

Joint Appraisal report 2018

Country	FEDERAL DEMOCRATIC REPUBLIC OF NEPAL
Full JA or JA update	<input checked="" type="checkbox"/> full JA <input type="checkbox"/> JA update
Date and location of Joint Appraisal meeting	19 – 23 NOVEMBER 2018; KATHMANDU
Participants / affiliation ¹	Family Welfare Division, DoHS, MoHP, Nepal GAVI, WHO, UNICEF, Inter-agency Coordination Committee (See Section 7 for full list of participants)
Reporting period	GOVERNMENT DATA REPORTING PERIOD IS FOR THE FISCAL PERIOD.
Fiscal period ²	16 JULY 2016 TO 15 JULY 2017
Comprehensive Multi Year Plan (cMYP) duration	2017 TO 2021
Gavi transition / co-financing group	INITIAL SELF-FINANCING

1. RENEWAL AND EXTENSION REQUESTS

Renewal requests were submitted on the country portal

Vaccine (NVS) renewal request (by 15 May)	<u>Yes</u> <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
HSS renewal request	<u>Yes</u> <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
CCEOP renewal request	Yes <input type="checkbox"/> No <input type="checkbox"/> <u>N/A</u> <input type="checkbox"/>

Observations on vaccine request (for 2019)

Population	29,411,599				
Birth cohort	639,935 (live births); 630,928 (surviving infants)				
Vaccine	DPT-HepB-Hib	PCV	MRSD	IPV (for fIPV)	...
Population in the target age cohort	630,928	630,928	633,105	630,928	
Target population to be vaccinated (first dose)	599,382	593,072	599,382	567,835	
Target population to be vaccinated (last dose)	574,145	555,217	538,140	545,122	
Implied coverage rate	Penta 1: 95% Penta 3: 91%	PCV1: 94% PCV3: 88%	MR 1: 95% MR 2: 85%	fIPV 1: 90% fIPV 2: 86%	
Last available WUENIC coverage rate (2017)	Penta 1: 95% Penta 3: 90%	PCV1: 90% PCV3: 80%	MR1: 90% MR2: 59%	IPV: 77% (2016)	
Last available admin coverage rate (2017)	Penta 1: 91% Penta 3: 86%	PCV1: 88% PCV3: 78%	MR1: 84% MR2: 57%	IPV: 72% (2016)	
Wastage rate	20%	10%	40%	25%	
Buffer	25%	25%	25%	25%	
Stock reported (CVS + RVS for start 2018)	562,500	945,400	1,433,590	0 (NA)	

Indicative interest to introduce new vaccines or request Health System Strengthening support from Gavi in the future³

Indicative interest to introduce new vaccines or request HSS support from Gavi	Programme	Expected application year	Expected introduction year
	NVS – Rotavirus vaccine routine	Completed in 2017; product change	2019

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.

³ Providing this information does not constitute any obligation for either the country or Gavi, it merely serves for information purposes.

		request application to be made	

2. RECENT CHANGES IN COUNTRY CONTEXT AND POTENTIAL RISKS FOR NEXT YEAR

Significant achievements of the National Immunization Program

1. Introduction of fractional dose of Inactivated Polio Vaccine

Nepal is the first Gavi-supported country in the world to introduce Inactivated Polio Vaccine in its routine immunization. IPV was introduced in Nepal in September 2014, ensuring its commitment towards global polio eradication. However, due to global shortage of IPV there was no supply of IPV to Nepal since March 2016, with last distribution from central level to sub-central level in May 2016. Meanwhile, keeping global shortage of IPV in mind, SAGE and WHO had recommended countries to introduce fractional dose of IPV (fIPV), two doses of which is more effective but utilizes less volume of vaccine than one dose of IPV. In 2017, Nepal's National Committee for Immunization Practices recommended that Nepal should introduce fIPV in its routine immunization. Following Inter-Agency Coordination Committee recommendation, and Ministry of Health and Population and Ministry of Finance endorsement, request was submitted to Gavi for support of fIPV to Nepal. Gavi approved this request/application and supplied the vaccines (first shipment received on 18 June 2018) and supported the country with vaccine introduction grant. Guideline and comprehensive IEC materials were developed for introduction of fIPV. Cascaded trainings were provided at all levels to health workers. Before the vaccine introduction, Nepal's first in-depth readiness assessment was conducted.

The launch program of fIPV was conducted on 4 October 2018 in Janakpur, Dhanusha District, Province 2, with Honorable Deputy Prime Minister and Minister of Health and Population as Chief Guest of the event. Now, fIPV is available in Nepal's routine immunization throughout the country.

2. Certification of rubella and congenital rubella syndrome (CRS) control

Rubella control is achieved when a country reduces the number of rubella cases by 95% as compared to the number of rubella cases in 2008. Nepal has achieved 97% reduction and is among the first six countries in the WHO South-East Asia Region to control rubella and congenital rubella syndrome (CRS).

The Regional Verification Commission during their meeting in Delhi from 31 July to 2 August 2018 reviewed progress towards measles elimination and rubella/CRS control in Nepal and other WHO South-East Asia Region countries. Based on the data and reports provided by the National Verification Committee of Nepal, the Commission certified on 3 August 2018 that Nepal has achieved control of rubella and congenital rubella syndrome. This certification is two years ahead of the regional target year of 2020 and one year ahead of the national target of 2019.

Federalization and Re-structuring of the Health System

As envisaged in the Constitution of Nepal 2015, Nepal has entered in to federal system of governance from the unitary system. The proposed seven provinces are already implemented and functional since August 2017. Under the federal system, the descending structure levels are central, provincial and local levels (palika). There are in total now 7 provinces and 753 local bodies (metropolitan, sub-metropolitan, municipalities, and rural municipalities).

Based on the federalized structure, health system is also undergoing restructuring, with major changes starting from July 2018. The organizational structure of Ministry of Health and Population has been restructured which includes the Secretariat; Health Emergency and Disaster Management Unit; Policy, Planning, Monitoring, Quality Assurance and Regulation; Population Management and Health coordination; and Administration Division. Development support coordination is conducted through Health Coordination Division under Population Management and Health Coordination.

Similarly, Department of Health Services has also undergone restructuring. There are five National Centers as in the previous structure (NTC, NSCASC, NPHL, NHTC, NHEICC). However, now there are five divisions – Management Division, Curative Service Division, Family Welfare Division, Epidemiology and Disease Control Division, and Nursing and Social Security Division. The former Logistics Management Division now falls under Management Division as Logistic Management Section. The former Immunization Section under Child Health Division now falls under Family Welfare Division as Child Health and Immunization Service

Section. Former Child Health Division and Family Health Division have been merged to form Family Welfare Division. Further, under Family Welfare Division, former IMNCI Section and Immunization Section were merged to form Child Health and Immunization Service Section.

At sub-national level, there were five Regional Health Directorates in each of the previous five regions. This has been replaced by Health Directorate under Social Development Ministry in each of the seven provinces. There are 77 districts now instead of the previous 75 (two previous districts each have been split in two). The District (Public) Health Offices at each of the district are still functional. However, there are plans to form 35 Health Offices combining 1-3 districts to replace the 75 former District (Public) Health Offices. This plan is still not fully operational, and the overall structure of District (Public) Health Offices is under discussion in the Cabinet.

Immunization Act

Nepal is the first country with Immunization Act in the South-East Asia Region. The immunization bill was approved by the Rt. Hon'ble President on 26 January 2016 with the Immunization Act coming into force within 90 days of this enactment. With this, Nepal has moved from program-based approach to right based approach for immunization. Based on the Act, Immunization Regulation is now available. Immunization Regulation 2074 B.S. has been published in Nepal Gazette on 6 August 2018. Immunization Act also has enabled National Immunization Fund to ensure immunization financing and sustainability and has public-private partnership model. However, the fund is yet to be fully operational.

Provincial Levels are also rapidly taking ownership of the immunization program. Province 4 (Gandaki) now has its own Immunization Act and has also established Immunization Fund.

Full Immunization Program

Nepal has initiated and implemented a unique and original initiative known as 'full immunization declaration (FID) program'. This program addresses issues of social inequity in immunization as every child regardless of social, economic or geographical considerations within an administrative boundary are meant to be fully immunized under this program. Over the years, Nepal has witnessed participation of all stakeholders at all levels to achieve full immunization. It is a moment of pride and honour for a VDC (Village Development Committee) or municipality or a district to be declared as fully immunized. Therefore, the event of declaration significantly marks community participation and engagement. This has ensured ownership of the program not only by the service providers and policy makers but also by the communities.

As of 15 July 2018, a total of 2926 (567 since previous reporting – 15 July 2017) out of 3281 VDCs, 180 (63 since previous reporting) out of 197 municipalities, 56 (27 since previous reporting) out of 77 districts have been declared 'fully immunized'. The new provinces have also started taking ownership of the full immunization initiative. Province 4 (Gandaki) has already declared their province as fully immunized province. All the districts in Province 7 has already been declared fully immunized, and, thus, Province 7 is ready to declare the province as fully immunized.

Achievement in full immunization is related to Gavi HSS (HSS-3) support disbursement related indicator (DLI-2). For Year 3 (2019), the target is to have 60% of the 13 low-performing districts have fully immunized VDCs. For Year 5 (2021), the final year, the target is to have 100% of the low-performing districts have fully immunized VDCs. In relation to Year 3 DLI, survey conducted (by UNICEF) in 8 of the 13 districts with low scores on human development index (HDI) show full immunization coverage with all basic EPI vaccines at average 95.9% and card retention rate over 95%. Final report of the survey is expected to be available before end 2018 and will be submitted to Gavi after NHRC (Nepal Health Research Council) validation of the report.

(In the current context of federalization and re-structuring of the health organogram/system in Nepal, during the Joint Appraisal, it was discussed on the need to revise EVM and Full Immunization DLI targets, as well as the need to reword Full Immunization DLI since VDCs no longer exist. Details are given below in 'Section 4.2. Performance of Gavi HSS support')

Effective Vaccine Management Assessment

EVM assessment 2017 has been completed and final report shared with Gavi after validation by Nepal Health Research Council (NHRC). Achievement in EVM is related to Gavi HSS (HSS-3) support disbursement related indicator (DLI) in Year 2 and Year 4 of the support period.

EVM Assessment 2017 shows improvement in majority of EVM criteria scores from that of 2014 EVM Assessment. Out of the 9 categories, 4 categories namely vaccine & commodity arrival procedures; cold and dry storage capacity; buildings, cold chain equipment and transport; and good vaccine management practices has achieved more than 80%. Nepal has achieved the DLI target (Year 2) of achieving EVM average score 70% with at least 4 attributes achieving 80%. Nepal has already received the funds related to this DLI achievement for Year 2.

NDHS 2016

The final report of Nepal Demographic Health Survey 2016 is available. The report is attached, and findings of the report related to immunization, especially for equity indicators, is discussed later in this Joint Appraisal Report.

Global Polio Eradication Initiative (GPEI)

GPEI and polio transition plan

WHO Immunization Preventable Disease (IPD) unit is the only GPEI funded asset in Nepal. WHO-IPD is a nationwide network of 15 surveillance medical officers and supporting staff (based in 11 field offices) supported by a central unit in Kathmandu. WHO-IPD provides technical assistance to the National Immunization Program in all matters related to immunization (routine including new vaccine introductions and supplementary) as well as vaccine preventable disease surveillance for polio, measles, rubella, Japanese encephalitis, neonatal tetanus, rotavirus and invasive bacterial diseases surveillance.

In mid-2017, a polio transitional plan was developed after a series of discussions with MoHP and the National Polio Legacy Committee (PLC). In June 2017, PLC recommended to MoHP that WHO-IPD network is of immense public health value to MoHP and should be sustained beyond polio eradication to deliver on priority public health goals of the country. PLC also congratulated MoHP for including a budget line for supporting polio transition planning in the financial year 2017-18 and recommended that WHO-IPD and Child Health Division (CHD) should formulate a sustainable polio transition plan including broadening donor base for WHO-IPD and present to PLC and MoHP.

A draft polio transition plan was developed and shared with CHD. However, in mid-2018, in course of re-structuring MoHP, Child Health Division was merged with Family Health Division, and Family Welfare Division (FWD) was created. MoHP is currently mulling over re-structuring the immunization committees including the PLC. This has led to some reduced momentum on progress on polio transition planning which is expected to be brought back on track in early 2019.

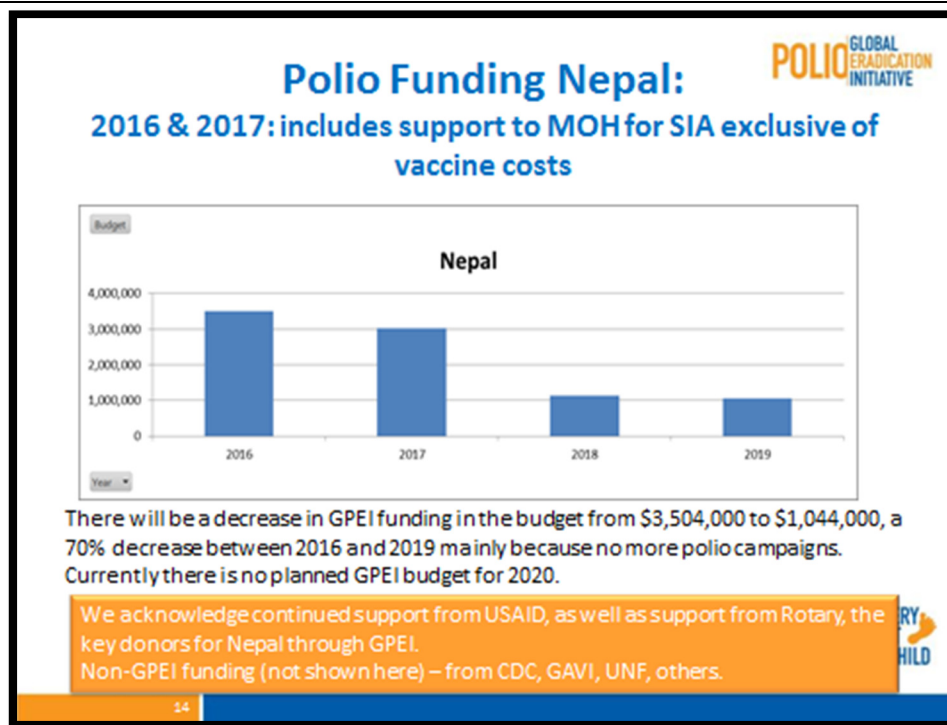
It would be reasonable to expect that a reduced GPEI support in 2020, would be supplemented by Gavi (through additional funding for HSS-3) and other donor support (CDC, USAID non-polio for childhood mortality surveillance). WHO-IPD network will continue to deliver technical assistance in broad areas of surveillance and immunization at least through 2021.

WHO-IPD will continue advocating with GoN/MoHP and work with FWD to convene PLC and proceed on endorsing a sustainable polio transition plan in early 2019.

GPEI funding

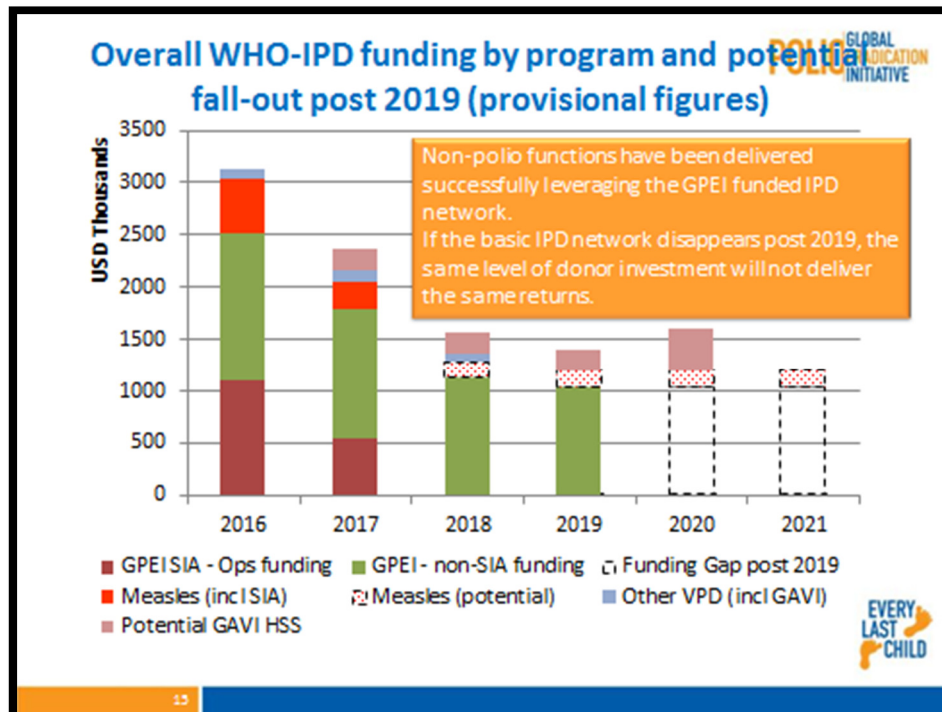
As stated above, WHO-IPD is the only GPEI funded asset in Nepal. GPEI funding provides 70% - 80% support (other funding streams are from measles and other sources including Gavi) to a nationwide network of polio and other VPD surveillance offices and a central office with human resources skilled in public health work – WHO-IPD network. GPEI has communicated the budgetary envelope for Nepal as shown in Figure 1.

Fig. 1. GPEI funding to Nepal, 2016 – 2019



Much of the gains made in routine immunization, new vaccine introduction, and measles elimination activities have leveraged the presence of the GPEI funded nationwide network of surveillance officers. Cessation of GPEI funding post 2019 will expose many of these gains to an imminent risk unless alternate funding sources are secured. The figure below shows the relative contribution to the WHO-IPD network from different funding sources and the expected funding gap post GPEI funding cessation (provisional figures).

Fig. 2. Different funding sources and expected funding gap post GPEI funding cessation



MoHP, WHO and UNICEF have agreed to utilize USD 6.96 million (to WHO & UNICEF) between 2019-2021 for additional funding through Gavi HSS-3. WHO-IPD has started re-purposing the IPD network to broaden its technical assistance from AFP surveillance to include routine immunization including new vaccine introduction, measles, rubella and VPD control. If donor support is available, IPD may also initiate a project on child mortality surveillance or other non-VPD surveillance to demonstrate value of the GPEI funded network beyond polio eradication.

In the new federalized structure and transition of the administrative structure as well as the structure of the health system/organogram, the Government has continued to recognize the importance of the National Immunization Program (NIP). NIP is still the priority program (P1) of the Government, and immunization has been kept as 'basic health service' delivered free to all at the point of consumption. Since immunization is kept as 'basic health service', the overall responsibility of the immunization program including vaccine procurement remains as the function of the federal government. Further, all basic health services are mandated by law to be delivered/provided to the citizens of Nepal.

Newly established provinces have also taken immunization program as a priority program. For example, Province 4 (Gandaki) has its own Immunization Act as well as Immunization Fund, and the province has been declared as a fully immunized province. Similarly, Province 7 is also ready for declaring fully immunized province having all its nine districts already declared fully immunized.

Based on the ongoing structural changes of the health system, important challenges have been identified and listed below. Important challenges after GPEI funding cessation is also listed below.

1) Possible removal/re-shaping of District (Public) Health Offices

At district level, District (Public) Health Offices have always been the mainstay of public health programs implementation and have remained as the cost-centres at district level. Potential roll-back or removal of D(P)HO system and/or limitation of their role to coordination only may pose challenges in efficient service delivery and program management in the future. The decision for this structural change mostly lies with Ministry of Health and Population, Social Development Ministry (Provinces), and Ministry of Federal Affairs and General Administration with the Cabinet approval. Program Divisions and partners may have limited direct role in the decision for this structural change.

As approved officially by the Government, there are plans to merge 77 District (Public) Health Offices to 35 Health Offices, with each Health Office covering 1-3 districts. However, there are ongoing discussions that D(P)HO may be kept as it is in the districts albeit slimmed down. Currently the directive to Provinces is to keep D(P)HO as it is (or as required by the Province) until alternate responsible offices are in place. There is thus continuing uncertainties in this regard. The Program Division, Province Level and Partners would continue to provide support and capacity building to the D(P)HO or Health Offices as well as the local level for continued efficient implementation of health programs including immunization, especially in the light of possible uncertainties or delays in the oversight, management and financial controls of public health service programs. However, with existing numerical strength of immunization core partners, it would be a challenge to provide technical assistance to the 753 local bodies directly without an intervening district level structure. The structure of D(P)HO is currently under discussion in the Cabinet.

2) Re-allocation of trained health staff, and strengthening/expansion of DHIS2 platform for HMIS and eLMIS system

Re-allocation of program-specific trained health staff to other programs or to administrative roles may pose challenge in efficient implementation of the health programs including immunization. This should be monitored, and appropriate measures such as training and capacity building to health staff should be given as applicable.

Previously, HMIS reporting used to be done from health facility level (paper based) to district level, from where HMIS electronic reporting was done. All district levels conduct online HMIS reporting using DHIS2 platform (which is the standard platform now in country for HMIS electronic/online reporting), whereas only some health facilities conduct online HMIS reporting. In the new structure, health facilities having online system report directly to the HMIS system, whereas those health facilities without online system send reports to local level, from where online reporting is conducted. The plan by 2020 is to have all health facilities report electronically in the online system/DHIS2 platform. Therefore, two challenges exist: 1) To expand electronic online HMIS reporting to all health facilities, and 2) In the interim, capacity building for local levels to conduct electronic HMIS reporting for those health facilities using paper-based system. Further, expansion of eLMIS, an important component for real-time logistics information, throughout the country in the current context remains a challenge. Currently, at central level, real-time vaccine stock information is available only up to regional level, and the data from district level is not up-to-date in eLMIS. Therefore, strengthening and expansion of eLMIS system up to district level should be considered as an important component

of overall immunization strengthening system. (HMIS and LMIS discussed further in 'Section 3.3 Data')

During Joint Appraisal mission, one health post (Tathali HP) in Bhaktapur District was visited. In the context of structural changes going on in the health system/organogram, the biggest concern raised by the staff at HP was regarding the ownership of all health programs by and capacity building for the health focal person(s), health section, at the palika/municipality level (local level). At the local level, all health programs for the health facilities (Health Posts, Primary Health Centres, Urban Health Clinics, Community Health Units) in the current new structure is conducted/coordinated by the health section at palika/municipality instead of by the District (Public) Health Offices as in the previous structure. The staff reported that, the immunization program is still conducted/coordinated through D(P)HO because of the District Vaccine Store at the D(P)HO. D(P)HO have vast experience/capacity for health programs and budget implementation. However, in the new structure, health focal person(s), health section, at the local level (palika/municipality) are responsible for this function. Therefore, during this transition the ownership and capacity building of the health focal person(s) at local level should be enhanced to implement all health programs efficiently at local level.

3) Increase in cost-centres at sub-national level

Instead of the previous 75 district level as cost-centres, now the 753 local bodies/levels are considered as the cost-centres. This poses difficulty in preparing Annual Work Plan and Budget and budget allocations. Further, there might be difficulty in tracking the activities implementation as well as in receiving the expenditure statements in time. Program divisions should closely monitor this in close collaboration with finance sections/divisions.

The platform currently being used for the local level is mainly TABUCS (Transaction Accounting and Budget Control System) and CGAS (Computerized Government Accounting System), whereas the SuTRA (Sub-national Treasury Regularity Application) may not be working or implemented properly. There are plans to use GARIS (Government Accounting and Reporting Information System) in the future. Regardless of the platform used for the local level financial management, the structure should be strengthened for timely financial reporting and universal single platform may be recommended for use.

4) Vaccine Stores

Currently vaccine and cold chain flow is as in the past structure. In the new structure, the erstwhile regional vaccine stores have started functioning as provincial vaccine stores in all provinces except Province 2 and Province 6 which are lacking provincial vaccine stores. Province 5, on the other hand, has two provincial/regional vaccine stores located within its boundary. Appropriate measures should be taken in the future to establish provincial vaccine stores in the two provinces lacking it. Building new provincial vaccine stores and strengthening central vaccines store would be important components for immunization health system strengthening. Further, merger of District (Public) Health Offices to Health Offices also poses challenges prompting discussion on the future of district vaccine stores. Currently, district vaccine stores are functional as in the previous structure without disruption of vaccine and logistics supply.

Gavi's CCE OP support does not include Walk-In Cooler (WIC) support. Therefore, enhancing storage capacity at Central Vaccine Store with procurement of new WICs through mechanisms such as pool fund (Gavi HSS support) may be appropriate. Further, construction of new CVS building has been discussed for several years but has not materialized.

5) Cessation of GPEI funding

Since its inception in 1998, GPEI has been the major funder (currently ~70% - 80%) for the WHO-IPD unit in Nepal. Over the years, WHO-IPD unit has expanded its technical support areas to GoN from polio eradication to control/elimination of measles-rubella, Japanese encephalitis, neonatal tetanus and other VPDs. In addition, thanks to additional Gavi support, WHO-IPD now also strongly supports GoN in all aspects for routine immunization including new vaccine introductions with policy framing, planning and training, concurrent monitoring to ensure timely corrective responses. As per current projections, the GPEI funding support to WHO-IPD is expected to end by 2019. If current technical assistance provided to program divisions through the WHO-IPD network is withdrawn, that would likely seriously impact all aspects of the immunization and VPD surveillance programmes in the country.

Since the beginning of current fiscal year (mid-July 2018), some of the key existing vaccine advisory committees (NCIP/NITAG, AEFI Committee) are dissolved and formation of newly reconstituted committees are under way. This delay impacts decision making regarding policy as well as technical matters, and thus

implementation of SEAR-ITAG recommendations, decision making regarding choice of alternate rotavirus vaccine for introduction in NIP, etc.

3. PERFORMANCE OF THE IMMUNISATION PROGRAMME

3.1. Coverage and equity of immunisation

Vaccination coverage

Nepal is currently receiving Gavi's new and underutilized vaccine support for pentavalent (DPT-HepB-Hib), fIPV (recently started), PCV, and measles second dose. Due to global shortage of IPV, Nepal had not received IPV vaccine since the last shipment in March 2016. The last supply from Central Vaccine Store to sub-national level (Regional Vaccine Store) was in May 2016. With Gavi/GPEI support, Nepal has now received IPV for use as fractional dose. The first shipment was received on 18 June 2018. Nepal has now introduced fractional dose of inactivated polio vaccine (fIPV) in routine immunization since October 2018 through Gavi support.

All other vaccines – BCG, OPV, MR first dose, JE, and rubella component in MRSD – and related supplies (syringes) are financed by the Government. Through the immunization program, Td vaccination financed by the Government is also provided to pregnant women.

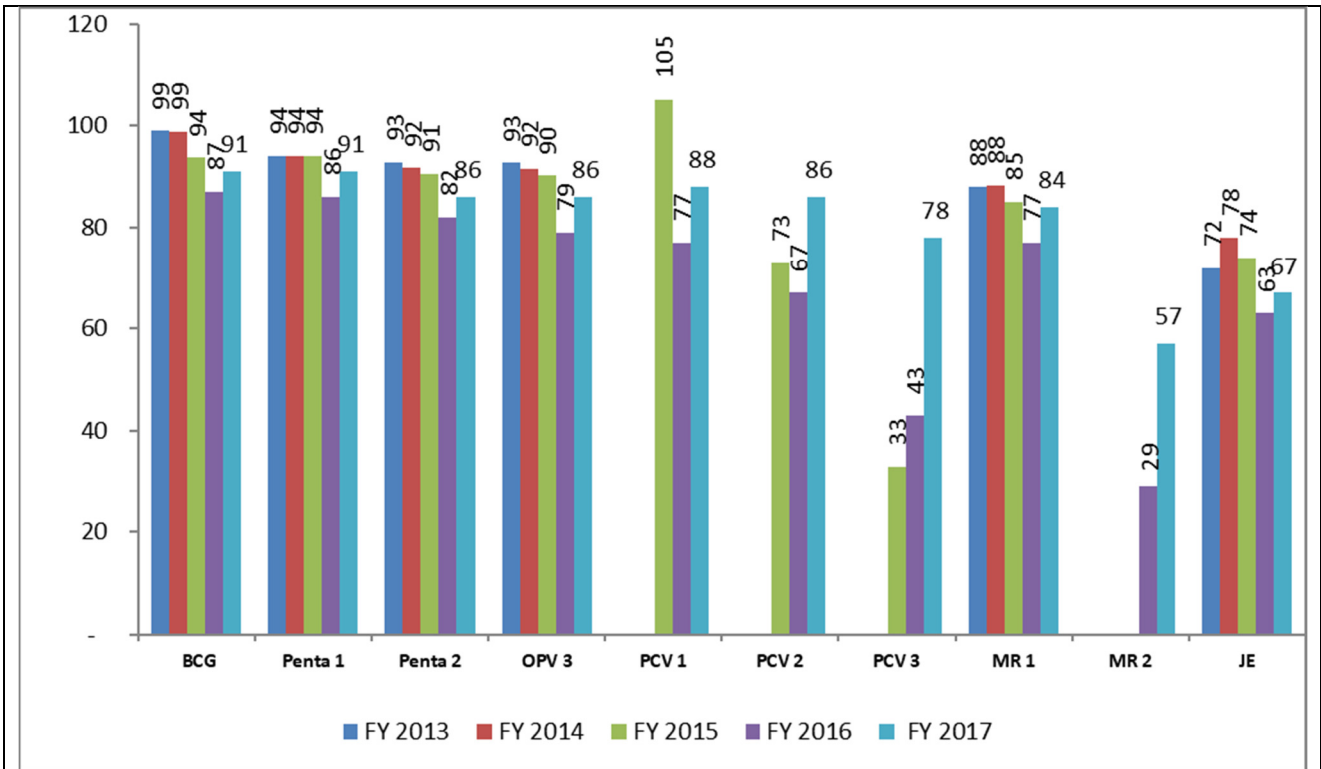
Nepal introduced several new vaccines/antigens in the past five years – namely rubella, IPV, PCV, MRSD, JEV (expansion), and fIPV. With introduction of several new or underutilized vaccines over the past five years, Nepal has demonstrated commitment and strong platform for delivery of immunization.

The administrative coverage of infant/child immunization antigens from FY 2013 to FY 2017 are given in Figure 3. The decrease in coverages of almost all antigens in FY 2016 following major earthquake and nation-wide fuel strike in 2015 have now increased significantly. Coverage for PCV for all doses have also increased. MRSD coverage has also increased significantly compared to FY 2016; however, the coverage at 57% is still not satisfactory. Survey (NDHS 2016) shows that vaccination coverages in Nepal is higher than administratively reported. Official estimates and WUENIC coverage also show higher coverages for each antigen. Figure 4 shows that the decline in coverage (WUENIC) in DPT1 and 3 in FY 2016 has now been reversed with DTP1 coverage at 95% and DTP3 at 90% (WUENIC). Administrative, official, and WUENIC coverages for Gavi supported vaccines are given in Table 5 in Section '4.1 Performance of vaccine support'. Data shows for each of the antigens the increase is at least 4% (administrative); PCV coverages have significantly improved. Considering WUENIC data, these achievements/coverages are even higher.

Due to increase in coverages for both DTP3 and MR 1, Nepal is now eligible for Gavi's Performance Based Funding. Communication regarding this from Gavi has been received by the country.

Among the Gavi supported vaccines, MRSD support is only for five years. Since MRSD was introduced in September 2015, the support is expected to cease in September 2020. Due to ongoing transition of the country into federalized structure as well as the re-structuring of the health system structure, leading to increased resources outlay in health budget to support administrative re-structuring, **Nepal requests Gavi to continue supporting the country with MRSD for several more years.**

Fig 3. National Routine Immunization Coverage (%), Nepal, Fiscal Year 2013 – 2017



Source: HMIS Administrative coverage

FOR PENTAVALENT 3, DELAYED VACCINATION (AFTER 1 YEAR AGE) IS RECORDED SEPARATELY IN HMIS. INCLUDING THIS DELAYED PENTA 3 COVERAGE IN THE NUMERATOR, NATIONAL COVERAGE COULD INCREASE BY ~ 5%

JEV data for 31 districts only where JEV was introduced during the period except in FY 2017 the coverage given is nation-wide coverage data.

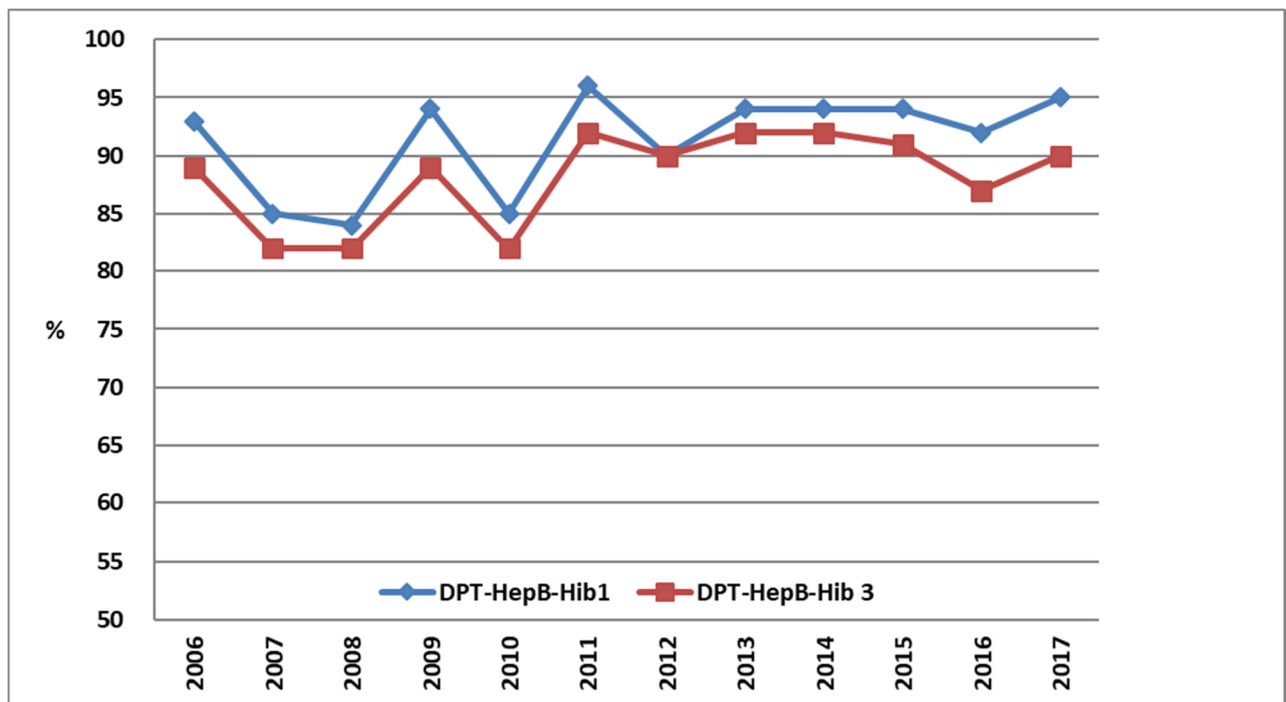
IPV coverage not given in the graph. IPV coverage for FY 2015 is 71%, and for FY 2016 is 72%. Although coverage (16%) has been reported for FY 2017, there already was national level stock out in FY 2017, and the reported coverage reflect vaccination with remaining stock at district level.

For FY 2015, adjusted denominator for PCV (WDR 6 months and EDR 3 months only) as per the introduction area in the FY. PCV coverage between 2015 and 2016 may not be comparable as in FY 2015, only limited area had introduced PCV (following earthquake).

For 2016, adjusted denominator for MR2 (including 10 months only in the FY)

MR2 low coverage in FY 2016 shows that all districts may not have introduced vaccine at the same time. MR2 introduced before the fuel strike in FY 2016.

Fig 4. DPT-HepB-Hib 1 & 3 Coverage, Nepal, 2006 – 2016



Source: WUENIC

Note: Hib included (pentavalent) since 2009

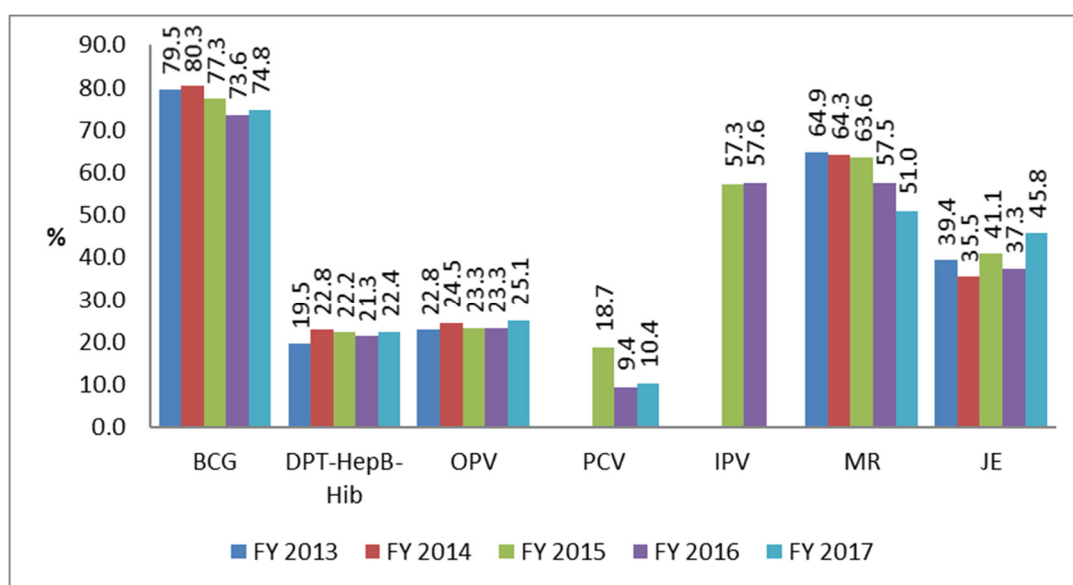
Vaccine wastage

Among the Gavi supported vaccines, the wastage rate (Figure 5) of pentavalent vaccine has been maintained (indicative wastage rate 20%), PCV wastage has had already been reduced in FY 2016 and maintained in FY 2017. Similarly, MR vaccine (total both Government and Gavi supported) has been reduced in FY 2017. This wastage rate of MR vaccine in FY 2017 (51%) is close to the indicative wastage rate of 50%, but Gavi provided wastage rate is 40%.

For all re-constituted vaccines (BCG, MR, and JE) that need to be discarded within 6 hours or end of immunization session whichever comes first, wastage rate is expected to be higher. Further, in Nepal, for BCG and MR, at least 'one vial per session' policy is used and small session sizes in Nepal because of sparse population in hilly terrain have to be allowed higher wastage. BCG wastage rate is very high due to 20-dose vial used (the price for 10-dose vial and 20-dose vial is similar).

Similarly, JEV wastage rate is high due to discard policy within 1 hour. Even though the JEV used in Nepal (SA 14-14-2) is already WHO prequalified and can be used up to 6 hours (similar to BCG and MR), the manufacturer still supplies vaccine to the country with package insert mentioning discard time limit up to one hour.

Fig 5. Vaccine Wastage Rate, Nepal, Fiscal Year 2013 – 2016



Source: HMIS

Equity in vaccination

HMIS does not routinely report vaccination coverage by all equity indicators. The latest available survey by equity indicators is NDHS 2016. In Nepal, proportion of unimmunized children has reduced from 3% (NDHS 2011) to 1% (NDHS 2016) indicating that 99% of the birth cohort is reached by the immunization system at least once. Coverages of all antigens, which dipped in 2016 following major earthquake and fuel-strike, have improved in 2017. Coverage of both pentavalent 1 and 3 is now $\geq 90\%$. Coverage of measles-rubella first dose is 90%. Coverages of newly introduced vaccines have also improved significantly compared to previous years. HMIS records delayed vaccination for DTP3 (after 1 year of age) separately and is not included in routine calculations. If the delayed DTP3 vaccination data is included, then the national DTP3 coverage could increase by $\sim 5\%$. Further, if delayed DTP3 vaccination data is included, then 96% and 82% of districts achieved $\geq 80\%$ coverage in 2015 and 2017 respectively (See Point 2 below).

However, challenges still persist and there are gaps as below:

1. Although high coverages for antigens such as pentavalent 3 and MR1 have been achieved, the national coverages of PCV 3, MRSD, JEV, and Td for pregnant women have not yet reached 90%.
2. Target of district level coverages (% districts with $\geq 80\%$ DTP 3 coverage) has actually declined from 96% to 82% between FY 2015 and 2017. Moreover, if timely vaccination is considered this drop is even sharper from 87% to 70%. Nevertheless, there is a slight improvement compared to FY 2016. (See Fig. 6 below and paragraph above)

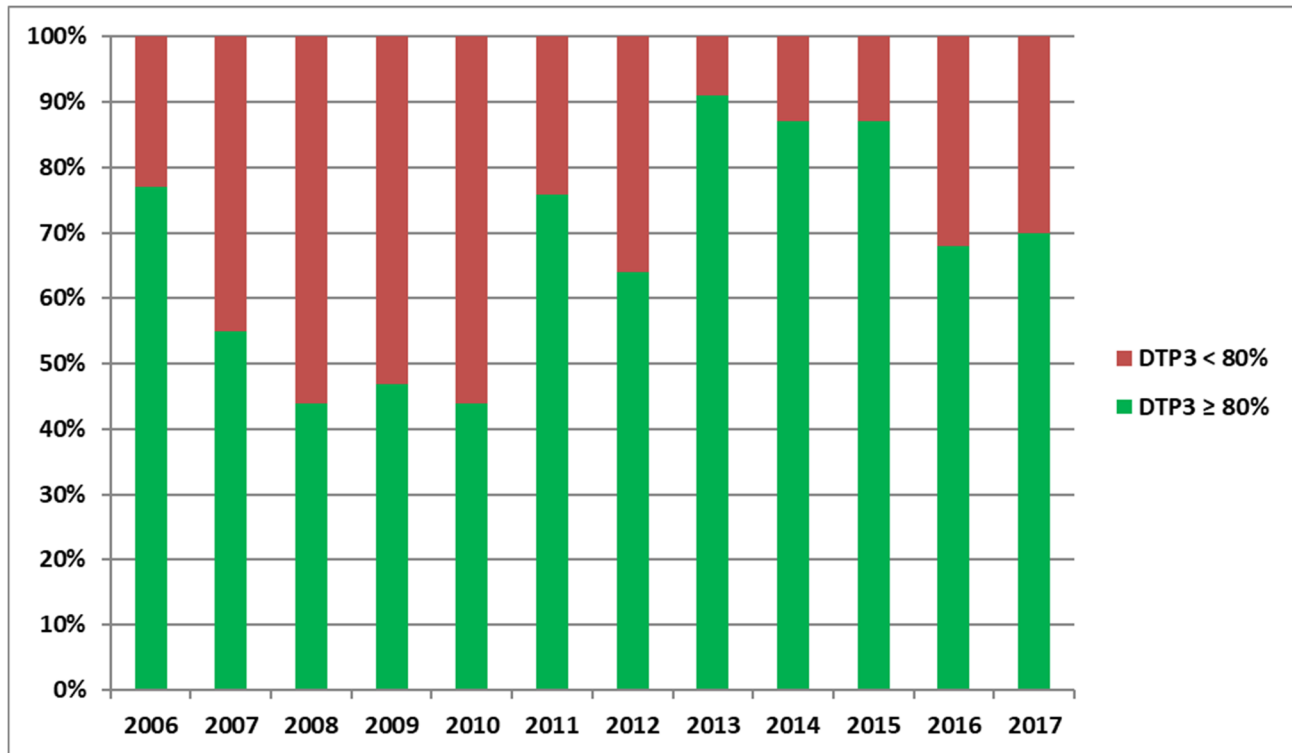
One of Gavi's Performance Based Funding is for achieving 90% of the districts with DTP3 coverage \geq 80%. Figure 6 shows that this was achieved in one year only between 2006 – 2015.

3. The coverage of MR1 is high (NDHS 2016 shows MR 1 coverage of ~ 90%). However, the coverage of MR2 is very low. MR 2 coverage has relatively increased significantly (by 28% points; 29 % in 2016 to 57% in 2017), it is still not satisfactory and is below 90%. For measles elimination, high coverages of both MR doses are required.

To improve MR 2 coverages, targeted approaches have been implemented. The new Full Immunization Declaration (FID) guideline state that for FID all antigens including MR2 should be evaluated (in contrast to previous approach where only basic vaccines were evaluated for full immunization). The agenda to increase MR 2 coverages and utilization of 'missed opportunity of vaccination' are included in almost all immunization reviews and trainings. Further, in the new immunization micro-planning format, dropout between DPT1 and MR2 is used to measure utilization, along with other traditional measures such as dropout between DPT1 and 3. For concurrent immunization supervision and monitoring (such as through SMO network and independent monitoring), districts and health facilities are prioritized for monitoring based on DTP3 as well as MR 2 coverages.

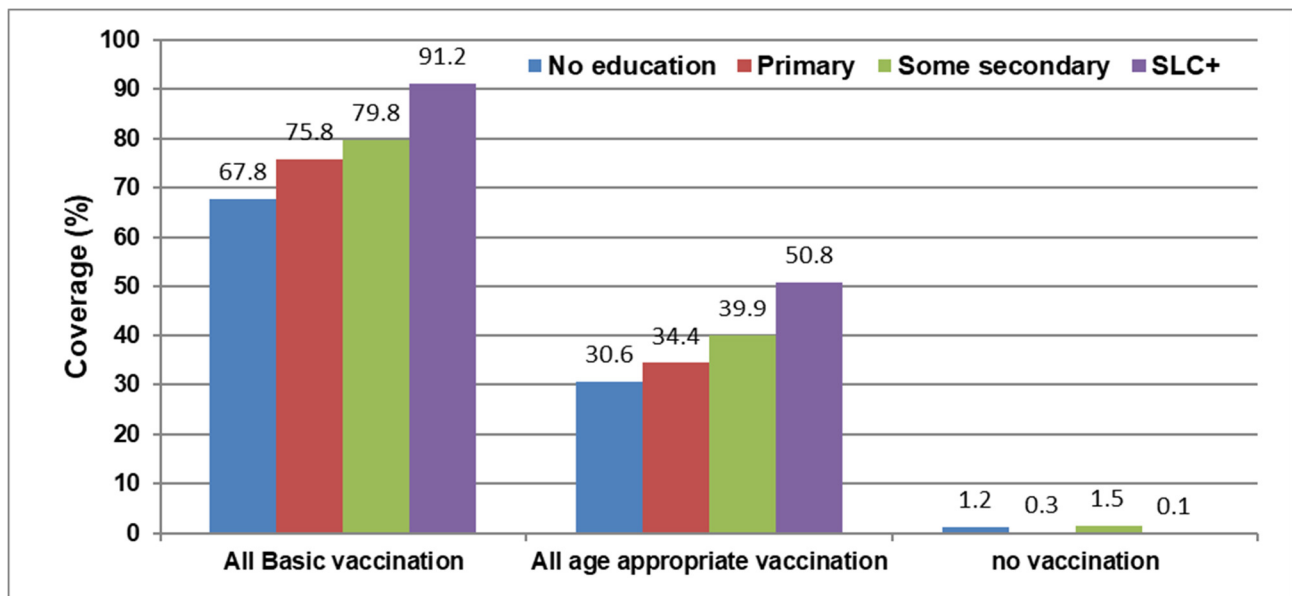
4. Coverages of all PCV doses have improved significantly (see Fig 3 and Table 5). Nevertheless, dropout between PCV 1 (given at 6 weeks) and PCV 3 (given at 9 months) is high (~11%). As per existing guideline, if a child comes after 7 months of age, then the child receives only two doses of PCV, and at 12 months, only one dose of PCV. This policy barrier (also see Point 6 below), wherein the third dose may not be given if child comes delayed, may affect the true drop-out figure, which could be less than the reported figure of 11%. Taking delayed DTP3 vaccination as a proxy, at least ~5% of children come delayed for PCV vaccination.
5. NDHS 2016 survey has shown that,
 - a. Percentage of children with no vaccination has improved from 3% in NDHS 2011 to 1% in NDHS 2016. This shows, that 99% of the children come in contact for at least one time. However, the proportion of infants receiving all basic vaccinations has dropped sharply to 78% from 87%. This might indicate that children are not being followed up systematically for all due doses of vaccines and needs to be explored further.
 - b. The differences in all basic vaccination coverage between male and female (77.4% vs. 78.4%), and residence in urban and rural areas (78.5% vs. 77%) are quite small indicating absence of gender bias and equitable penetration of the program in urban and rural areas.
 - c. However, there are larger differences between ecological zones (mountain 74.1%, hill 88%, Terai 71.3%), and mother's education (no education 67.8%, SLC+ 91.2%). Mother's education status shows an almost linear unidirectional relationship with child's immunization status and could be the most important equity indicator affecting immunization coverage. About a third to a quarter of infants whose mothers have less than secondary education will miss out on one or more childhood vaccines. (See Fig. 7)
 - d. Household economic status shows a more complex relationship with child's immunization status (lowest quintile 76.6%, highest quintile 81.6% with the lowest and the highest immunization coverage being recorded in the third and fourth wealth quintiles, 70.9% and 84.8% respectively).
 - e. Analysis of trend/improvement of equity gap by indicator from NDHS 2011 to NDHS 2016, shows that ecological zone and mother's education are important indicators needing attention, whereas equity gaps due to gender, urban/rural, and wealth quintile have improved (Table 1).
6. Any policy barriers for immunization such as 1 year limit for DTP vaccination, and 2 year age ceiling for all vaccinations need to be removed to have equitable access to all children for vaccination regardless of age (or delayed presentation for vaccination). Nevertheless, delayed vaccination should not be encouraged.

Fig 6. Percentage of Districts having ≥ 80% DTP3 coverage, Nepal, 2006 – 2017



Source: JRF 2006 – 2016, the source for which is HMIS. Given data does not include delayed vaccination (DTP3 after 1 year of age) which is recorded separately in HMIS. If this delayed vaccination data is added, coverages increases.

Fig 7. Vaccination Coverage by Mother’s Education Status (NDHS 2016)



Percentage of children age 12-23 months who received specific vaccines at any time before the survey (according to a vaccination card or the mother’s report)

All basic vaccination: BCG, three doses of DPT-HepB-Hib (pentavalent), three doses of oral polio vaccine, and one dose of measles/rubella

All age appropriate vaccination: BCG, three doses of DPT-HepB-Hib (pentavalent), three doses of oral polio vaccine, three doses of pneumococcal vaccine, and one dose of measles/rubella

Table 1. Trend in Equity Gap in Immunization Coverage, NDHS 2011 to NDHS 2016

Children age 12-23 months who received specific vaccine (%)					Children age 12-23 months who received specific vaccine (%)				
Indicators	Determinants	DPT3	MR1	All basic vaccine	Indicators	Determinants	DPT3	MR1	All basic vaccine
National					National				
		91.7	88	87			85.9	90.4	77.8
Gender	Male	92.1	89.7	88.2	Gender	Male	85.7	91.2	77.4
	Female	91.3	86.3	85.7		Female	86.2	89.4	78.4
	Equity Gap	0.8	3.4	2.5		Equity Gap	-0.5	1.8	-1
Place of Residence	Urban	94.9	91.8	90	Place of Residence	Urban	85.6	91.2	78.5
	Rural	91.4	87.6	86.6		Rural	86.3	89.5	77
	Equity Gap	3.5	4.2	3.4		Equity Gap	-0.7	1.7	1.5
Ecological Zone	Mountain	90.4	90.9	88.2	Ecological Zone	Mountain	85.5	95.8	74.1
	Hill	93.4	90.4	89.5		Hill	94.5	95.9	88
	Terai	90.6	85.8	84.8		Terai	80.2	85.9	71.3
	Equity Gap	3	5.1	4.7		Equity Gap	14.3	10	16.7
Mother's education	No education	85.8	79.6	78.1	Mother's education	No education	80.3	83.4	67.8
	Primary	95.3	96.3	94.6		Primary	85	91.9	75.8
	Some secondary	97.4	95.2	95.2		Some secondary	86.4	91.9	79.8
	SLC+	97.1	92.8	92.4		SLC+	94.1	97	91.2
	Equity Gap	11.3	13.2	14.3		Equity Gap	13.8	13.6	23.4
Development region	Eastern	93.8	87.9	87.7	Federal States	State 1	85.6	96.5	79.4
	Central	89.1	84.6	83.1		State 2	76.1	81.4	65.2
	Western	94	91.2	91.2		State 3	90.4	95.4	85.3
	Mid-western	87.7	87.4	84.7		State 4	94.7	98	92.7
	Far-western	97.1	94.9	93.7		State 5	89.1	85.9	78.3
	Equity Gap	9.4	10.3	10.6		State 6	83.3	93.9	74.9
						State 7	92.7	95.2	83.4
Birth order	1	94.2	92.3	91.1	Equity Gap	18.6	16.6	27.5	
	2-3	92.5	89.2	88.3	Birth order	1	89	93	84
	4-5	93.9	86.2	86.2		2-3	86.2	89.6	75.6
	6+	71.6	63.1	59.6		4-5	79.3	91.4	74.4
	Equity Gap	22.6	29.2	31.5		6+	73.7	70.9	51.5
				Equity Gap		15.3	22.1	32.5	
Wealth Quintile	Lowest	87.6	86	84.5	Wealth Quintile	Lowest	86.5	94	76.6
	Second	89.7	85.2	83.9		Second	84.9	89.7	77.2
	Middle	90.5	85.2	84		Middle	80.9	85.2	70.9
	Fourth	96.7	92.2	91.5		Fourth	89.8	93.6	84.8
	Highest	98.4	96.1	95.7		Highest	89.5	89.8	81.6
	Equity Gap	10.8	10.1	11.2		Equity Gap	3	-4.2	5

Main things that need to be addressed/way forward for the immunization program are:

1. In view of short-supply of the preferred rotavirus vaccine (Rotarix, GSK), selection of available RVV product supported by Gavi should be done, and request submitted to Gavi.
2. To immunize children who missed vaccination between IPV stock out (in 2016) and introduction of fIPV (in 2018), Nepal has already submitted the indication during NVS renewal to Gavi in May 2017. Further discussion should be held with Gavi, followed up with official letter from the country indicating targets and modalities (campaign vs. routine). Due to MR campaign in 2019 in the country and unpredictability of IPV availability for missed cohort, the implementation of this activity will require targeted efforts from all side.
3. Targeted sub-national analysis and approaches should be implemented to improve MR2 coverages and improve equity gaps (mothers education and ecological zones). The program should set up mechanisms to identify and prioritize on families at the highest risk of missing out full immunization at the community level which are at highest risk of missing doses for their children. Further, focus should be given to districts which have not yet achieved $\geq 80\%$ timely coverage for pentavalent 3, as well as for other antigens.
4. Achieved coverages level should be sustained and coverages of antigens which have not yet reached 90% (PCV 3, MRSD, JEV and Td for pregnant women) should be improved. In the context of transition to federalization, special attention is required from all levels of the Government to sustain achievements so far.
5. Policy barriers such as 1 year age ceiling for traditional vaccines (DTP), and 2 year age ceiling for all routine immunization vaccines should be removed. However, this should not discourage timely vaccination for all antigens. Further, delayed vaccination schedule may need to be revised (for PCV), and booster doses (DTP and other vaccines as applicable) may need to be implemented through policy recommendations.

6. In the private market, there is short-supply of TT vaccines due to unavailability. Universal use of Td vaccine in the private market should be encouraged through policy recommendation and discussion with Department of Drug Administration for registration of Td vaccine only instead of TT vaccine.
7. MR SIA/campaign application has been submitted to Gavi, which has been well accepted, and final support Decision Letter is expected to be sent by Gavi soon. This MR campaign application proposal includes strong linkages with routine immunization for its strengthening. The target for campaign implementation is the last quarter of 2019. Starting from early 2019, adequate preparations should be done. Achieving very high coverages in the campaign as well as achieving high coverage for routine MR 2 vaccination is vital to progress towards measles elimination in the country.

To institute policy recommendations as outlined above as well as for implementation of SEAR ITAG recommendations, Nepal's NITAG (NCIP – National Committee for Immunization Practices) should be re-constituted immediately by MoHP without further delay.

3.2. Key drivers of sustainable coverage and equity

National Immunization Program is the priority program (P1) of the Ministry of Health and Population, Government of Nepal. In the federalized structure now, provinces have shown strong commitment towards immunization, with one province having its own Immunization Act and declared fully immunized province, and another province ready to be declared fully immunized with all its district declared fully immunized.

Despite natural calamities such as flooding and landslides every year, and difficult terrain of Nepal (highest point on Earth to almost sea level in the 200 KM width of the country), Nepal has maintained high coverage of the traditional vaccines. Both DTP 1 and 3 coverage were maintained at or above in the past 5 years before major earthquake occurred in 2015. The dip in vaccination coverages in FY 2016 have improved significantly in FY 2017, showing the resilience of the health system and immunization delivery in Nepal. Even though there are ongoing transitions within the country for administrative structure as well as the health system structure, health services including immunization have not been interrupted. The success of the National Immunization Program in Nepal could be attributed to strong leadership and management from the 'supply' side, as well as the wide-spread community acceptance of vaccination from the 'demand' side.

In Nepal, proportion of unimmunized children has reduced from 3% (NDHS 2011) to 1% (NDHS 2016) indicating that 99% of the birth cohort is reached by the immunization system at least once, showing that there might not be any problem in access to immunization. The relatively low coverages or high dropouts of some of the antigens (e.g., MRSD) may reflect non-utilization of the immunization services by the recipients as well non-utilization for missed opportunity for vaccination by service providers.

Policy barriers related to immunization (e.g, 1 year age limit to receive DTP1, and 2 year age limit for all vaccines in NIP) will need to be lifted through NCIP/NITAG policy recommendation without discouraging timely vaccination for each antigen. Analysis of HMIS data for delayed vaccination (DTP 3 after 1 year of age) shows that 82% of the districts had DTP 3 coverage \geq 80% in contrast to 70% only based on timely vaccination. There is 5% drop-out between DTP1 and 3. Concurrent RI monitoring done by WHO-IPD (with Gavi support) has shown that health workers are not systematically using 'due list' of children for every session.

The slow increase in coverage of MRSD has been fully realized and has been an important agenda for all immunization trainings and reviews, as well as monitoring and supervision. The updated Full Immunization Guideline now includes all newly introduced vaccines including MRSD mandatorily for full immunization declaration.

The difference between all basic vaccination coverages between male and female children is minimal showing no gender bias for vaccination. In fact, NDHS 2016 shows that 1% more female children compared to male children received all basic vaccinations. However, mother's education status shows an almost linear unidirectional relationship with child's immunization status. Educated mother are more likely to immunize their children compared to less educated or non-educated mothers. Identifying and prioritizing families at community level at highest risk of missing doses for their children should be an important activity to follow up on vaccination. Mother's education linked to uptake of vaccination/children's outcome also forms broader agenda for development and may need to be addressed by broader policies and programs (*SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*).

In the new federal context and ongoing restructuring of the health system, availability and distribution as well as skills of the health work force seems to be impacted. Reports from the field suggest vacant posts and inadequate and unequal distribution of health workers. Capacity building activities are delayed at the provincial and local levels owing to inadequate skilled human resources and delayed disbursement of the

budget. Challenges in monitoring and supervision due to inadequate human resources have also been noted. At federal and provincial level, the number of HR counts for immunization management may be reduced compared to previous structure.

Achievements in Effective Vaccine Management (in 2017 compared to 2014) have already been included in the previous Joint Appraisal report and only tables (Table 2 and 3) are given below to highlight progress.

Table 2. EVM category scores (%) by level, 2014

	E1	E2	E3	E4	E5	E6	E7	E8	E9
Primary	68	47	82	55	72	67	59	79	46
Sub-national		59	93	77	54	77	60	90	48
Lowest delivery		69	86	75	41	61	59	84	48
Service point		63	78	47	33	39	44	85	45
Average	68	60	85	64	50	61	56	85	47

Table 3. EVM category scores (%) by level, 2017

	E1	E2	E3	E4	E5	E6	E7	E8	E9
Primary	97	73	85	78	76	94	76	96	83
Sub-national		92	84	90	89	90	66	93	70
Lowest delivery		84	94	92	71	82	74	93	80
Service point		70	80	75	45	53	72	91	66
Average	97	79.8	86	84	70.3	79.8	72	93.3	74.8

As suggested in the tables above, there is a marked improvement in vaccine management as compared to 2014. The supply chain system has a key role in ensuring sustainable coverage and equity. Gavi HSS support has largely contributed to supply chain leadership through capacity building of supply chain work force. Special focus needs to be given to most inaccessible districts of Karnali Province. The EVM Improvement Plan is an example of continuous improvement and planning to support the comprehensive Multi-year Plan for Immunization 2017-2021. Gavi supported CCEOP will play a very pivotal role in improving the national cold chain system over the next few years and beyond. Introduction of new vaccines will require Nepal to prepare its infrastructure and human resources sufficiently. The data management component especially real time electronic recording through a nationally supported uniform logistics system with visibility of vaccines and ancillary equipment stock levels is an area for immunization system strengthening which requires special attention through additional technical assistance. Also, there is a critical gap in provincial level stores in two provinces.

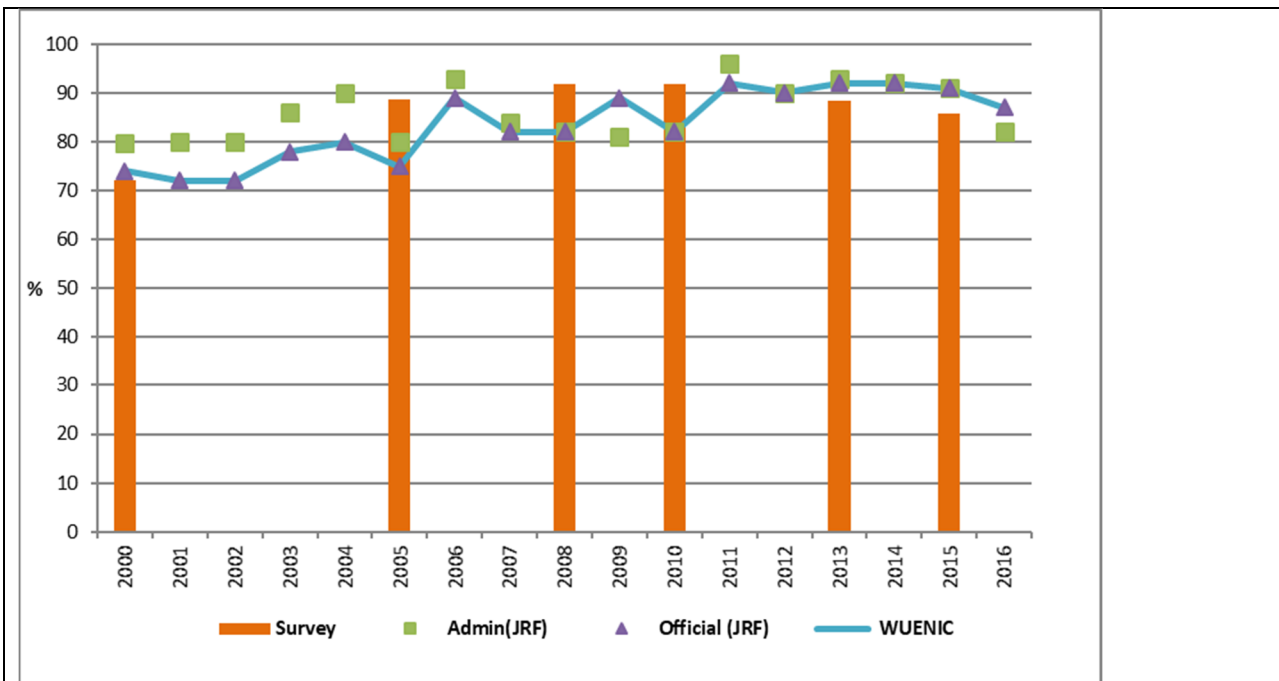
(Note: EPI Review for Nepal has been planned in 2019)

3.3. Data

Target population data, surveys and difference in coverages

HMIS population figures (used officially for immunization target population) in Nepal is higher than the UNPD estimates. For example, UNPD estimates for surviving infants in 2017 was 556,336 whereas HMIS estimate was 623,929 (absolute difference of 67,593 or increase by 12%). In the past 10 years, surveys conducted in Nepal have generally shown higher coverages than administrative coverages. The difference between administrative coverage and WUENIC is not very high with WUENIC coverage higher than administrative in the previous two fiscal years. This shows the integrity of immunization data reported, as well as highlights that the real issue may be under-reporting of data and/or non-inclusion of delayed vaccination in reported coverage. Figure 8 shows below shows the DTP3 coverage (only) as reported from various mechanism.

Fig 8. DTP3 coverage 2000-2016, comparison between survey, administrative and official estimate from JRF, and WUENIC



Survey: In serial order 2000 – 2016: NDHS 2001, NDHS 2006, EPI survey 2009, NDHS 2011, NMICS 2014, NDHS 2016 (Key Findings Report)

Established immunization data systems

Administrative immunization data is reported through HMIS (Health Management Information System). HMIS in Nepal has a long history of three decades. There are in total 6559 HMIS reporting units, out of which 4736 are public/government units and 1823 are from non-government sector. In HMIS altogether 2074 data variables are collected, and there are 318 indicators used in HMIS. For online HMIS reporting in the country, DHIS2 platform is used. Currently, around 1200 units are reporting HMIS through online system (DHIS2). The remaining health facilities/reporting units conducting paper based HMIS report send report to concerned health office at palika level (local level) (instead of the DPHO level in previous structure), from where online reporting is conducted. The plan is to have all health facilities/reporting units conduct online HMIS reporting by 2020. In the interim, for those health facilities conducting paper-based reporting, online reporting is conducted by concerned palika/local level. Therefore, there is huge need of capacity building for HMIS reporting as well as to have online reporting by all health facilities by 2020. In the current health AWPB, capacity building trainings up to palika/local level (not health facility level) have been included. This needs to be followed up in the next AWPB with capacity building up to health facility level.

All health facilities, after monthly review of data conducted at the health facility send HMIS reporting. Whereas, province level (only view rights/no edit rights) and central level can review data and provide feedback. Data is reviewed at various stages and levels. Further, for HMIS current focus is to have strong data validation rules within the application, and data quality check mechanism within the HMIS. Some data validation already exists in the used online system (DHIS2). Annual regional reviews in each region (in new structure - provincial reviews in each province) are conducted where the data and performance of all programs are reviewed, following which annual national review is conducted. Apart from this, annual immunization review meeting is also conducted where feedback on performance based on the data is given. Therefore, all data including immunization data is reviewed periodically at all levels.

Annually, through Immunization Program AWPB, data quality self assessments (DQSA) are conducted at the districts by Regional Health Directorate (RHD) (now to be conducted through Province). Districts for DQSA are selected based on vaccination coverage, under or over reporting, and new districts where DQSA have not be done previously. Findings of assessments are shared in the regional/provincial reviews conducted every year in each region/province, and corrective actions are taken. The challenge is to collate all DQSA at central level and often the reports are not available in English.

The federal context brings in opportunities to strengthen data systems such as HMIS/DHIS 2, and LMIS. The LMIS which pertains to a very important part of the immunization system somehow tends to fall in shadow. Strengthening capacities in LMIS would help in providing accurate stock of vaccines and related commodities, support forecasting and distribution, hence minimizing shortages at the districts and below. Although continuous support is being provided, the e-LMIS reporting system has not been able to pick up

as expected. The immunization system will hugely benefit from a robust LMIS system and this is a potential area the Government together with Gavi and partners should consider.

New initiatives

Nepal has conducted several new eHealth initiatives for immunization. VaxTrac was conducted in selected health facilities of two districts (Nawalparasi and Dadeldhura). Further, EIRS (Electronic Immunization Registration System) piloting was conducted since 2014 in five districts (Kanchanpur, Palpa, Chitwan, Kaski, and Bhaktapur). Review of the EIRS piloting was conducted in June 2018, which showed positive feedback from the districts. However, huge resources and informed policy decisions will be required to expand EIRS nationally.

VPD surveillance

Nepal has well established VPD surveillance system including data management. Surveillance of polio/acute flaccid paralysis, measles and rubella, Japanese encephalitis/acute encephalitis syndrome, and neonatal tetanus is conducted through the Surveillance Medical Officers network funded by GPEI (70%-80%) and measles network, CDC and lately Gavi. Nepal has been maintaining certification standard surveillance for these VPDs. NNT elimination status has been sustained since 2005. The last case of polio was seen in 2010 and Nepal was certified polio free with other SEAR countries in 2014. Data from this VPD surveillance system was crucial for these certifications. Target for measles elimination and rubella/CRS control is 2019. In 2018, Nepal has already achieved rubella/CRS control. Based on the data and reports provided by the National Verification Committee of Nepal, the Regional Verification Committee certified on 3 August 2018 that Nepal achieved control of rubella and congenital rubella syndrome. The data for this certification was obtained through this system of VPD surveillance. For VPD surveillance data management, web-based database system is currently being developed. This system once implemented will link data from WHO-IPD field offices with central office directly as well as with the laboratory with the advantage of real-time data monitoring.

Sentinel surveillance

Sentinel surveillance for invasive bacterial diseases (Hib, pneumococcus and meningococcus) and rotavirus has been conducted since 2009/2010 in Nepal. The site for IBD sentinel surveillance is Patan Hospital, Patan Academy of Health Sciences, and is conducted/supported through multi-collaboration including University of Oxford. The clinical site for rotavirus sentinel surveillance is Kanti Children's Hospital and coordinating laboratory is Public Health Research Laboratory, Tribhuvan University Teaching Hospital. The site also has multi collaboration (including CDC).

The data from both sites have served the National Committee for Immunization Practices (Nepal's NITAG) to make relevant recommendations. Data from IBD sentinel surveillance has been pivotal in evidence generation and decision making for PCV introduction. Following the vaccine introduction, various impact studies are ongoing at the site. Data from rotavirus sentinel surveillance has been pivotal in evidence generation and decision making for rotavirus vaccine introduction and subsequent recent application to Gavi for rotavirus vaccine support.

Further, in view of rotavirus vaccine introduction in near future and need for expanded baseline data and impact studies after vaccine introduction, rotavirus sentinel surveillance has been expanded (since February 2018) to two major hospitals in geographically representative sites – B.P Koirala Institute of Health Sciences, Dharan (in Eastern Part), and Nepalgunj Medical College, Nepalgunj (in Western Part). Along with the pre-existing site, these sites are successfully implementing rotavirus sentinel surveillance generating surveillance.

Nepal has also been conducting intussusception surveillance in four hospitals of Kathmandu, with baseline data available. Post vaccine introduction, this platform will be utilized to generate data on intussusception/vaccine safety. Currently intussusception surveillance is ongoing independently through CDC support. Discussions are ongoing to integrate this system and conduct surveillance through WHO-IPD with oversight from both WHO-IPD and Program Division.

AEFI/vaccine pharmacovigilance

Nepal has well-established mechanism for National AEFI Committee to monitor adverse even following immunization. All serious AEFI cases are reported immediately to the central level. All serious AEFI are promptly reported and investigated. Causality assessment is conducted by the National AEFI committee. Data from AEFI surveillance have been used for program improvement as well as for continued vaccine pharmacovigilance/safety. For capacity building, AEFI is the component of all immunization related trainings and new vaccine introduction trainings.

Immunization Program Core Group

Immunization Program Core Group has been established with Chief, Child Health and Immunization Section, as Chair of this group and government staff (Family Welfare Division, HMIS Section, Logistics Management Section) and partners (WHO, UNICEF) as members. The main purpose of this group is to review immunization program aspects including data monthly for improving immunization program. Along with HMIS data, concurrent immunization program monitoring (through immunization committees, program division staff, independent monitors, and Surveillance Medical Officers) data is reviewed by Immunization Program Core Group to guide immunization program.

For concurrent immunization program monitoring, recording and reporting tools have been developed and is being used by monitors including independent monitors and SMOs. Further, there are plans to use tablet-based system to collect, compile, and analyse immunization monitoring data. Data triangulation exercise (such as between VPD surveillance, HMIS reporting and concurrent RI monitoring) is now routinely conducted.

3.4. Immunisation financing

Improved sustainability of health care financing is one of the outcomes (Outcome 6) under Nepal Health Sector Strategy (NHSS). Progress in this outcome is reviewed as part of Joint Annual Review of NHSS. For improved sustainability in health care financing, the NHSS focuses on increasing investments in the health sector (strengthened health financing system) and social health protection mechanisms (strengthened social health protection mechanisms). Government health expenditure as a percentage of the Gross Domestic Product (GDP) for FY 2016/17 is 1.8%. There has been a 0.4% increase compared to the baseline year and 0.2% increase compared to the NHSS target. Over the years, government spending on health as a share of GDP is increasing, albeit marginally. The percentage of the health budget against the total government budget in FY 2017/18 is 4.4%. This is a decrease by 1.7% from 6.1% in FY 2013/14. (Source: Progress of the Health Sector, Report for Joint Annual Review 2018)

In Fiscal Year 2016/2017:

- Total National Budget: NPR 1048.92 Billion
- Total health budget: NPR 48.67 Billion (4.64% of national budget)
- Total immunization program budget: NPR 2,452,939,000 (as allocated in the AWPB) (5.04% of health budget)

Immunization financing information for the last five fiscal years are given in Table 4. The Government has financed 36% to 22% of vaccines used in RI in the last 5 years. Among the total financing for routine immunization, the Government has financed 46% to 22%. These figures only include the activities included in AWPB, and does not include other costs/financing such as staff salary as well as opportunity costs. Therefore, the total financing by the Government is higher than reflected in these figures.

In the last five years, the minimum financing for total vaccines (from all sources) used in routine immunization is NPR 571,219,000 (USD 4,846,408), and maximum financing is NPR 2,945,386,000 (USD 24,989,615). The minimum financing for total routine immunization including vaccines is NPR 920,932,000 (USD 7,813,487), and maximum financing is NPR 3,875,605,000 (USD 32,881,896).

Table 4. Immunization Financing Information (in NPR), FY 2013 – 2017, Nepal

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Are there line items in the national Govt. budget specifically for purchase of vaccines used in RI?	YES	YES	YES	YES	YES
Govt. financing on vaccines used in RI	205,327,000	180,181,000	363,480,000	654,392,000	375,166,000
Total financing on vaccines (from all sources) used in RI	571,219,000	617,681,000	1,355,830,000	2,945,386,000	1,496,066,000

% of total financing on vaccines financed by Govt.	36%	29%	27%	22%	25%
Govt financing on RI including vaccines	427,467,000	205,831,100	731,609,000	917,871,000	621,066,000
Total financing (from all sources) on RI including vaccines	922,760,000	920,932,000	1,723,959,000	3,875,605,000	2,346,294,000
% of total financing on RI financed by Govt.	46%	22%	42%	24%	27%

Source: JRF

National Immunization Program is the priority program (P1) of the Government. In the Decade of Vaccines (2011 – 2020), Nepal has been a champion in new and underutilized vaccines introduction with introduction of rubella vaccine (as MR first dose) in 2013, IPV in 2014, PCV in 2015, MRSD in 2015, JEV national scale up in 2016, and fIPV in 2018. Further, HPV vaccine demonstration program was conducted in 2016 and 2017. These new and underutilized vaccines support were made possible with vaccines as well as vaccine introduction grant support by Gavi. With this, Nepal has already achieved the GVAP target, and is on track for achieving RVAP Goal 7 of introducing two additional new or under-utilized vaccines in routine immunization between 2016 and 2020.

Currently in the National Immunization Program, pentavalent vaccine (DPT-HepB-Hib), PCV, MRSD, and fIPV are supported by Gavi with co-financing by the Government as applicable. All other vaccines in the National Immunization Program are financed and procured by the Government. Nepal has also conducted several immunization campaigns during this decade (MR catch-up campaign 2011/12, MR campaign 2015/16; polio NID/sNID – 2010 mop-up, 2011 NID and sNID, 2012 NID, 2013 NID, 2015 sNID, 2016 sNID; JE campaign – selected districts in 2011 and 2013, 47 districts in 2016), among which JE campaign in 2016 was supported by Gavi.

Gavi grants received by the country:

1. *Old grants with complete satisfactory reporting:*

Old grants (Hep-B VIG, INS, Pentavalent VIG, HSS 1, ISS) have already been reported with satisfactory reporting.

2. *Past grants with incomplete reporting*

The past grants received by Nepal are measles-rubella VIG, polio VIG, pneumococcal VIG, and HSS 2. Every year, aggregate financial reporting related to these grants has been provided to Gavi. As per Gavi's letter on 8 May 2018, further financial analysis has been conducted in Gavi's format with reporting for each grant by expenditure type. Utilization as of 15 July 2017 for these grants (except HSS2) is 100%. The financial reports of the grants in Gavi format are attached.

HSS 2 financial reporting is beyond the scope of Program Division as the fund was supported through pool fund mechanism.

3. *Recent grants with incomplete reporting*

Recent grants received by Nepal are HPV demo, MSD VIG, JE VIG, and JE Op cost. Every year, aggregate financial reporting related to these grants has been provided to Gavi. As per Gavi's letter on 8 May 2018, further financial analysis has been conducted in Gavi's format with reporting for each grant by expenditure type. Utilization as of 15 July 2017 for these grants is given below. The financial reports of the grants in Gavi format are attached.

Utilization of recent grants as of 15 July 2017:

- HPV demonstration program: 77%
- MSD VIG: 20%
- JE VIG: 27%
- JE Op cost: 65%

Analysis show that the utilization of these grants as of 15 July 2017 was low, especially for MSD VIG, and JE Op cost. These grants overlapped during the time-period. The remaining balance from all these grants (after 15 July 2017) is NPR 149,949,474.33 (= USD 1,272,220.232 @ 117.8644 conversion rate). This remaining amount is already booked into immunization AWPB in Fiscal Year 2017/2018, the expenditure report for which is yet to be received. Program Division requests Gavi for approval for use of this remaining budget.

In Fiscal Year 2017/2018, Nepal has received introduction grants for fIPV and PCV presentation switch. PCV presentation switch is underway and trainings have been completed, and fIPV has already been introduced successfully in National Immunization Program. Expenditures report for these grants are yet to be received as the fiscal year has just completed in July 2018. Financial reporting for these grants will be conducted as soon as the expenditure reports are available.

There is a dual mechanism followed in Nepal. The cash grants for VIGs and operational support for the campaigns go to the Program Division – previously Child Health Division, now Family Welfare Division (the fund given name in the account: Gavi cash support; to be used exclusively by the immunization program); whereas the HSS funds go through the pooled fund mechanism under Nepal Health Sector Strategy. The recipient in both instances is Government treasury and the expenditures are managed by the Government's financial management system. Except for VIG and Op cost supports, the program and financial management reports of the HSS grant is through the pool fund which has a common oversight mechanism under the framework of Nepal Health Sector Strategy, and is reviewed annually through Joint Annual Review. The final audit of the cash grants with the overall AWPB budget is conducted by Auditor General's Office, which is a constitutional body (that is independent institution established by the Constitution of Nepal) and is considered as an external audit. Gavi support is executed through immunization AWPB, which forms a part of overall Government AWPB (Red Book), and the AWPB is subject to scrutiny by Ministry of Health and Population, Ministry of Finance and National Planning Commission.

The audit reports of previous 4 years (FY 2013/14 – FY 2016/17) are available with translation to English. The reports are provided as attachments.

Lessons learnt from financial analysis of Gavi past and recent grants (non-HSS) are:

- 1) It takes at least 1.5 years from application submission to Gavi to implementation/vaccine introduction in the country. Therefore, there are variances in expenditure by category from application to actual implementation. Nevertheless, this should be carefully planned during application preparation so that variances are minimized during actual implementation.
- 2) All Gavi grants come into one account and serve as a 'basket account' for all Gavi cash grants without any segregation by grant name. Therefore, careful prospective monitoring and segregation (for example, mentioning grant name in the activity) is required for practical purposes including during development of AWPB. This becomes increasingly important when there are multiple grants running/overlapping during a time-period/fiscal year (such as the recent grants mentioned above).
- 3) Prospectively, financial reporting by expenditure category by grant should be done to Gavi on time. Request for approval for use of remaining balance should be submitted timely to Gavi for approval. Successful execution of these would rely on obtaining timely expenditure reports from finance section.
- 4) For all Government procurements, official Fixed Asset Register is maintained by Logistics Management Section. A copy of the Fixed Asset Register should be taken by Program Division to track and report on Gavi-supported logistics procurement. This practice has now been started.
- 5) Utilization/absorption capacity for some grants within a fiscal year/time-period allocated for the grant were seen to be low. Proper planning and execution should be done to fully absorb specific grants within allocated time-period. However, this may at times be difficult as there is fixed time for development of AWPB, during which Gavi Decision Letter for support may not have been received by the country. It may be difficult to insert new activity/budget in running AWPB.

4. PERFORMANCE OF GAVI SUPPORT

4.1. Performance of vaccine support

(Note: Read in conjunction with Section 3.1 Coverage and equity of immunisation)

Gavi support to Nepal has been instrumental for introduction of new and underutilized vaccines in Nepal, as well as for achieving high coverages and equity. Nepal is currently receiving Gavi's new and underutilized vaccine support for pentavalent (DPT-HepB-Hib), fIPV (recently started in current FY), PCV, and measles second dose. The decline in coverages in FY 2016 post-earthquake and several months long fuel strike have been reversed and significantly improved in FY 2017 (Table 5). Improvements have been made for pentavalent vaccine coverage, with pentavalent 3 coverage of 90% (WUENIC). Significant improvements have been made in PCV coverage. However, PCV 3 coverage is not satisfactory at 80% (WUENIC). For MRSD, which was introduced after earthquake and slightly before the fuel strike, the coverage is still not satisfactory at 59% (WUENIC). Although this coverage represents significant improvement of 28% points compared to previous fiscal year, the coverage is not enough for measles elimination.

Table 5. Administrative, official and WUENIC coverages (%), and GPF targets of Gavi-supported vaccines, FY 2016 and FY 2017

Vaccine	Admin. Coverage FY 2016	WUENIC FY 2016	GPF target for 2016	Admin. Coverage FY 2017 (% point increase compared to FY 2016)	WUENIC FY 2017 (% point increase compared to FY 2016)	GPF target for 2017
DPT-HepB-Hib 1	86	92	NA	91 (+5)	95 (+3)	NA
DPT-HepB-Hib 3	82 (dropout 5% against 2% GPF target)	87	89	86 (+4) (dropout 5% against 2% GPF target)	90 (+3)	93
PCV 1	77	NA	NA	88 (+11)	NA	NA
PCV 2	67	NA	NA	86 (+19)	NA	NA
PCV 3	43 (dropout 44% against 6% GPF target)	46	85	78 (+35) (dropout 12% against 4% GPF target)	80 (+34)	91
MR 1	77	83	85	84 (+7)	90 (+7)	91
MR 2	29 (dropout 69% against 2% target)	25	83	57 (+28) (dropout 32% against 8% target)	59 (+34)	84

GPF: Grant Performance Framework

4.2. Performance of Gavi HSS support (if country is receiving Gavi HSS support)

Nepal Health Sector Strategy (NHSS) [Source: MoHP]

Under the auspices of National Health Policy 2014, Nepal Health Sector Strategy (NHSS) 2016/17-2020/21 is the primary instrument to guide the health sector for the next five years in Nepal. It adopts the vision and mission set forth by the National Health Policy and carries the ethos of Constitutional provision to guarantee universal access to basic health services. Developed within the context of Sector Wide Approach (SWAp), it sees partnership as a cornerstone for health development in Nepal. The strategy was developed jointly by the government and its development partners and commit to align their efforts to NHSS priorities and are jointly accountable to achieve the results. NHSS also harnesses multi sectoral approach to address social determinants of health. The NHSS Results Framework is the basis to monitor its overall performance. Annual reviews and a Mid Term Review (MTR) will measure progress across the sector and make necessary adjustments. The NHSS has nine outcomes measured through 29 outcome level indicators and 26 outputs

with 56 corresponding output level indicators. The NHSS Implementation Plan (IP) and subsequent Annual Work Plan and Budget (AWPB) will translate the NHSS into action. The MoHP will lead the implementation, monitoring and evaluation of this strategy with participation of line ministries, development partners, non-governmental agencies, civil society, private sector, cooperatives and local communities. The implementation plan is developed to achieve the outputs of NHSS and ultimately its outcome and goals. As agreed in the Joint Annual Review (2016), the NHSS IP will be implemented between the fiscal years 2016/17 to 2020/2021. In the NHSS IP, year 1 refers to fiscal year 2073/74 (2016/17) and consecutively year 5 refers to 2077/78 (2020/21).

As per the Joint Financing Arrangement for NHSS, Department of International Development (DFID), World Bank, Gavi, and German Development Cooperation (GDC)/KfW are the pooling partners, whereas German Development Cooperation (GIZ), KOICA, USAID, UNICEF, UNFPA, and WHO are non-pooling partners. Gavi contributes its Health System Strengthening support to Nepal through pool fund as a pooling partner of NHSS.

The review of the achievements of NHSS is conducted annually through Joint Annual Reviews and through Mid Term Reviews.

The Joint Annual Review reports for 2018 are available on <http://www.nhssp.org.np/JAR-Reports.html> .

The quarterly reports are available on <http://www.nhssp.org.np/Quarterly-Reports.html>

There are several indicators from NHSS that are included as Grant Performance Framework (GPF). Several indicators that are directly linked with immunization coverage are given below.

Equitable utilization of health care services (Source: MoHP)

Code	Indicator	Baseline			Milestone/Target				Data Source	Monitoring Frequency	Responsible Agency
		Data	Year	Source	2017		2020				
					Target	Ach.	Source	Target			
OC3	Equitable utilization of health care services										
OC3.2	% of children fully immunized	84.5	2014	NMICS	90	77.8	NDHS 2018	90			
	Wealth quintile										
	Lowest quintile	83.1	2014	NMICS	na	76.6	NDHS 2018	na			
	Highest quintile	92.7	2014	NMICS	na	81.6	NDHS 2018	na			
	Equity gap	9.6	2014	NMICS	na	5.0					
	Eco-region										
	Mountain	81.9	2014	NMICS	na	74.1					
	Hills	85.4	2014	NMICS	na	88.0	NDHS 2018	na			
	Terai	84.3	2014	NMICS	na	71.3					
	Equity gap	3.5	2014	NMICS	na	16.7					
	Antigen										
	DPT3	88	2014	NMICS	90	85.9	NDHS 2018	90			
	Measles	93	2014	NMICS	90	90.4	NDHS 2018	90			
	Provinces								NDHS NMICS HMIS	3 years	MoHP
	Province 1	na	na	na	na	79.4					
	Province 2	na	na	na	na	65.2					
	Province 3	na	na	na	na	85.3					
	Province 4	na	na	na	na	92.7	NDHS 2018	na			
	Province 5	na	na	na	na	78.3					
	Province 6	na	na	na	na	74.9					
	Province 7	na	na	na	na	83.4					
	Equity gap	na	na	na	na	27.5					
	Earthquake affected 14 districts	86.9	2014	NMICS	na	na		na			
	% of districts with >90% fully immunized children	na	2014	HMIS	80	23.4	HMIS 2016/17	100			
	% of districts with > 80% coverage of DPT3	64	2014	HMIS	80	70.1	HMIS 2016/17	100			

Achievement of disbursement linked indicators and performance based funding

Gavi's Health System Strengthening Support (HSS3) modality is as given below:

Grant year	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Standard PP	\$8.70m	\$3.48m	\$3.48m	\$3.48m	\$3.48m	\$36.54m
	(Received: 11 Dec 2016)	(Received: 22 Dec 2017)				
DLI-based		\$3.48m	\$3.48m	\$3.48m	\$3.48m	
		(Received: 20 July 2018)				
Potential PBF Payment*		Based on performance	Based on performance	Based on performance	Based on performance	

*If DTP 3 coverage < 90%: USD 30 per additional child vaccinated with DTP3 if coverage increases compared to previous year, and USD 30 per additional child vaccinated with MR 1 if coverage increases compared to previous year. If DTP 3 coverage ≥ 90%: +20% of the yearly ceiling, if DTP3 coverage is maintained or increased, and +20% of the yearly ceiling, if DTP3 coverage ≥80% in 90% of districts.

DLI-1 is related to effective operational logistics and supply chain management system. In Year 2, the target is to have EVM score 70% with at least 4 attributes achieving 80%; and in Year 4 the target is to have EVM score 80% with at least 6 attributes achieving 80%. The baseline for this DLI is EVM Assessment 2014. Nepal has already achieved this DLI target in Year 2 and has received the corresponding DLI-based funding. [This DLI in NHSS is under Outcome 1 (Strengthened function of health systems), DLI 6]

DLI-2 is related to improved equity access to immunization services in targeted districts. In Year 3, the target is to have 60% of low performing districts have fully immunized VDCs; and in Year 5 the target is to have 100% of low performing districts have fully immunized VDCs. In the new structure, VDCs no longer exist. Therefore, it is a subject of discussion whether this should be replaced by 'rural municipalities' denoting rural area only or 'local levels' denoting all rural/urban municipalities. The poor performing districts for this DLI are 13 identified districts with low coverage and high drop-out in DTP3 vaccination (11 districts), and high coverage and high drop-out in DTP3 vaccination (2 districts) based on FY 2014 data. For Year 3, verification survey has been completed (supported by UNICEF) and data shows that Nepal has achieved its target for this DLI in Year 3. Final report will be submitted to Gavi soon after obtaining necessary validations. [This DLI in NHSS is under Outcome 3 (Equitable utilization of health care services), DLI 14]

Due to increase in coverages for both DTP 3 and MR 1 in FY 2017 compared to FY 2016, Nepal is eligible to receive performance based funding (PBF) payment of USD 480,990. Gavi has already communicated to the country regarding this payment, and will disburse the funds after issuing Decision Letter and receiving proposal from the country for the utilization of this fund.

During the Joint Appraisal in-country mission, it was discussed that both EVM and full immunization DLI may need to be revised in the current context of federalization and massive changes undergoing in the health structure:

- *The target for the Year 4 EVM DLI needs to be revised down, acknowledging the impact of the move to a federal structure. Appropriate revised target needs to be discussed by Gavi and partners with the government and the World Bank and then clearance would be required through World Bank's legal processes with the government (as Gavi shares this DLI with the World Bank).*
- *The full immunization coverage DLI, which references VDCs, needs to be reworded to reflect the change in federal structure and more closely match to what can be verified through the methodology used for the coverage survey for the Year 3 DLI. The Year 5 DLI target for full immunization will also need to be revised down considering the impact of the move to federal structure. Once finalized with discussion between Gavi, partners (WHO and UNICEF) and the Government, this revised DLI can be agreed directly between Gavi and the government.*

Further, availability of 2nd additional funding under HSS (the 1st additional funding of US\$ 6.96 already programmed) was also discussed during the Joint Appraisal mission. The proposal for this 2nd additional funding with activities that clearly link on improving coverage and equity needs to be submitted to Gavi within the first quarter of 2019. With the short time available to utilize this 2nd additional HSS funding of US\$10.875 million (utilization by end 2020), a proposal should be urgently developed by country and submitted to Gavi. Further, Nepal is eligible for PBF payment of US\$ 480,990 based on 2017 performance and this will be disbursed once Gavi received proposal from the country and Decision Letter is issued by Gavi

Objective 1	
Objective of the HSS grant (as per the HSS proposals or PSR)	Not applicable (HSS support to Nepal is provided through a pool fund).
Priority geographies / population groups or constraints to C&E addressed by the objective	
% activities conducted / budget utilisation	
Major activities implemented & Review of implementation progress including key successes & outcomes / activities not	

implemented or delayed / financial absorption	
Major activities planned for upcoming period (mention significant changes / budget reallocations and associated needs for technical assistance ¹¹)	

4.3. Performance of Gavi CCEOP support (if country is receiving Gavi CCEOP support)

<p>Gavi's support to Nepal for cold chain equipment optimization platform (CCEOP) is already approved by Gavi. ToR of the CCEOP working group was finalized, and the working group was established and is functional. Detailed Operational Deployment Plan (ODP) was developed and endorsed by the Government. The ODP was officially submitted to UNICEF Supply Division, Copenhagen, for further process.</p> <p>The ODP components include:</p> <ul style="list-style-type: none"> (i) Expansion covering 50 districts and 158 health facilities, and extension covering 16 districts and 24 health facilities in 2019 (ii) Replacement starting in 2020 covering 57 districts and 190 health facilities and extension and (iii) Extension starting in 2021 covering 74 districts and 188 health facilities. <p>Additionally, request for proposal (RFP) was called by the Supply Division in August 2018. A technical evaluation team was instituted to evaluate the proposals. As of now, Supply Division is in process of preparing a detailed costed plan. Deployment of high performing cold chain equipment to health facilities will improve their capacity to reach underserved populations, make supply chains more efficient and effective.</p> <p>Overall, CCEOP will complement efforts to strengthen supply chain and sustainably strengthen immunization and equity. The CCEOP is resource intensive and demands continuous technical backup, monitoring and supervision by specialized cold chain expert(s). Roll-out of cold chain optimization platform in Nepal will start from 2019, and applicable reporting will be conducted in next Joint Appraisal in 2019.</p>

4.4. Financial management performance

<p>'Immunization Financing' and 'Financial Management Performance' part has been reported together in the 'Immunization Financing Part'. Please see '3.4. Immunization Financing' section above.</p>
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4.5. Transition planning (if applicable, e.g. country is in accelerated transition phase)

<p>Not applicable for now</p>

4.6. Technical Assistance (TA)

<p>Technical assistance is provided by core partners (WHO and UNICEF) at national level and sub-national level in overall National Immunization Program including new vaccine introduction and implementation; SIA/campaigns; policy technical support to immunization, VPD, and program committees; immunization supervision and monitoring including concurrent immunization monitoring; VPD (polio, measles and rubella, NNT, JE) surveillance; sentinel surveillance of rotavirus and IBD; Gavi reporting requirements, new applications, and renewals; CCE OP planning and implementation; EVM strengthening and improvement; support achievement of Gavi HSS support related DLIs (EVM and full immunization); immunization data, HMIS and LMIS strengthening; use of information technology for immunization; AEFI investigation, etc. The overall aim is to improve immunization coverage and equity with focus in quality processes and services.</p>
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5. UPDATE OF FINDINGS FROM PREVIOUS JOINT APPRAISAL

Prioritised actions from previous Joint Appraisal	Current status
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<p>1. New vaccine introduction and implementation. Strengthening of immunization and VPD surveillance committees. Strengthening of sentinel surveillance.</p>	<p>Nepal has successfully introduced fIPV in its routine immunization, and PCV presentation switch is underway as planned. Although country is fully prepared for rotavirus vaccine introduction, having developed guideline and IEC materials and distribution completed at sub-national level as well as training activities included in the immunization AWPB, rotavirus vaccine introduction has been delayed due to non-availability of Rotarix. Committees are strengthened with technical support from partners. Based on the data and technical support provided to National Verification Committee for Measles Elimination and Rubella/CRS Control, Nepal has been certified among the first countries in the SEAR as having controlled Rubella and CRS. Currently Nepal's NITAG/NCIP is being re-constituted by MoHP.</p> <p>Sentinel surveillance of both IBD and rotavirus are continuing surveillance maintaining surveillance performance indicators. Rotavirus sentinel surveillance have been expanded to two more geographically representative sites. All three rotavirus sentinel surveillance sites are collecting pre-vaccine introduction data and are prepared for post-vaccine introduction surveillance.</p>
<p>2. Strengthen routine immunization through data management and actions, and joint supervision and monitoring</p>	<p>Concurrent immunization supervision and monitoring system has been established which includes monitoring by Government staff, partners (including SMO network), committees members, and independent monitors with real-time immunization monitoring data collected from district, health facility, immunization session (both fixed and outreach), and community levels. Immunization Program Core Group has been established to monitor immunization data and performance. Standardized recording and reporting tools have been developed and endorsed by Immunization Program Core Group, and is used for immunization supervision and monitoring. Data is reviewed and shared for action to stakeholders including during Provincial Health Review meetings.</p>
<p>3. Decentralized planning and budgeting for immunization program and micro-planning of immunization</p>	<p>Support to conduct the bottleneck analysis of the immunization program in 13 poor performing districts has been completed. Under the new federal set up, decentralized planning and budgeting processes have been initiated in selected local government units (LGU) to improve coverage and equity for immunization services under which there is a plan to rollout new microplanning tools, strengthening cold chain system, third party monitoring and on the job training/orientation to health workers.</p> <p>New micro-planning formats based on the new federalized structure have been developed. Capacity building trainings (ToT) were provided to region and district focal persons, who then conducted cascaded trainings to health facility focal persons for development of health facility-based immunization microplanning. In the next fiscal year, the plan is to compile microplanning from all levels to develop immunization atlas.</p>
<p>4. Cold Chain Equipment Optimization Platform implementation</p>	<p>TOR of the CCEOP working group has been finalized and the working group is established and functional. Detailed Operational Deployment Plan (ODP) is developed and endorsed by the government. The ODP is officially submitted to Supply Division (SD) Copenhagen for further processing. The details of ODP components are given above in CCE OP section. Additionally, request for proposal (RFP) was called by the Supply Division (SD) in August 2018. A technical evaluation team has been installed to evaluate the proposals. SD is in process of preparing a detailed costed plan.</p>
<p>5. EVM improvement as per EVM improvement plan to achieve DLI for HSS support and achievement of full immunization in low performing districts</p>	<p>Four events of cold chain and vaccine management training have been conducted in March/April 2018. The training was held in the central and mid-western regions where 97 EPI supervisors and cold chain assistants from the low performing districts as well as participation represented from 14 earthquake affected districts, 16 flood affected districts, and EPI cold chain officers who missed at previous training were included. Training for the remaining 57 cold chain officers and cold chain handlers is planned in the current fiscal year. As planned in the EVM/IP, activities are ongoing in all vaccine stores in 13 low performing districts.</p>

	Nepal has already achieved Year 2 DLI for Gavi HSS related to EVM. Further, full immunization validation survey has been completed in 8 low-performing districts in relation to Year 3 DLI for Gavi HSS related to full immunization in 13 low-performing districts.
Additional significant IRC / HLRP recommendations (if applicable)	Current status
N/A	N/A

6. ACTION PLAN: SUMMARY OF FINDINGS, ACTIONS AND RESOURCE/SUPPORT NEEDS IDENTIFIED AND AGREED DURING THE JOINT APPRAISAL

<p>Overview of key activities planned for the next year:</p> <ol style="list-style-type: none"> 1. After re-constitution of NCIP following key policy re-visits need to be done: <ol style="list-style-type: none"> a. Implementation of SEAR-ITAG recommendations b. Selection of new rotavirus vaccine product to submit request to Gavi for support c. Discussion on lifting-off policy barriers such as age limit for vaccination in routine immunization d. Discussion on booster doses required (for example, for diphtheria and tetanus) as well as on revising delayed vaccination schedule (for example, for PCV). e. Recommendation on universal use of Td instead of TT in the private market 2. Preparation for rotavirus vaccine introduction based on new rotavirus vaccine product selection and request submission to Gavi 3. Planning and request submission to Gavi and planning for fIPV vaccination to cohort that missed IPV vaccination between IPV stock-out start (in 2016) and introduction of fIPV in routine immunization (in 2018). However, this may depend upon the availability of IPV vaccine through Gavi/GPEI. 4. Effective planning for MR campaign scheduled towards the end of 2019. The proposal for MR campaign includes strong linkages to routine immunization. As planned, proper planning and implementation of these linkages should be done. Further, focus should be given to increase coverage of MR 2. 5. The three-year implementation of Cold Chain Equipment Optimization Platform (CCE OP) starts in 2019. Effective planning, monitoring and implementation of CCE OP roll-out should be done throughout the year(s). 6. Effective vaccine management (EVM) should be strengthened further with EVM IP implementation/achievement. Further, for the Gavi supported HSS 4th Year DLI, EVM assessment should be conducted in 2019. 7. Decrease equity gap in immunization especially improving national MR2 coverage and sub-national level immunization coverages through targeted problem analysis and approach including identification of districts/local areas with low coverages, advocacy, concurrent immunization supervision and monitoring, microplanning, etc. 8. Urgently discuss on revising Gavi HSS DLIs for both EVM and full immunization. 9. Urgently submit plan for the available 2nd additional funding through Gavi HSS, and upon proposal approval start implementation of activities due to short time available for the utilization of the support. <ol style="list-style-type: none"> a. The proposal for this additional funding should show strong linkages in improving immunization coverage and equity. b. During the Joint Appraisal, strengthening of HMIS/DHIS2 system including expansion of the online system to all health facilities and capacity building of the health workers were discussed and identified as the areas needing attention. The proposal for HSS funding may need to cover this aspect if this is not planned to be addressed through other sources such as GoN funds or pool fund. c. Further, during the Joint Appraisal, strengthening of the eLMIS including use of the system, expansion in all vaccine storage units, and capacity building of health workers were discussed and identified as areas needing attention. The proposal for HSS additional funding may need to cover this aspect if this is not planned to be addressed through other sources such as GoN funds or pool fund.
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Key finding / Action 1	Strengthen new vaccine introductions planning and implementation.
Current response	New vaccine such as fIPV introduction completed and PCV presentation switch underway.
Agreed country actions	Submit request with planning for IPV vaccination to missed cohort due to IPV shortage. Submit request with confirmation of preferred product for rotavirus vaccine introduction.
Expected outputs / results	Rotavirus vaccine will be introduced in routine immunization. Based on IPV availability, missed cohort of children will be immunized.
Associated timeline	By mid-2019 for request/application submission
Required resources / support	Program Division (FWD) leading with core partners technical support.
Key finding / Action 2	Effective MR campaign planning and implementation to achieve high coverages and strong linkages to routine immunization strengthening.
Current response	Strong MR campaign application with strong linkages to routine immunization already submitted to Gavi
Agreed country actions	Start planning in early 2019 as per the activities outlined in MR campaign support application. Include activities in the Government's Immunization AWPB.
Expected outputs / results	High MR campaign coverages will be achieved, missed opportunity for vaccination in routine immunization will be utilized achieving high coverages for routine MR 2 ultimately to progress towards measles elimination
Associated timeline	Starting early 2019 and complete by end 2019
Required resources / support	Implementation of Gavi support for MR campaign and Government contribution for MR campaign ensured through AWPB, core partners technical support.
Key finding / Action 3	Improve national MR2 coverage and sub-national vaccination coverages
Current response	Targeted approaches and technical support at national and sub-national level to sustain immunization coverages and achieve sub-national high coverages underway.
Agreed country actions	Targeted sub-national level analysis and identification of districts/local areas with low coverages, advocacy and social mobilization approaches, concurrent immunization supervision and monitoring, identification of factors leading to low MR2 coverage to improve and sustain vaccination coverages. Policy re-visits through NCIP recommendations.
Expected outputs / results	Equity gaps in immunization coverage will be reduced and MR 2 coverages will be increased
Associated timeline	Throughout 2019
Required resources / support	Program division leading and core partners support; utilization of 2 nd additional HSS funding available to improve coverage and equity.
Key finding / Action 4	Cold Chain Equipment Optimization Platform roll-out
Current response	Operational Deployment Plan already developed and endorsed.
Agreed country actions	Start roll-out of CCE OP as per Operational Deployment Plan
Expected outputs / results	CCE OP will be rolled out successfully and will complement efforts to strengthen supply chain and sustainably strengthen immunization and equity
Associated timeline	Deployment (expansion) as per ODP for 2019 (overall CCE OP deployment is for three year, 2019 – 2021)
Required resources / support	Program Divisions (FWD, MD) leading with core partners support. CCE OP funding country-part through pool fund ensured through AWPB.
Key finding / Action 5	EVM improvement and EVM assessment
Current response	EVM improvement has been strengthened and DLI based on EVM for Year 2 of Gavi HSS support has been achieved.
Agreed country actions	Sustain EVM improvements in the context of federalization through implementation of EVM IP; conduct EVM assessment in 2019 (this forms part of DLI for Year 4 of Gavi HSS support)
Expected outputs / results	Effective vaccine management will be strengthened and sustained in the context of federalization
Associated timeline	Throughout 2019
Required resources / support	Program Divisions (FWD, MD) leading with core partners support

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

Joint Appraisal in-country mission was conducted from 19 November to 23 November 2018. The participants in the full joint appraisal were:

- Jhalak S. Gautam, Chief, Child Health and Immunization Section, Family Welfare Division, Department of Health Services, MoHP, Nepal
- Laxmi Marasini, Nursing Officer, FWD, DoHS, MoHP, Nepal
- Bharat Bhandari, Immunization Officer, FWD, DoHS, MoHP, Nepal
- Basanta Shrestha, Public Health Officer, FWD, DoHS, MoHP, Nepal
- Samuel Muller, Senior Country Manager, Country Support, Gavi
- Mihaela Minca, Programme Officer, Country Support, Gavi
- Friederike Teutsch, Senior Programme Manager, Applications & Review, Gavi
- Midori Sato, Chief of Health, UNICEF, Nepal
- Sushma Bhusal, Child Health Specialist, UNICEF, Nepal
- Pradeep Shrestha, Child Health Officer, UNICEF, Nepal
- Sunil Bahl, Team Lead, IVD, WHO Regional Office for South-East Asia
- Anindya S. Bose, Team Lead, Programme for Immunization Preventable Diseases, WHO (WHO-IPD), Nepal
- Rahul Pradhan, Immunization Cluster Lead, National Professional Officer, WHO-IPD, Nepal
- Mona Lacoul, Data Cluster Lead, NPO, WHO-IPD, Nepal
- Binod Gupta, Immunization Monitoring Officer, WHO-IPD, Nepal
- Kavita K. Bhandari, Immunization Program Assistant, WHO-IPD, Nepal

The following presented or attended in specific agenda discussions during the Joint Appraisal mission:

- Sharad Sharma, Chief, Integrated Health Information Management Section, Management Division, DoHS, MoHP, Nepal
- Madhu Pokharel, Chief Financial Controller, DoHS, Nepal
- Nichola Cadge, Health Adviser, DFID, Nepal
- Shilu Adhikari, Senior MNCH Advisor, USAID, Nepal
- Kari L. Hurt, Health Specialist, World Bank, Nepal

High level visits including discussions and briefing/debriefing were conducted to the following:

- Honorable Mr. Upendra Yadav, Deputy Prime Minister and Minister of Health and Population, Nepal
- Mahendra P. Shrestha, Chief, Health Coordination Division, MoHP, Nepal
- R. P. Bichha, Director, Family Welfare Division, DoHS, MoHP, Nepal
- Jos Vandelaer, WHO Representative to Nepal
- Tomoo Hozumi, UNICEF Representative to Nepal
- Rownak Khan, UNICEF Deputy Representative to Nepal
- Sunil Bahl, Team Lead, IVD, WHO Regional Office for South-East Asia
- Paul Rutter, Regional Adviser for Health, UNICEF Regional Office for South Asia

During the Joint Appraisal mission, all aspects of the Joint Appraisal was presented and discussed by all full Joint Appraisal team members. The agenda of the Joint Appraisal mission is attached. Field visit for observation was conducted to District Public Health Office, Bhaktapur District; Tathali Health Post, Bhaktapur; and fixed immunization session at Tathali Health Post. Further, observational visit was also conducted to Central Vaccine Store, Management Division, DoHS.

All parts in this Joint Appraisal Report is written by Rahul Pradhan and Jhalak S. Gautam except GPEI/polio transition part by Anindya S. Bose, CCEOP and EVM part by Sushma Bhusal and Jhalak S. Gautam, and technical assistance, updates of finding from previous JA, and action points discussed and written by all team. All report arranged by Rahul Pradhan. Data/figure support provided by Kavita Bhandari and Mona Lacoul. **The report is fully reviewed, discussed, and agreed upon by all full Joint Appraisal team members.**

Upon completion of the Joint Appraisal mission and the report, Joint Appraisal was reviewed, discussed and endorsed by the Inter-Agency Coordination Committee, Nepal. ICC Meeting was held on 4 December 2018.

8. ANNEX: Compliance with Gavi reporting requirements

	Yes	No	Not applicable
Grant Performance Framework (GPF) * reporting against all due indicators	X		
Financial Reports *			
Periodic financial reports	X		
Annual financial statement	X		
Annual financial audit report	X (will be provided by end Dec 2018. Currently official translation undergoing)		
End of year stock level report (which is normally provided by 15 May as part of the vaccine renewal request) *	X		
Campaign reports *			
Supplementary Immunisation Activity technical report			X
Campaign coverage survey report			X
Immunisation financing and expenditure information	X		
Data quality and survey reporting			
Annual data quality desk review			X
Data improvement plan (DIP)			X
Progress report on data improvement plan implementation			X
In-depth data assessment (conducted in the last five years)			X
Nationally representative coverage survey (conducted in the last five years)	X (NDHS 2016)		
Annual progress update on the Effective Vaccine Management (EVM) improvement plan	X		
CCEOP: updated CCE inventory		X	
Post Introduction Evaluation (PIE)			
Measles & rubella situation analysis and 5 year plan	X (through MR campaign application)		
Operational plan for the immunisation programme	X		
HSS end of grant evaluation report			X
HPV specific reports	X (already provided)		
Reporting by partners on TCA and PEF functions	X (through Gavi's partner portal)		