Ministry of Health of Kyrgyzstan

National Immunization Programme Comprehensive Multi-Year Plan 2017-2021

Version 21st February 2017

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Executive Summary

The below Executive Summary provides a short summary of the main achievements, challenges identified and ways forward for the Kyrgyzstan National Immunization Programme (NIP) for 2017-2021. The "ways forward" proposed below remain intentionally limited, further analysis and a plan of action with all objectives, strategies and key activities will be provided in sections 3 and 4.

General overview

In 2016, Kyrgyzstan NIP remains strong and well performing. The health personnel in place continue to provide high-quality immunization services. The performances of the programme remain high as shown by the administrative coverage for routine vaccines being between 95.6% and 99%. However a large outbreak of measles in 2014-2015 (more than 20,000 cases), combined to increasing resistance to immunization and migration are challenging the performances of the NIP. The Gavi HSS grant will bring some financial support for the coming years, but the Government will need to consider the NIP as the highest priority and start taking over in term of financing.

Immunization services

Routine immunization and service delivery

Main challenges

- Immunization timeliness and false contraindications remain major problems in Kyrgyzstan NIP
- Despite progress in addressing migrants and remote/hard-to-reach populations, immunization of children from these groups remains a challenge

Ways forward

- Strengthen capacity building for health staff (managerial, technical, communication) at different levels; Provide earmarked budget for training and supervision
- Further develop and implement strategies to reach migrants and remote/hard-to-reach populations

New vaccines introduction

Ways forward

- Plan the introduction of Rotavirus and HPV vaccines with realistic dates of introduction

Diseases control

Main challenges

- The huge measles outbreak highlighted the accumulation of susceptible populations and therefore some weaknesses in the programme, challenging the real vaccination coverage

Ways forward

- Conduct a national workshop to discuss data obtained during measles outbreak, lessons learnt and strategies to prevent any future outbreak
- Continue strengthening AFP surveillance and monitoring subnational performances to ensure that all cases are identified and investigated in a timely manner

Vaccine quality, supply and management

Vaccine regulation

Main challenges

- The Regulatory Authority (DDPME) doesn't fully perform the required function of post-marketing surveillance for vaccines and is not sufficiently involved in matters related to AEFI cases management

Ways forward

- Plan the assessment of NRA functions and provide technical assistance to strengthen capacity of the Department of Drug Provision and Medical Equipment (DDPME)

Vaccine supply and procurement

Main challenges

- There are not enough reserve/buffer stocks for some vaccines, at least at the central level

Ways forward

- Establish reserve/buffer stocks for all vaccines, at all levels (25% required for central level)

Vaccine management, cold chain and logistics

Main challenges

- Insufficient vaccine storage and transport capacity to meet increasing volumes following introduction of new vaccines, in particular at national, sub-national and district level
- Cold chain challenges at immunization delivery sites: lack of refrigerators in 13 percent primary health care facilities; high proportion inadequate (domestic refrigerators) and ageing cold chain equipment
- Ineffective equipment maintenance programme resulted in a large proportion of non-functional equipment
- Reduced immunization opportunities due to cold chain limitations and restricted use of WHO multi-dose open vial policy
- Lack of temperature monitoring device in 9% refrigerators and limited use of continuous temperature monitoring
- Some vaccine stock management practices are out-dated (e.g. national level) and not always respecting the standard operation procedures (SOPs)

Ways forward

- Improve vaccine management policy and practice through systematic documentation of progress, identification of problems and improvement planning (EVM assessments, cold chain inventory, temperature monitoring studies, supervision programmes & supervisory tools)
- Support personnel development and performance by setting in place quality management systems (including implementation of SOPs at all levels) backed by legal, regulatory, institutional and capacity building frameworks. Vaccine management policy guidelines and tools need to be made available throughout the supply chain levels and to the staff training and capacity building programmes
- Continue procuring and distributing quality-standard refrigerators, temperature monitoring devices, vaccine carriers and refrigerated vehicles (Gavi HSS and CCEOP grants)

Surveillance and reporting

VPD surveillance

Main challenges

- There is a lack of analysis of surveillance data at all levels (data for action)
- Due to turnover of health staff and doctors, there are varying knowledge on VPD surveillance among the personnel, especially at the field level

Ways forward

- Implement regular analysis of surveillance data at all levels to improve programme performances
- Conduct regular training on VPD surveillance for health staff, including doctors in family medicine, physicians and paediatricians, both public and private sectors

AEFI surveillance

Main challenges

- Few cases of AEFI type known as “vaccine product-related” (CIOMS definition) were detected, challenging the sensitivity of the AEFI surveillance system

Ways forward

- Review and strengthen the AEFI surveillance and its sensitivity

Immunization coverage reporting

Main challenges

- The extent of the measles outbreak (2014-2015) and survey data (DHS 2012, MICS 2014) indicate a lower vaccination coverage
- Administrative expectations to meet the goals and financial punishments sometimes lead staff to report unrealistic coverage rates

Ways forward

- Introduce home-based vaccination records (child vaccination card/health booklet) based on vaccination form no.63 (vaccination form/booklet on child health); Establish electronic immunization registry linked with the birth registry integrated with e-health database
- Encourage realistic reporting of target population and vaccination coverage; Avoid punishment of staff for low coverage

Demand generation and communication

Main challenges

- There is a growing trend of vaccine resistance/refusal and a lack of exact understanding on the extend and reasons for the problem
- There is a lack of capacity building on communication skills for health workers

Ways forward

- Draft a comprehensive communication and social mobilization strategy and plan for all stakeholders, including all components (e.g. capacity building, material development)
- Include specific strategies into the communication plan to address resistance/refusal, anti-immunization groups, but also hard to reach population (e.g. migrants)

Programme management

Leadership, governance, legislation and programme management

Main challenges

- Weak management at the governmental level to implement SWAp, RBF, Gavi HSS leads to difficulties for alignment, harmonization and implementation of public health initiatives
- There are insufficient involvement and interactions between Public Health Unit (PHU), Department of Organization of Health Care & Drugs Policy (DOHCDP) and RCI, in the area of policies and strategies development for immunization

Ways forward

- Ensure the national immunization programme continues to be a high priority programme; Advocate the Parliament and Government for strengthening its management and implementation
- Ensure the “National Programme Immunoprophylaxis” and the cMYP 2017-2021 are aligned and if possible become a single planning document approved by Government Resolution; Build capacity for utilization of that planning document for better decision making, planning and management

Human resource management

Main challenges

- Health work force is a major issue at all levels, with shortage of qualified health staff, high turnover, aging work force, low motivation, mainly due to low salaries and no incentives

Ways forward

- Initiatives such as incentives provided to health staff under the Results-Based Financing (RBF) should be finalized and implemented to attract and retain health staff

Programme cost and financing

Main challenges

- The national immunization programme still much depends on funding from Partners (80% to 85%), particularly for operational costs (e.g. capacity building) and cold chain equipment

Ways forward

- High level advocacy is required for the Government to increase the overall immunization budget in the coming years, especially in view of Rotavirus and HPV vaccines introduction

List of Acronyms

AD Syringe	Auto Disable Syringe
AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
BCG	Bacillus Calmette Guerin
bOPV	Bivalent Oral Polio Vaccine
CCEOP	Cold Chain Equipment Operational Platform
CIOMS	Council for International Organizations of Medical Sciences
CIS	Commonwealth of Independent States
cMYP	Comprehensive Multi-Year Plan
CRS	Congenital Rubella Syndrome
DDPME	Department of Drug Provision and Medical Equipment
DHS	Demographic Health Survey
DOHCDP	Department of Organization of Health Care & Drugs Policy
DTP	Diphtheria Tetanus Pertussis Vaccine
DT/Td	Diphtheria Tetanus Vaccine
EEU	Eurasian Economic Union
ETAGE	European Technical Advisory Group of Experts
EVAP	European Vaccine Action Plan
EVM	Effective Vaccine Management
FAP	Feldsher-Obstetrical Ambulatory Point
FGP	Family Group Practice
FMA	Financial Management Assessment
FMC	Family Medicine Centre
Gavi	Gavi, The Vaccine Alliance
GDP	Gross Domestic Product
GP	General Practitioner
GPC	General Practice Centre
GPEI	Global Polio Eradication Initiative
GVAP	Global Vaccine Action Plan
HepB/HBV	Hepatitis B Vaccine
HPV	Human Papilloma Virus
Hib	*Haemophilus Influenzae* type b Vaccine
HSS	Health System Strengthening
ICC	Inter Agency Coordination Committee
IDP	Institutional Development Plan
IIP	Immunization in Practice
IPV	Inactivated Polio Vaccine
KAP	Knowledge Aptitude Practice
MCH	Mother and Child Health
MDG	Millennium Development Goals
MDVP	Multi Dose Vial Policy
MICS	Multiple Indicator Coverage Survey
MHIF	Medical Health Insurance Fund
MLM	Mid Level Management
MMR	Measles Mumps and Rubella Vaccine
MOF	Ministry of Finance
MOH	Ministry of Health
MOU	Memorandum of Understanding
NCCPE	National Certification Committee for Polio Eradication
NGO	Non-Governmental Organisation
NHP	National Health Reform Programme
NIP	National Immunization Programme
NITAG	National Technical Advisory Committee
NRA	National Regulatory Authorities
NVCMR	National Verification Committee for Measles and Rubella elimination
OCHA	Office for the Coordination of Humanitarian Affairs
OOP	Out of Pocket Payment
OPV	Oral Polio Vaccine
PCV	Pneumococcal Vaccine
Penta	Pentavalent Vaccine (DPT-HepB-Hib)
PHC	Primary Health Care
PHU	Public Health Unit
RBF	Results-Based Financing
RCI	Republican Centre for Immunoprophylaxis
RRL	Regional Reference Laboratory
RV	Rotavirus Vaccine
SGBP	State Guaranteed Benefits Package
SIA	Supplementary Immunization Activities
SOP	Standard Operating Procedures
SSES	State Sanitary-Epidemiological Surveillance
SWAp	Sector Wide Approach programme
tOPV	Trivalent Oral Polio Vaccine
UNICEF	United Nations Children's Fund
VAPP	Vaccine Associated Paralytic Polio
VAR	Vaccine Arrival Report
VDPV	Vaccine Derived Polio Virus
VHC	Village Health Committee
VPD	Vaccine Preventable Disease
VVM	Vaccine Vial Monitor
WB	World Bank
WHA	World Health Assembly
WHO	World Health Organization

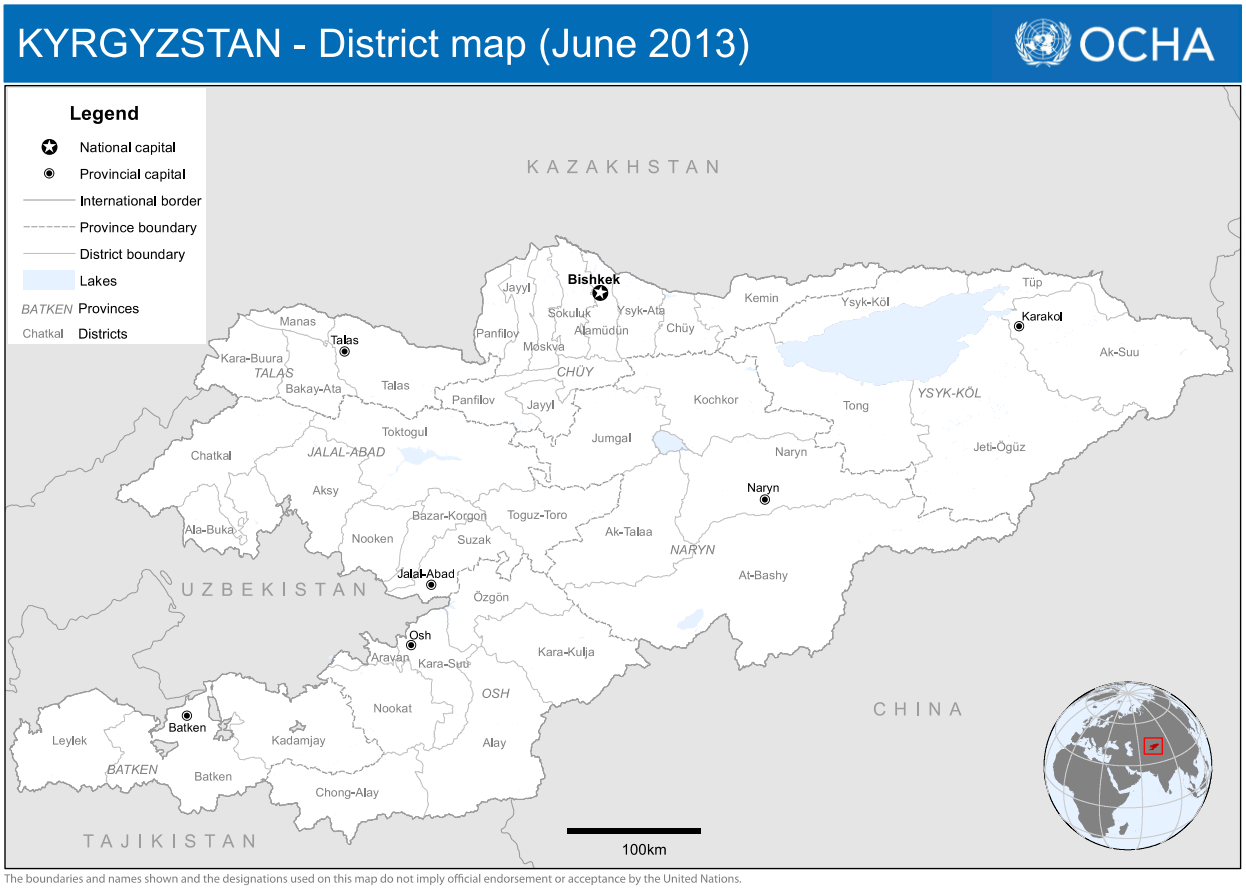
1. Background

1.1. General information

Geographic and demographic situation

Located in Central Asia on the historical Silk Road, Kyrgyzstan is a mountainous country. About 90% of its territory is located 1,500 m over the sea level. Given the prevailing mountainous relief, the population is mainly settled along the river valleys and lakes. The country has common boundary with Kazakhstan, Uzbekistan, Tajikistan and China. The territory of the country is 199,951 square kilometres.

The country is administratively divided in 7 regions/provinces (oblasts), 2 cities (Bishkek and Osh), as shown below on the map. There are 40 districts (rayons), 25 towns, 28 urban settlements and 440 local communities (aiyls).



By mid-2016 the population of Kyrgyzstan comprised 6,033,738 people, majority being rural population (65.2%). The average population density is 25 people per square kilometre. Kyrgyzstan is a multinational country with the main ethnic groups being Kyrgyz (67.4%), Uzbeks (14.2%), Russians (10.3%), remaining population (8.5%) being from other nationalities.

Despite scale migration the overall population of Kyrgyzstan has continued to increase, given to high birth rate. The population of the country is young, children and adolescents (0-14 years) representing 31% of the total.

Basic geographic and demographic indicators

Indicator	Year	Value
Mid-year population	2016	6,033,738
Country superficies (square kilometre)		199,951
Population average density (square kilometre)		25
Rural population (% of total population)		65%
Live births per 1000 population	2015	27
Birth cohort	2016	152,358
Surviving Infants (surviving to 1 year)	2016	149,784
Population aged 0–14 years (%)	2013	31%

Source: European Health for All database (HFA-DB) – and – Gavi (Country profile)

Health situation

Both official data and survey data on infant and child mortality show a declining trend. In the five year period preceding the 2014 MICS survey, Kyrgyzstan had neonatal, infant and under 5 mortality rates of 17, 24 and 29 per 1 000 live births respectively, with males having somewhat higher rates than females. For infant and under-5 mortality, rural areas recorded approximately 1.5 times more deaths per 1 000 live births compared to urban areas and was nearly 2 times higher in poorest households compared to those from the richest households.

In recent years, the main causes of death in children under 5 years account for respiratory diseases and acute intestinal infection. The high prevalence of anaemia among children has an adverse effect on the occurrence and course of disease in children.

As regard to the overall population's health status, cardiovascular diseases are the main cause of death, but Kyrgyzstan also faces very high infant and maternal mortality rates, as well as high rates of tuberculosis and an increasing incidence of HIV/AIDS. Other leading causes of death are cardiovascular diseases, diseases of the respiratory system and malignant neoplasms (cancer).

Basic health indicators

Indicator	Year	Value
Estimated life expectancy (world health report)	2015	71
Life expectancy at birth (years), females	2013	75
Life expectancy at birth (years), males	2013	67
Crude death rate per 1000 population	2013	6
SDR all causes, all ages, per 100 000	2013	1088
Neonatal mortality rate per 1000 live births	2014*	17
Infant mortality rate per 1000 live births	2014*	24
Under 5 years mortality rate per 1000 live births	2014*	29

Source: European Health for All database (HFA-DB) – and – MICS 2014 (*)

Millennium Development Goals (MDGs) health indicators

MDG	Baseline*	Latest**
Under-five mortality rate (per 1000 live births)	66	24
Maternal mortality ratio (per 100,000 live births)	85	75
Deaths due to HIV/AIDS (per 100,000 population)	0	1.3
Deaths due to tuberculosis among HIV-negative people (per 100,000 pop)	25	11

Source: Global Health Observatory

** 1990 for under-five mortality and maternal mortality; 2000 for other indicators*

*** 2012 for deaths due to HIV/AIDS; 2013 for other indicator*

1.2. Political and socio-economic trends[1]

The country gained its independence in 1991 after the collapse of the Soviet Union and embarked on a transition to a democratic system of governance and market economy. For the past 20 years the country has experienced many upheavals of political, economic and social nature. In March 2005 and April 2010, as a result of popular resentment with the ruling regimes the then-presidents were toppled. In June 2010 a large scale ethnic conflict took place in the south of the country which led to hundreds of deaths. Several thousand people were injured, while hundreds of thousands fled the conflict area. The government was able to stabilize the situation with support of the international community that offered humanitarian assistance, support for infrastructural reconstruction projects and efforts on re-building trust.

After the events of April 2010, a national referendum endorsed a new Constitution which defined the parliamentary form of government. Kyrgyzstan has become the first parliamentary republic in Central Asia. Today, the country is a host to a growing private sector and a vibrant civil society. It is a member of many international organizations, including the UN, World Trade Organization and Shanghai Cooperation Organization.

The global 2011 Human Development Report ranks Kyrgyzstan 126th (out of 187 countries) with a Human Development Index rating of 0.62 which means that the country is in the lower part of the group of countries with medium human development, pointing to regional and urban/rural disparities as well as inequalities between men and women. Kyrgyzstan is on the 66th place out of 146 countries on the UNDP Gender Inequality Index.

Poverty fell from over 62% in 2000 to 32% in 2009, but after the latest events it rose to 37% in 2013 with an increasing proportion of the poor being female. UNICEF estimates that every second child in the country lives in poverty. The poverty level is also characterized by sharp regional disparities. In some areas it reaches 50%. Extreme poverty is at 4.5%.

The country's economy is largely informal (40-60% GDP by different estimations), especially in the service sector and agriculture. In 26% of households, at least one family member is working abroad. The total number of labour migrants from Kyrgyzstan is estimated between 700 thousand to 1 million, with majority of them working in the Russian Federation. The amount of remittances from migrants in 2011 was about $1.7 billion, around 30% of GDP. Import growth rates significantly outpace export growth rates, resulting in a negative trade balance that exceeded $3 billion in 2012.

Kyrgyzstan is classified as one of two low-income countries in the Europe and CIS region with $2200 GDP per capita (by purchasing power parity in 2010). The economy grew 3.9% per annum in 2000-2005 and 3.7% in 2005-2010. Growth in Kyrgyzstan slowed significantly in 2014, reflecting the deteriorating external environment and supply-side constraints. Real GDP growth fell to 3.6% from 10.9% in the previous year. Re-export businesses were affected as the Eurasian Economic Union (EEU) began to exercise stricter border control on goods imported from third countries.

[1] *Source: UNDP Kyrgyzstan – and – Gavi joint appraisal report 2015*

Higher spending and the depreciation of the local currency translated into a significant increase in public debt from 46.1% of GDP in 2013 to 53% in 2014. The fall of the Russian Rubble and the Kazakh Tenge led to a significant depreciation of the Kyrgyz Som against the US dollar (approaching 40% since Jan 2014), which, together with increases in energy tariffs, drove inflation from 4% in 2013 to 10.5% in December 2014.

Significant amounts of aid in the form of soft loans and grants are channelled to Kyrgyzstan by the international community. During the years of independence, the country has accumulated massive external debt, about $3 billion USD.

Domestically, political institutions that are still evolving may limit the ability of the government to implement reforms. The parliamentary elections in October 2015 might also have delayed implementation of some of the reforms. All together, these factors may cloud the growth outlook, and jeopardize poverty reduction gains.

Basic development indicators

Indicator	Year	Value
Gross national income per capita (PPP, USD)	2014	3
GDP per capita (by purchasing power parity, USD)	2010	2200
Economic growth	2014	3.6%
Level of poverty in the country	2013	37%
Human Development Ranking (out of 187 countries)	2011	126
Gender Equality Index (out of 146 countries)	2011	66

Source: Global Health Observatory & UNDP Kyrgyzstan – and – Gavi joint appraisal 2015

1.3. Health care system[2]

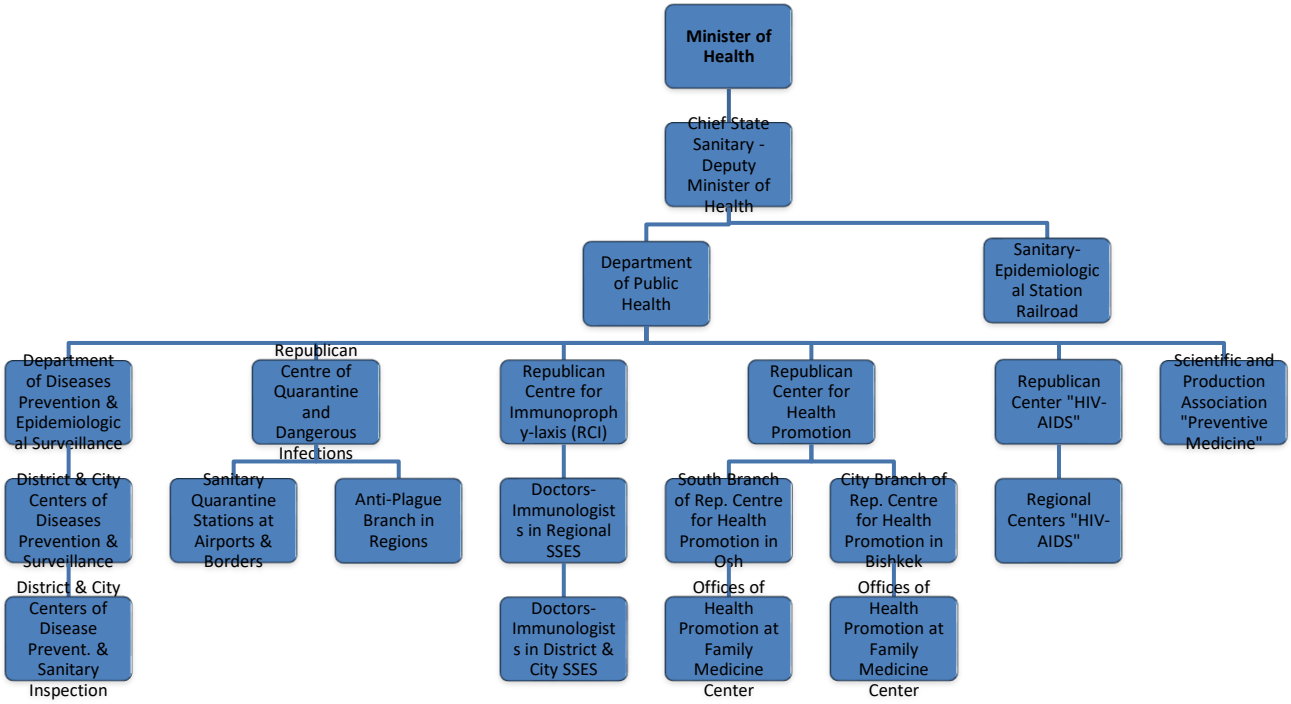
Organization and governance

Current legislation defines the Kyrgyz health system in the following ways:

- The health care infrastructure should correspond to the needs of the population, as well as to the financial resources available in the public sector.
- The health financing system combines social health insurance with a system financed by general taxes and pools resources at the national level; a single payer purchases medical services on behalf of the entire population.
- The State Guaranteed Benefits Package (SGBP) ensures access to a defined set of health services for the entire population.
- Health care management has been decentralized, and health care providers assume more administrative and financial autonomy.
- Health services should be oriented towards prevention rather than cure.
- Public and private health care providers coexist.

[2] *Source: Health systems in transition Kyrgyzstan 2011 – and – Gavi HSS application 2013*

Structure of public health system



Source: MoH Kyrgyzstan

Websites of MoH and Partners in Kyrgyzstan

http://www.dgsen.kg/podrazdel.php?podrazdel=226
http://med.kg
http://www.euro.who.int/en/countries/kyrgyzstan
https://www.unicef.org/kyrgyzstan/
http://www.gavi.org/country/kyrgyzstan/

Service delivery

The health services delivery system consists of three levels of care facilities. Primary health care (PHC) facilities comprise Feldsher-Obstetrical Ambulatory Points (FAPs), family group practices (FGPs), and family medicine centres (FMCs). FAPs provide PHC services in remote rural areas. They are usually staffed by at least one paramedic health worker, called feldsher, but in larger villages, FAPs employ also a midwife and a nurse. FAPs offer the most basic services such as antenatal and postnatal care, immunization and health education. FGPs are the main providers of PHC services and usually consist of three to five doctors. FMCs are the largest outpatient health facilities in the country. They employ between 10 and 20 doctors providing primary and specialized outpatient services, as well as diagnostics and minor surgeries. Typically, there is one FMC per rayon that is responsible for all FGPs and FAPs located in their respective catchment area.

In addition, there are 27 General Practice Centres (GPC) that provide both primary and secondary care. GPCs were formed in 2006 by merging territorial hospitals and PHC facilities in remote areas with population less than 25,000 people.

There is no data on exact proportion of services delivered by private implementers. The role of non-governmental organisations (NGO) and faith-based implementers is also very limited.

Workforce and Human Resources

There are three levels of health workers: (i) physicians, (ii) midlevel health workers, including nurses, midwives and feldshers, and (iii) lower level health workers. In addition, there are non-medically trained community health workers organized in Village Health Committees.

Lack of health care human resources in rural and remote areas of the Kyrgyz Republic continues to deteriorate. The problem is not in the absolute number of trained personnel, but in the number of professionals needed for rural areas (e.g. doctors in family medicine), the lack of social and economic conditions to attract young professionals, and the poor involvement of representatives to address staffing issues in the field. To date, two main conditions determine the selection of workplace by professionals – these are the availability of housing (social benefits, the degree of development of social infrastructure) and the wage.

Therefore, the actions of the Ministry of Health for human resources policy should be aimed at addressing the following barriers: irrational distribution of medical staff resulting in a critical situation with medical specialists in the country, especially in remote and inaccessible areas; incompliance of the system for professional training with the needs of practical health care and modern international standards.

Health and Community Systems Financing

Health system of the Kyrgyz Republic has three main sources of financing: (i) public, (ii) private and (iii) external financing. Public financing includes both republican and local budgets and payroll contribution to the Medical Health Insurance Fund (MHIF). Private funds include household out-of-pocket payments directly at the facility. External financing represents funds provided by international donors through parallel financing or budget support.

From the republican budget, funds flow to the Ministry of Health, the MHIF and other ministries and agencies. The Ministry of Health finances tertiary care facilities and the State Sanitary-Epidemiological Surveillance (SSES) services and institutions. The MHIF accumulates funds at the republican level, including revenues from the mandatory health insurance system and the Social Fund, and distributes them to the regions to finance provision of the SGBP in health facilities at primary and secondary levels.

The major performance based programme that provides incentives to health care providers to deliver primary healthcare services, including immunization, is the Results-Based Financing (RBF) Project currently under the first pilot stage that includes only hospitals.

Principal health care reforms

The National Health Reform Programme (NHP) called “Den Sooluk”, covering the 2012-2016 period, is the 3rd sector strategy supporting a continuous track of reform. Based on the burden of disease, four priority health improvement areas have been selected: (i) Cardio-vascular diseases, (ii) Mother and child health, Tuberculosis, and HIV infection.

Health care system strengthening dimension of the NHP focuses on the removal of those health system barriers that have undermined the delivery of core services needed to achieve health gains. Health system barriers have been identified for each of the four priority health improvement areas grouped around the main functions of health systems: (i) public health, (ii)

individual health services, (iii) financing, (iv) resource generation (human resources, drugs and medical supplies, information systems) and (v) governance.

Basic health system indicators

Indicator	Year	Value
Hospital beds per 100 000	2014	442
Physicians per 100 000	2014	186
Total expenditure on health per capita (USD)	2014	215
Total health expenditure as% of GDP, WHO estimates	2014	6.5

Source: Global Health Observatory – and – UNDP Kyrgyzstan

1.4. National immunization programme within health care system[3]

Legislative framework and planning

The "Law on Immunoprophylaxis of infectious diseases" (2001) defines main responsibilities of the government, medical institutions and population regarding the prevention of infectious diseases. The Government of Kyrgyzstan is responsible to provide immunization to all the citizens free of charge with consideration of the national immunization calendar. Every citizen is called for vaccination; nevertheless, there is no substantial mechanism to enforce obligation for immunization, people are allowed to refuse vaccination.

Details on immunization regulations are provided in the following Orders. Some of these Orders are combined with manuals and guidelines. Several of those are under revision or to be revised due to continuous changes in the immunization calendar and other programmatic purposes.

- *Order no.35 on "Epidemiological surveillance on pertussis" (January 2008)*
- *Order no.36 on "Reporting immunization coverage"*
- *Order no.88 on "Approving immunization programme 2013-2017"*
- *Order no.117 on "Introduction of pentavalent vaccine" (March 2009)*
- *Order no.143 on "Immunization calendar", including PCV (February 2016)*
- *Order no.664 on "Guideline on optimization of immunization work" (December 2008)*
- *Order no.829 on "Immunization safe practices" (December 2009)*
- *Order no.834 on "Diphtheria control" (December 2009)*
- *Order no.840 on "Improving AFP surveillance" (December 2009)*
- *Order no.841 on "Elimination of Measles, Rubella and CRS" (December 2009)*
- *Order no.842 on "Improvement of immunoprophylaxis services" (December 2009)*

Currently the 4th programme on "Approving immunization programme 2013-2017" is on-going. The Ministry of Health approves this National Immunization Plan. Besides this leading programme, there are targeted programmes on polio eradication maintenance, on measles and rubella elimination, and on viral hepatitis. The cMYP 2012-2016 have been somehow a parallel multi-year plan, allowing to better list the priority interventions and the partners support.

[3] *Source: NIP review 2016 – and – Gavi joint appraisal 2015*

Management of the NIP

To strengthen immunization services, the Ministry of Health created in 1994 the Republican Centre of Immunoprophylaxis (RCI). Its functions were to shape policies and strategies on immunization, perform immunization monitoring and vaccine preventable diseases (VPD) surveillance, provide and procure vaccines, and ensure the overall management of the immunization programme at national level. The RCI has its own budget and reports to the Ministry of Health.

At the regional level, the immunization programme is managed by the 8 regional departments (titled Regional and Bishkek City Centre of Immunoprophylaxis), within the structure of Regional/City State Sanitary-Epidemiological Surveillance (SSES). At present the issues of immunization at the oblast (region) and rayon (district) levels are responsibility of an epidemiologist, specialist in vaccine, cold chain and immunization monitoring. Epidemiologist is responsible for all organizational activities including professional training for medical workers in immunization and surveillance of vaccine preventable diseases.

Advisory bodies and committees

Advisory bodies and committees for immunization and diseases control exist in Kyrgyzstan. The Inter-agency Coordination Committee (ICC), considered in recent years not fully functional, was recently reviewed with the Order n°218 “On improving work of ICC” (March 2016). Its composition was revised and the two recent meetings in 2016 were held with minutes issued.

As for the National Technical Advisory Committees (NITAG), it exists since April 2012, is supported by SIVAC initiative (through the International Vaccine Institute, South Korea), and is composed of MoH and hospital specialists. In the recent times, it provided recommendations on new vaccines introduction; they met once in 2015.

The National Certification Committee for Polio Eradication (NCCPE), under the Order n°88, has to issue a yearly update of the status of “Kyrgyzstan polio free”. Its members meet once a year for the certification review; they also met for discussing bOPV and IPV introduction. As for the National Verification Committee for Measles & Rubella elimination (NVCMR), under the Order n°841, it has to fulfil the role of monitoring the progress in measles and rubella elimination. The committee composition/members changed; they met 3 times in 2015, mainly due to measles outbreak.

There is another committee in place, the Republican Immunization Committee. It is composed of the Public Health Unit, MCH and RCI. This is an operational committee responsible to approve immunization activities; they met 3 times in 2015.

Delivery of immunization services

Since 1996 the structure and functions of the health sector institutions have undergone certain changes in compliance with the national programme of reform of the health sector (currently “Den Sooluk” for the years 2012-2016). The major functions in immunization delivery were assigned and integrated into the activities of Primary Health Care (PHC) services.

Routine immunization in Kyrgyzstan is implemented through fixed immunization posts in the following facilities nationwide:

- Feldsher-midwifery posts (FAPs) 1026
- Family groups practices 694
- Family medicine centres 64
- General practice centres 27
- State maternities 53
- Private maternities 7

Health facilities have equipped rooms for immunization delivery and vaccines are administered by personnel with relevant and valid certificates. Immunization performance data and VPD surveillance data are reported monthly from those facilities, through the rayon and oblast/city State Sanitary-Epidemiological Surveillance (SSES), up to the RCI and the MoH.

Outreach and mobile practices are not used in routine immunization but are employed during supplementary immunization activities (SIAs). Provision of immunization services through private health facilities, except maternities for birth doses, is not allowed by national legislation.

Financing and procurement

In total, the MoH Kyrgyzstan finances 5 national programmes under "Den Sooluk", including the National Programme on Public Health. The National Immunization Programme is a part of the National Public Health Programme and the budget for NIP financing, including the budget for vaccine procurement is reflected separately in the budget.

The RCI develops and submits the budget forecast to the MoH in November of each year. The submitted forecast includes annual requirement for vaccine procurement, staff salaries based on the staff qualification and ranking, and operational costs for epidemiological surveillance. The MoH reviews RCI request and informs RCI on preliminary approval by December 1st, and the final approval by the end of the year. The actual transfer of RCI funds is carried out in March of the next year.

Gavi has been one of the primary donors of the programme since its inception in 2000, and has provided ISS, HSS and NVS grants to Kyrgyzstan. The country remains Gavi-eligible and qualified to receive all types of support. In 2015, the country moved to pre transition (formerly known as intermediate) country grouping which means the country will have to co-financing incrementally increasing amounts for Gavi supported vaccines.

Over time, the Government funding for vaccines has been steadily increasing. In 2014, the Government budget for all vaccines was 0.94 million USD for a vaccines total budget of 1.83 million USD (51% Government share). In 2015 the Government budget for all vaccines was 1.62 million USD for a vaccines total budget of 2.51 million USD (65% Government share). However the 2016 vaccines budget include MR extra vaccines for the outbreak response.

In term of procurement, Kyrgyzstan has been using for the last 25 years the opportunity of purchasing all childhood vaccines through UNICEF Supply Division. The procurement and supply mechanism is regulated within the frame of the Memorandum of Understanding 2012-2022 between the government and UNICEF.

The RCI in currently in charge of the immunization procurement related activities. Every year, they make an estimation of needs (considering the stock balances). Then the request for vaccines

takes place in October to UNICEF Procurement Services, with 100% pre-payment (funds are allocated by Government in April; 5-7% financial buffer (contingency) is deposed in RCI). Upon arrival of vaccines, RCI is in charge of customs clearance and transferring vaccines from the airport to the central cold store. Vaccine Arrival Report (VAR) is usually used.

Partners contribution

As mentioned, Gavi is a major donor to the immunization programme. The two other major partners are WHO and UNICEF with continuous financial and technical support for the different components of the programme. In a recent agreement on the 18 November 2016, the Gavi HSS grant (4.6 million USD) will be implemented with the direct technical assistant of WHO and UNICEF.

2. Vaccine-preventable disease and vaccination

2.1. Vaccine-preventable diseases

Background on VPD surveillance

All communicable diseases are nationally reportable through a computerised disease notification system. VPD surveillance is a part of this system. Polio and measles/rubella have case based surveillance. There is detailed information available on the cases reported at the RCI, but at the SSES, only aggregate numbers are available. National communicable disease surveillance guidelines, which include the VPD surveillance, are the guiding document. Along with these guidelines, there are various Orders from the MOH for specific diseases - Order n°834 on "Diphtheria control" (December 2009); Order n°840 on "Improving AFP surveillance" (December 2009); Order n°841 on "Elimination of Measles, Rubella and CRS" (December 2009).

Reported cases of VPD, 2011-2015

	2011	2012	2013	2014	2015
Polio	0	0	0	0	0
Measles	225	0	1	318	17,779 *
Rubella	3	6	12	24	101
CRS	0	0	0	-	0
Diphtheria	0	1	0	0	0
Acute Hepatitis B (before 14 y. old)	38	35	32	9	6
Pertussis	77	62	90	111	280
Tetanus (total)	0	0	0	-	-
Mumps	300	337	694	887	553
Neonatal Tetanus	0	0	0	-	-

Source: WHO CISID

** RCI indicated during the review a number of 21,343 cases, which may include suspected cases*

WHO accredited laboratories are available for testing samples for polio, measles/rubella, but testing facilities for other VPDs like diphtheria, pertussis, mumps are not available. Stool samples collected from identified AFP cases are shipped to the regional reference laboratory in Moscow for confirmation. Blood samples collected in case of measles/rubella are sent to the reference laboratories within the country for confirmation.

Reported cases of VPD by age group, 2016 (6 months)

	Total cases	2006 (6 months) by age group						
		< 1 year	1-4 years	5-9 years	10-14 years	15-19 years	20-29 years	> 30 years
Diphtheria	1	-	-	-	-	-	-	-
Pertussis	73	59	13	1	-	-	-	-
Mumps	159	-	13	41	42	34	18	11
Measles	0	-	-	-	-	-	-	-
Rubella	0	-	-	-	-	-	-	-
Acute HepB	197			1		18	93	85
Polio	0	-	-	-	-	-	-	-

Source: RCI

Poliomyelitis

Kyrgyzstan has been polio free since 1993. There were no "Hot" cases identified this year. There were also no polio compatible cases identified in the recent years. As of July 2016, there have been 30 cases reported with an annualized non-polio AFP rate of 2.11.

Indicators on AFP surveillance, 2011-2015

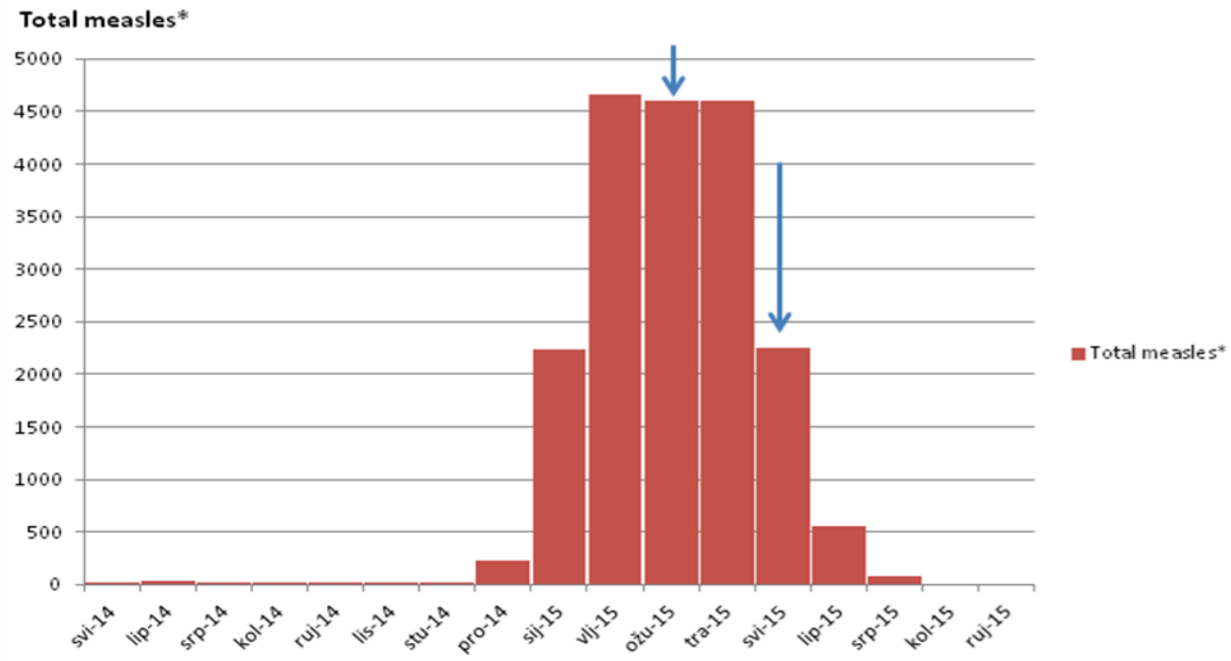
Variables	2011	2012	2013	2014	2015	Target
Number of AFP cases reported <15 years	65	61	74	43	51	-
Number of WPV cases	0	0	0	0	0	0
Number of polio compatible cases	0	0	0	0	0	0
Non-polio AFP rate	4.29	4.02	3.96	2.28	2.76	≥ 2

Source: RCI

Measles and rubella

Following a measles outbreak in 2011 there was declining trend of measles cases in Kyrgyzstan. But in 2014-2015 the country experienced a huge measles outbreak. The first cases were reported from Ysky-Ata rayon of Chui Oblast in May 2014. The initial response included active case finding and contact tracing for the identification of susceptible individuals and organizing catch-up immunization activities for unvaccinated individuals. This could not break the transmission and was followed by a full-blown outbreak in December 2014 which continued up to July 2015. Cases were reported from all over the country, majority were from the urban areas of Bishkek and Osh. Investigation done following the first cases showed that the strain was an importation from Kazakhstan and belonged to the "D8" genotype circulating in the sub-region.

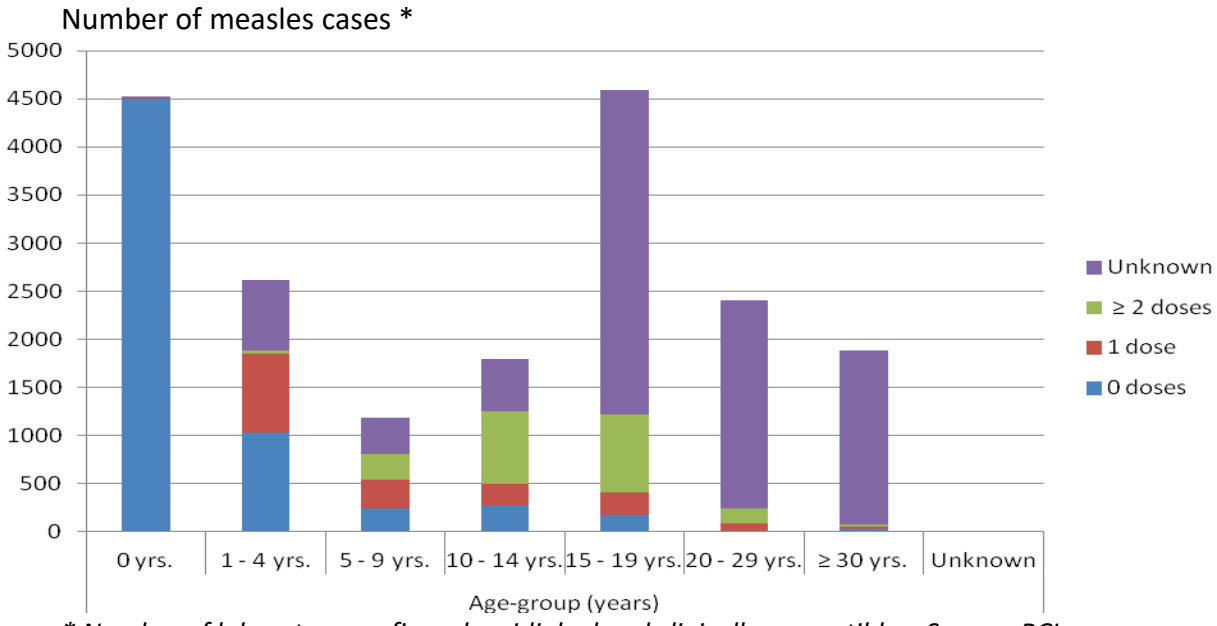
Measles epidemic curve, 2014-2015



** Total number of laboratory confirmed, epi-linked and clinically compatible – Source: RCI*

A total of 21,343 cases were reported during this time. The incidence per million population for 2015 was 2993.1. The age group affected was < 1 year (24.8%), 1-4 years (11.7%), 5-9 years (5.7), 10-19 years (33%) and > 20 years (24.5%). 1290 cases had laboratory confirmation and rest were epi-linked. Majority of the measles cases ~80% occurred in persons with "unknown" vaccination status. Of all the measles cases in 2015, 59% occurred in persons with "no" or "unknown" vaccination status under 20 years old and 35% in persons with "no" or "unknown" vaccination history aged 1-20 years old.

Distribution of measles cases by age group and vaccination status, 2015



** Number of laboratory confirmed, epi-linked and clinically compatible – Source: RCI*

For the first 6 months of 2016, there was neither measles nor rubella case.

Hepatitis B

There have a continuous decrease of acute hepatitis B reported cases for the population before 14 years old in the last 5 years, with only 6 cases in 2015.

For the first 6 months of 2016, there is only 1 case of hepatitis B (< 14 years old).

Diphtheria

In the recent years, the last reported case of diphtheria dated 2012. Sustained high immunization coverage made that achievement possible, especially following the 1995 outbreak of diphtheria due to an epidemic in the European region. During that period 1980 persons were infected with diphtheria and 30 of them died.

For the first 6 months of 2016, there was 4 suspected cases, 3 discarded and 1 classified as clinical case (Talas oblast). The Talas SSES recommended to proceed to verification of the form no.63 and to immediately vaccinate the adequate contingent with Td vaccine.

Pertussis

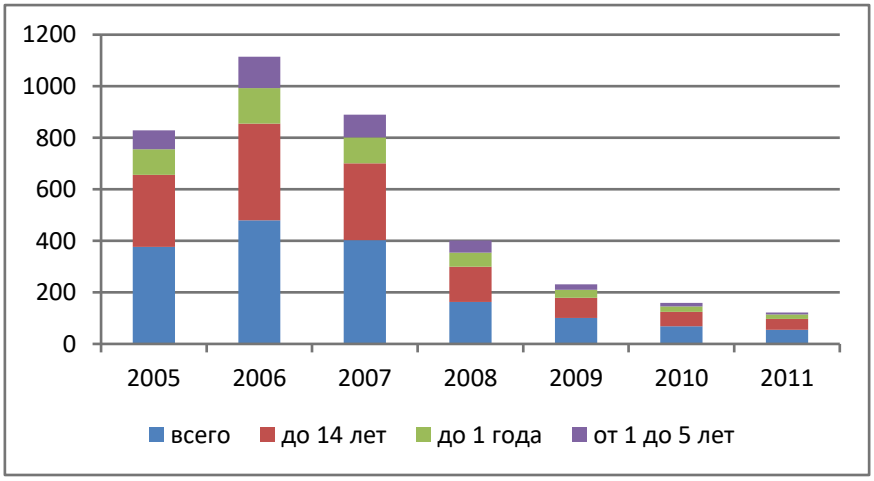
There has been a steady increase of the pertussis reported cases in the last 5 years.

For the first 6 months of 2016, there were 73 cases in total, with 56 in Bishkek (76.5% of total cases). For these first 6 months of 2016, there was a decrease by 1.7 times compared to the same period of the last year.

Hib related infections

The introduction of Hib vaccine with the pentavalent in 2009 improved the epidemiological situation for Hib related infections, like purulent Hib-meningitis and Hib-pneumonia. There was a sharp decreased incidence for these two diseases and a reduced mortality.

Number of purulent meningitis, 2005-2011



Source: SSES

Mumps

There are several hundreds of cases of mumps every year, with 553 cases in 2015.

For 2016 first 6 months, there were 159 cases in total. For 2016 first 6 months, there was a decrease by 3 times compared to the same period of the last year. That was mainly due to the fact that since January 2015, the calendar of vaccination introduced MMR for the 6 years of age.

Rotavirus

No surveillance for rotavirus infection has been implemented yet, therefore no related data are available.

Meningitis

There was a recent meningitis outbreak, but the cases are now decreasing. Tests were sent to Gabriechevsky Institute. No specific campaign is currently required. Sentinel surveillance were to be set up in October 2016.

2.2. National immunization schedule

National immunization schedule in Kyrgyzstan was last updated on 26 February 2016 by MOH Decree no.143. The new schedule provided for exclusion of the birth dose of OPV (based on NITAG recommendations from 2014) and introduction of 3 doses of PCV-13 at 2, 5, and 12 months and one dose of IPV at 3.5 months to be co-administered with OPV3 and Penta3 (IPV yet to be introduced in the country). The new schedule is presented below:

Immunization schedule, 2016

Age	Description	Antigen
Within 24hrs after birth	Hepatitis B	HBV
During stay in maternity	Tuberculosis	BCG
2 months	Diphtheria + pertussis + tetanus + *Hib* + hepatitis B – 1st dose Pneumococcal infection – 1st dose Poliomyelitis – 1st dose	Pentavalent PCV-13 bOPV
3.5 months	Diphtheria + pertussis + tetanus + *Hib* + hepatitis B – 2nd dose Poliomyelitis – 2nd dose	Pentavalent bOPV + IPV
5 months	Diphtheria + pertussis + tetanus + *Hib* + bepatitis B – 3rd dose Pneumococcal infection – 2nd dose Poliomyelitis – 3rd dose	Pentavalent PCV-13 bOPV
12 month	Measles + mumps + rubella – 1st dose Pneumococcal infection – 3rd dose	MMR PCV-13
2 years	Diphtheria + pertussis + tetanus – Booster dose	DTwP
6 years	Diphtheria + tetanus – Booster dose Measles + mumps + rubella – 2nd dose	DT MMR
11 years	Diphtheria + tetanus – Booster dose	Td
16, 26, 36, 46, 56 years	Diphtheria + tetanus – Booster dose	Td

During the past five years, only one new antigen was added to immunization programme, the pneumococcal vaccine in 13-valent presentation, PCV-13, in March 2016. In addition, from 30 April 2016, Kyrgyzstan switched from trivalent oral polio vaccine (tOPV) to bivalent vaccine (bOPV) as part of the globally synchronized effort to withdraw type 2 oral polio vaccine.

IPV introduction, even though already included in the new immunization schedule, was postponed to the 4th quarter of 2017 due to global supply problems. Kyrgyzstan was put on hold due to low estimated risk of cVDPV2 emergence in the country, however implementation of risk mitigation measures (strengthening polio surveillance, including active surveillance, sustaining high immunization coverage with polio vaccines, update of outbreak preparedness plan) were recommended to the country.

In the coming years, 2 new vaccines are foreseen to be introduced, the Rotavirus vaccine and the HPV vaccine. Both vaccines were recommended to be introduced by the NITAG and are currently considered. There is a probability that Rotavirus vaccine will be introduced first in 2017-2018 and then the HPV vaccine in 2018-2019, but further planning needs to be done.

2.3. Vaccination coverage

Immunization coverage targets have been set in the European Vaccine Action Plan (EVAP) which requires all countries to achieve at least 95% nationwide coverage with all antigens, as well as reaching at least 90% in each rayon (district). Kyrgyzstan has a well-established immunization programme and had reported historically high coverage rates. However, the large measles outbreak which occurred in 2014/2015, also affecting 1-4 years and school age children among other age groups, raised questions about the quality of administrative data as well as about possible immunity gaps in certain age groups, populations and geographic locations.

Immunization coverage is also important regarding the payment of immunization service providers in Kyrgyzstan. One of the indicators used by the Mandatory Health Insurance Fund to pay the FMCs is the timely immunization coverage. In addition, the Results-Based Financing (RBF) model supported by the World Bank is going to include immunization related indicator(s) in its framework.

The immunization data in Kyrgyzstan are managed at the national level by the RCI and by the State Sanitary-Epidemiological Surveillance (SSES) within the Ministry of Health. At the oblast and city levels, immunization data are managed by the SSES offices. The National Statistics Committee of the Kyrgyz Republic oversees statistical data and official population estimates.

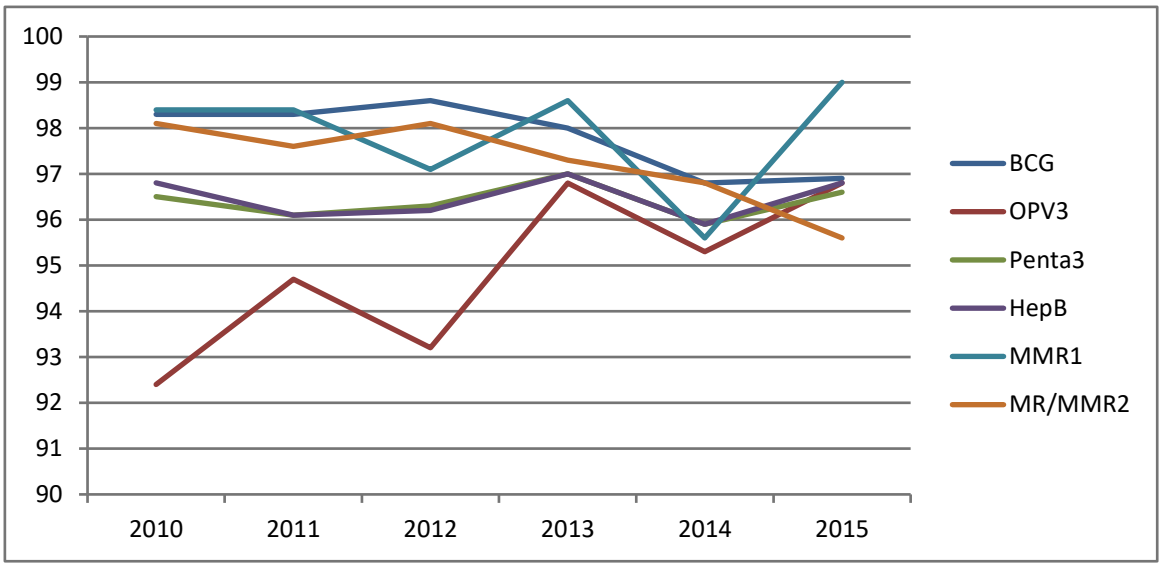
Vaccination coverage administrative data

National immunization coverage with all vaccines has been reported high in Kyrgyzstan, mostly >95% in the past 5 years. Drop-out rates are low, Penta1 - Penta3 drop-out is 3.3% and MMR1 - MMR2 drop-out is 3.4%.

Childhood vaccination administrative coverage, 2010-2015

	2010	2011	2012	2013	2014	2015
BCG	98.3	98.3	98.6	98.0	96.8	96.9
OPV3	92.4	94.7	93.2	96.8	95.3	96.8
Penta3	96.5	96.1	96.3	97.0	95.9	96.6
HepB	96.8	96.1	96.2	97.0	95.9	96.8
MMR1	98.4	98.4	97.1	98.6	95.6	99.0
MR/MMR2	98.1	97.6	98.1	97.3	96.8	95.6

Source: RCI



Vaccination coverage surveys

There were 2 surveys conducted in Kyrgyzstan which included vaccination coverage information, the MICS in 2014 and the DHS in 2012.

MICS 2014 coverage was generally in line with the administrative coverage, with a slight (1-3%) decline. The exception is OPV3 coverage, which was found 9.3% lower in MICS than the administrative figure. Actually the immunization data in the MICS survey was mainly obtained by visiting the health facilities and copying the records, since there is no vaccination card in Kyrgyzstan. Mothers' recall was factored in a minority of cases. Therefore MICS vaccination coverage results are not expected to be very different from the administrative reports. The difference in OPV3 coverage is an outlier and may be due to missing registration of OPV doses separately in health facilities (a recent data quality assessment by WHO revealed that pentavalent and OPV are recorded in the same line).

On the other hand, DHS 2012 results divert more from the administrative coverage. Penta3 and OPV3 coverage data are very low in addition to the MMR1 coverage, which was found lower that the administrative coverage.

MICS also provided immunization coverage according to background characteristics. Results show that Penta3 coverage is lower in urban areas (92.2%) than in rural areas (96.8%). Based on the regional breakdown, Bishkek city and Chuy oblast (around 90-91%) have lower coverage

compared to the other regions which are all above 95%. Children from the richest wealth quintile had lower Penta3 coverage (90.9%) compared to other wealth groups which are all above 95%. There is no significant difference according to gender and mother's education. The results are in line with challenges experienced by the health staff in registering and vaccinating children in urban areas, and more number of measles cases seen in Bishkek city and Chuy oblast during the outbreak. Also during the interviews it occurred that wealthier parents living in urban areas tend to be more sceptical about the benefits of immunization or seek for vaccines sold in the private sector of neighbouring countries.

According to MICS, 80.4% of children surveyed were fully immunized (received all vaccines BCG, Polio3, HepB at birth, Penta3 by 12 months of age and MMR1 by 24 months).

Childhood vaccination surveys coverage 2014 and 2012

	Administrative 2013	MICS 2014	Percentage difference	Administrative 2011	DHS 2012	Percentage difference
BCG	98.0	99.6	1.6	98.3	98.9	-0.6
OPV3	96.8	**87.5**	**9.3**	94.7	**77.7**	**17.0**
Penta3	97.0	93.9	3.1	96.1	**84.2**	**11.9**
MMR1	98.6	95.8	2.8	98.4	94.2	4.2

3. Immunization programme components and characteristics (achievements, challenges and the way forward-solutions)

This section provides a "situation analysis" on five immunization programme components. It refers to the findings and recommendations of several assessments, evaluations and studies conducted in the recent years (all references are provided in each chapter). Proposed "ways forward" are guided and justified by all those documents and by discussions with all stakeholders. Further information on objectives, strategies and activities will be provided in section 4.

3.1. Immunization services

3.1.1. Routine immunization and service delivery

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *Gavi joint appraisal report 2015*
- *RCI plan of action 2013-2017*
- *RCI annual report 2015*

Kyrgyzstan national immunization programme remains strong and well-performing. The health personnel in place continue to provide high-quality immunization services. The performances of the programme remain high as shown by the overall coverage for the routine vaccines being between 95.6% and 99% (2015 administrative data, excluding pneumococcal recently introduced vaccine).

The immunization practices and vaccines administration are in general good and respected (for the practices observed during the NIP review), and all vaccinations take place in health facilities by certified nurses. Immunization staff received some training in the recent years, however it is mostly done on an ad-hoc basis, for new vaccines introduction or supplementary immunization activities (e.g. measles outbreak campaign), and therefore could be considered insufficient to regularly covering all NIP components, as staff turn-over is high.

Immunization timeliness remains a major problem in Kyrgyzstan, even though most of the planned vaccinations are implemented by the age of 12 months. Delays are mostly caused by seasonal migration of population (in mountainous areas immunization almost cease during summer months due to families moving to summer pastures), in-country labour migration (to capital and major urban areas) and false contraindications which are still widely applied, even though slightly less based on anecdotal evidence. Family practitioners cited minor health problems as temporary contraindications delaying vaccination for 1-2 months, and the excess influence of neurologists in delaying/preventing vaccination remains. Delays could also be caused by multi-dose presentation for some vaccines (BCG, bOPV, 20 doses) for immunization in sparsely populated areas.

As for supervision of immunization activities, the RCI staff has to regularly conduct supportive supervision visits to the oblast SSES, including some rayon SSES (supposedly 2 times per year per oblast). Then in cascade, oblast and rayon SSES staff are supposed to visit health facilities. However, as for training, operational costs are recognized to be insufficient, especially for transportation (most of RCI operational costs are supported by donors' funds), and therefore there is a lack of supportive supervision. Moreover due to primary health care system reform, the RCI and oblast SSES supervision role remains mainly an advising role, recommending what need to be improved, but not having any power to enforce changes when wrong practices and wrong behaviours occur. In that regard, supervision from all levels (MoH, RCI, oblast/city/rayon SESS) is not sufficient to ensure adequate adjustments of the programme in the above-mentioned problems.

Concerning the routine immunization calendar, it has been evolving in the recent years, as described in section 2, and for the last 5 years was revised and updated with new vaccines introduced (PCV, bOPV, IPV).

Main achievements

- NIP continue to be a strong and well-performing programme in Kyrgyzstan
- Immunization practices and vaccines administration are in general good and respected
- All vaccinations take place in health facilities by certified nurses
- Immunization calendar was revised with new vaccines (PCV, bOPV, IPV)

Main challenges

- EPI training for health staff is currently insufficient, especially as staff turn-over is high
- Supervision from all levels is not sufficient and relies on external financial support
- Immunization timeliness remains a major problem in Kyrgyzstan
- False contraindications still exist despite trainings and Orders

- Despite progress in addressing migrants and remote/hard-to-reach populations, immunization of children from these groups remains a challenge

Ways forward

- Continue ensuring universal access of population to immunization services and reach everybody targeted for immunization
- Strengthen capacity building for health staff (managerial, technical, communication) at different levels; implement MLM and IIP training courses; increase pool of trainers; expand training to GPs
- Provide earmarked budget for training and supervision, as specified in multi-year plan
- Further develop and implement strategies to reach migrants and remote/hard-to-reach populations

Note: As previously mentioned, proposed "ways forward" will be completed with further information on objectives, strategies and activities in section 4.

3.1.2. New vaccines introduction

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *RCI presentation on new vaccine introduction 2013*

During the past five years, only one new antigen was added to immunization programme, the pneumococcal vaccine in 13-valent presentation, PCV-13, in March 2016. In addition, from 30th April 2016, Kyrgyzstan switched from trivalent oral polio vaccine (tOPV) to bivalent vaccine (bOPV) as part of the globally synchronized effort to withdraw type 2 polio vaccine. Overall, both PCV introduction and OPV switch in Kyrgyzstan were smooth processes.

The introduction of PCV was delayed for almost a year due to large measles outbreak in the country in 2014-2015. Decision to postpone was taken by MOH on recommendation of the ICC. Prior to the introduction, on 26 February 2016, the Ministry of Health issued a Decree no.143 stipulating introduction of PCV-13 and one dose of inactivated polio vaccine (IPV) into the national immunization schedule and presenting the new schedule.

Acceptance of new vaccine was equally good by medical workers and parents; concerns with the need for additional vaccine and with safety of vaccine or multiple injections were limited. The interviewed medical workers were aware of diseases PCV prevents and of benefits of vaccination, knew new immunization schedule and did not have any difficulties with administration of PCV. No AEFIs were reported for any vaccine since the introduction of PCV vaccine, and PCV was generally regarded as very safe vaccine.

All visited sites during the NIP review reported that the introduction of PCV was a smooth process and staff of health facilities and SSES felt that the introduction of PCV had improved the immunization programme. Interviewed staff noted that advocacy and communication activities and training sessions prior to PCV introduction boosted immunization awareness in communities and increased overall knowledge of health workers.

As it has been only four months since the introduction, it was quite early to assess PCV coverage, particularly with the second dose. Therefore, the review only compared coverage of PCV1 and Penta1, and difference was 2% in April, up to 3-4% in May, and down to 1-2% in June.

"Switch" from tOPV to bOPV was implemented smoothly; no problems were reported at national or lower levels. The national "Switch" date was on 30th April 2016, and bOPV was used since 2nd May. The leftover tOPV was destroyed at every facility level with no centralized collection; reports on disposal were available in all visited sites. Despite smooth implementation of the "Switch", the knowledge of front-line staff on the rationale of the "Switch" was observed as insufficient, needs to be addressed in further trainings on IPV.

IPV introduction, even though already included in the new immunization schedule, was postponed to quarter 4 of 2017 due to global supply problems. Kyrgyzstan was put on hold due to low estimated risk of cVDPV2 emergence in the country, however implementation of risk mitigation measures (strengthening polio surveillance, including active surveillance, sustaining high immunization coverage with polio vaccines, update of outbreak preparedness plan) were recommended to the country.

Rotavirus and HPV vaccines introduction has been recommended by NITAG, and was already mentioned in the previous cMYP 2012-2016, with rotavirus introduction in 2015 and HPV introduction in 2016. Measles outbreak and other reasons substantially delayed their introduction. Realistic dates their introduction need now to be established.

Main achievements

- New vaccines were introduced (PCV, bOPV); the process was evaluated to be "smooth"
- Kyrgyzstan implemented globally synchronized tOPV to bOPV "Switch" in April 2016
- Preparation to IPV introduction was achieved

Main challenges

- Due to global shortage, there will delay with IPV introduction until end of 2017

Ways forward

- Plan the introduction of Rotavirus and HPV vaccines with realistic dates of introduction
- Implement risk mitigation measures because of IPV supply delay, as recommended by GPEI

3.1.3. Diseases control

3.1.3.1. Polio-free sustaining

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *Annual report polio eradication activities 2015*
- *Rapid AFP surveillance assessment 2012*

Kyrgyzstan has been polio free since 1993. The country has been maintaining high OPV3 coverage by routine immunization and by SIAs (2011, 2012, and 2013). The country has successfully implemented the "Switch" from tOPV to bOPV and is ready with the preparations for

introduction of IPV into the routine immunization schedule. However the issue of migrants (internal and external from neighbouring countries), vaccine hesitancy among certain religious groups coupled with delayed introduction of IPV due to global shortage could lead to accumulation of immunity gap against type 2.

The AFP (Acute Flaccid Paralysis) surveillance is well established in the country. However there is a decline in the number of AFP cases reported over the last few years including 2016. Nonetheless the country was able to achieve the key surveillance indicators in the past years, especially the non-polio AFP rate which has been > 2 all through the years from 2011 onwards (this has been adopted in the EURO Region since the outbreak of wild polio cases in Tajikistan). There are some areas where there are no AFP cases reported for the last 7 years (e.g. Toguz-Toro), though the population numbers are not high enough to report case(s) every year.

As of July 2016, there have been 30 cases reported with an annualized non-polio AFP rate of 2.11. There are no "Hot" cases identified this year. There was no polio compatible cases identified in the recent years. The oblasts and cities send weekly AFP "zero reports" to the RCI by paper/email. In general the timeliness of the weekly reports is 70% which is below the desired target (90%) while completeness of reports is 93%. Active surveillance visits are supposed to be conducted, but the review teams did not see any evidence of it, and there is no documentation of the visits nor reports of any missed AFP found.

The AFP cases reported are investigated timely as required within 48 hours of notification, but the stool collection rates have dropped to less than the desired 80% target in 2015 (76%). Over the past few years, the cases registered/reported within 7 days is declining which might be one of the reasons for not meeting stool adequacy. The shipment process to the laboratory is funded by WHO. Environmental sampling has not yet been started in the country.

Indicators at the national level are good, but the subnational level surveillance needs to be strengthened and the surveillance gaps need to be fixed. During the 2016 NIP review, it was also found that there were gaps in the knowledge about AFP surveillance, the health workers asking for the reason for analysing AFP data as the country did not have polio since 1993.

Indicators on AFP surveillance

Variables	2011	2012	2013	2014	2015	Target
Number of AFP cases reported <15 years	65	61	74	43	51	-
Number of WPV cases	0	0	0	0	0	0
Number of polio compatible cases	0	0	0	0	0	0
Non polio AFP rate	4.29	4.02	3.96	2.28	2.76	≥ 2
Adequate stool collection rate (%)	98.3	98.2	96.65	91.64	76.11	≥ 80%
Surveillance index	0.98	0.98	0.96	0.84	0.80	≥ 0.8
60-day follow up (%)	100	100	100	100	100	≥ 80%
NPEV isolated (%)	-	-	-	-	-	≥ 10%
Registered within 7 days (%)	93.96	93.95	82.6	74.52	59.6	≥ 80%
Investigated within 48 hours (%)	92.19	78.52	100	99.07	99.3	≥ 80%
Timeliness (%)	0.28	0.73	0.79	0.64	0.56	≥ 80%

Source: RCI

Main achievements

- The country has been polio free since 1993, and maintaining good quality AFP surveillance
- All AFP cases are reported and investigated in time
- Stool specimens from AFP cases are collected and sent to reference lab in Moscow
- Kyrgyzstan has sustained high OPV3 coverage over the years

Main challenges

- Due to the delayed introduction of IPV due to global shortage, there could be a risk of accumulation of immunity gap against type 2
- The geographic proximity to polio high-risk country makes it vulnerable to importation
- There are gaps in documentation of active case searches conducted for AFP surveillance
- Environmental surveillance for polio has not yet started

Ways forward

- Continue strengthening AFP surveillance and monitoring subnational performances to ensure that all cases are identified and investigated in a timely manner
- Improve implementation of active surveillance and regular analysis of surveillance data to improve programme performances
- Explore possibility of starting supplementary environmental sampling for polio viruses

3.1.3.2. Measles and rubella elimination

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *Annual report of eliminating measles and rubella 2015*
- *Measles outbreak basic data analysis 2014-2015*
- *Evaluation of measles and rubella SIAs 2015*

The epidemiology of the 2014-2015 measles outbreak was described in section 2. The country with the help of international partners implemented 2 rounds of SIA with MR vaccines in March and May 2015 targeting first the Bishkek capital city and Chuy oblast and then the rest of the country. The overall administrative coverage was reported to be 95%, but the post-SIA assessment showed that the coverage was below 90% in a few regions. The outbreak was attributed to the accumulation of susceptible population over the years, to the migrants who were not in the FGP registered lists, mainly in the urban areas of Bishkek and Osh, and were unimmunized, and to vaccine hesitancy and refusal cases due to religious beliefs.

WHO EURO conducted a post-SIAs evaluation and came to the following conclusions: “The national immunization programme needs to be strengthened to prevent the accumulation of susceptible populations in the future. Mobile populations have challenged the programme and will probably continue to do so in the future. Administrative monitoring of vaccination coverage based on healthcare facilities records alone may not be accurate enough for capturing highly mobile populations. To better address this issue, healthcare facilities should consider reaching out in the communities more frequently. This would offer the opportunity to convey education messages for maintaining the public trust in vaccination, to update their target population, and to

enhance social mobilization for routine immunization. On these occasions they might consider advocating to parents for better retention of their children's vaccination cards, as a mean to document vaccination status."

Concerning measles-rubella surveillance, there is functional system in the country. The FGPs/FMCs report suspected cases to the oblast hospitals where the cases are admitted and investigated. The blood samples are collected and tested for measles antibody in the national lab that is accredited by WHO. If the laboratory samples are positive, then the case is reported to the SSES using the online system and response activities are initiated. If the lab samples are negative for measles, it is tested for rubella.

During the outbreak measles-rubella surveillance was overwhelmed, especially its laboratory component. Now that the outbreak is over and the number of measles cases has come down to zero, measles-rubella surveillance performances should be restored to the elimination standards recommended by WHO EURO. This would offer national public health authorities an opportunity to verify the interruption of measles transmission and together with good monitoring of the immunization programme can orient future measles-rubella elimination efforts.

Main achievements

- Kyrgyzstan has been able to stop the 2014-2015 measles outbreak with responsive immunization SIAs conducted in 2 phases
- Measles-rubella surveillance and laboratory confirmation function and were of much use during the outbreak

Main challenges

- The huge measles outbreak highlighted the accumulation of susceptible populations and therefore the weaknesses of the programme, challenging the real vaccination coverage
- Although there was an evaluation of measles and rubella SIAs in 2015, no specific action have been taken up to now to discuss the lessons learnt from this outbreak

Ways forward

- Responses to potential future accumulation of susceptible populations include reaching on time all targeted groups, especially hard-to-reach groups (mobile population, migrants)
- Conduct a national workshop to discuss data obtained during and post measles outbreak, lessons learnt and strategies to prevent any future outbreak
- Strengthen measles-rubella surveillance to WHO EURO elimination standards

3.1.3.3. Hepatitis B control

As mentioned in section 2, there was a continuous decrease of acute hepatitis B reported cases (for population under 14 years) in the last 5 years, with only 6 cases in 2015 and for the first 6 months of 2016, only 1 case. For 2015, it represents 0.3 per 100,000 of this age group.

WHO EURO has included hepatitis B infection control as a goal in EVAP (like polio sustaining and measles-rubella elimination). The control indicator is currently being discussed.

Main achievements

- Hepatitis B vaccination coverage has been high (> 95%, administrative coverage)
- Reported cases of acute hepatitis B have decreased to a low 6 cases in 2015

Main challenges

- Ensure the hepatitis B vaccination coverage remains high (coverage survey to confirm)

Ways forward

- Continue controlling hepatitis B infection to meet regional goal

3.2. Vaccine quality, supply and management

3.2.1. Vaccine regulation

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *Gavi joint appraisal report 2015*

The Department of Drug Provision and Medical Equipment (DDPME) of the MoH is in charge of registration of pharmaceuticals in the country. However, typical functions of the NRA (licensing, post-marketing surveillance) are not in place and existing control laboratories don't have the required technical capacity. Not all vaccines are registered in the country and import is based on individual waivers issued for importing a particular shipment. The RCI team is in charge of the follow-up of the issuance of this waiver, with the support of UNICEF Country Office.

In that regard, the Department of Drug Provision and Medical Equipment, although involved in pharmacovigilance issues, does not perform all required functions of post-marketing surveillance for vaccines. They therefore are not sufficiently involved in matters related to management of AEFI cases, as it was shown during the 2012 pentavalent crisis.

As mentioned in the 2015 Gavi joint appraisal report, considering the current performances of the DDPME, it is important that the NRA critical regulatory functions for vaccines are assessed and strengthened to update the AEFI system in line with WHO recommendations related to case definitions, reporting forms, case investigations, reporting of filtering cases, causality assessment, data analysis and feedback.

Main challenges

- Not all vaccines are registered in the country and import is based on individual waivers
- DDPME doesn't perform all required functions of post-marketing surveillance for vaccines and therefore is not sufficiently involved in matters related to AEFI cases management

Ways forward

- Ensure the Department of Drug Provision and Medical Equipment (Kyrgyz NRA) is fully involved in serious AEFI case investigation
- Plan the assessment of the NRA functions and provide technical assistance to strengthen the technical capacity of the Department of Drug Provision and Medical Equipment

3.2.2. Vaccine supply and procurement

The below situation analysis is based on the following documents:

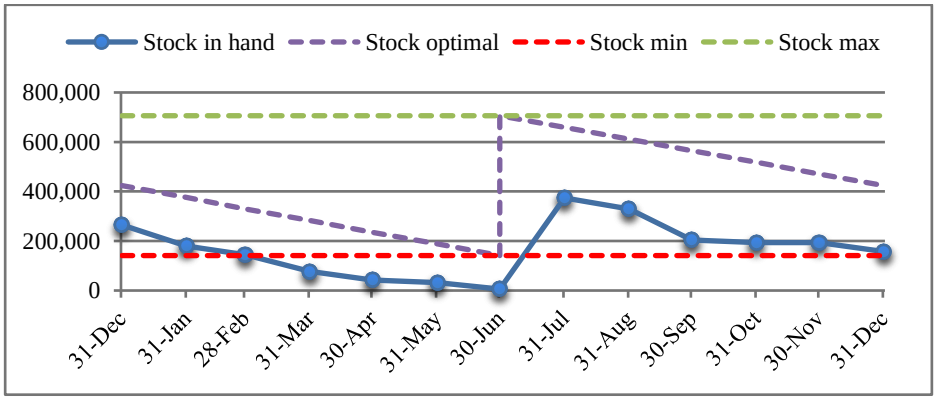
- *NIP review report 2016*
- *EVM assessment 2015*
- *Vaccines and immunization supplies data log 2015*

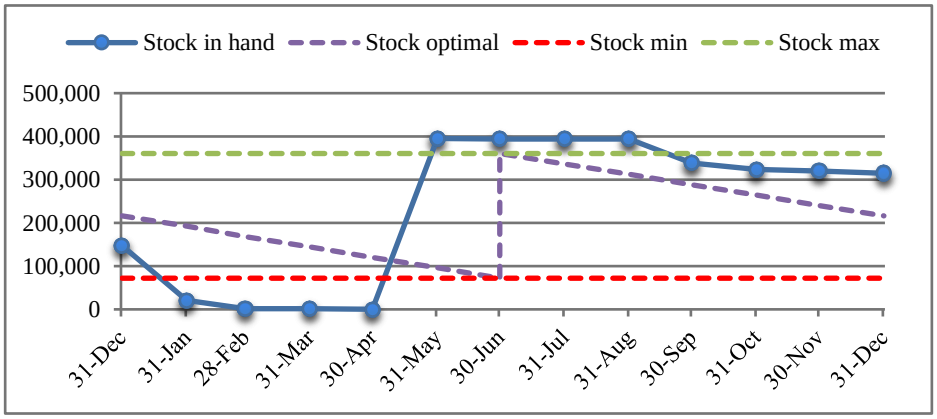
Kyrgyzstan has been using for the last 25 years the opportunity of purchasing all childhood quality-assured vaccines (WHO prequalified) through UNICEF Supply Division. The procurement and supply mechanism is regulated within the frame of the Memorandum of Understanding 2012-2022 between the Government and UNICEF.

The RCI is currently in charge of the immunization procurement related activities. Every year, they make an estimation of needs (considering the vaccines stock balances). Then the request for vaccines takes place in October to UNICEF Procurement Services, with 100% pre-payment (funds are allocated by Government in April; 5-7% financial buffer (contingency) is deposed in RCI). Upon arrival of vaccines, RCI is in charge of customs clearance and transferring vaccines from the airport to the central cold store. Vaccine Arrival Report (VAR) is usually used.

Concerning the stocks-in-hand at national level, only one shortage (DPT) was reported in 2015-2016 (stock-out during 3 months in the 4th quarter of 2015). The analysis of the vaccines movements for 2015 at the national store demonstrates that although there was no major shortage (except DPT), there was still not enough reserve for some vaccines (see below graphs). While pentavalent respected minimal and maximal optimal stock-in-hands, the OPV was insufficient and often below the minimal stock-in-hands. For MMR, it is difficult to conclude with the 2014-2015 outbreak having disrupted the stock control.

OPV and MMR (respectively) vaccine stock-in-hands analysis at central store, 2015





Main achievements

- All childhood vaccines supplied/used are quality-assured vaccines (WHO prequalified)
- The procurement and supply mechanism is well functioning (MoU Government-UNICEF)

Main challenges

- Vaccine stock-outs were experienced during 2016 by 86% district vaccine stores and 80% facilities providing immunization services. Most of the stock outs involved DTP vaccine, however stock outs of other products (such as Td, MMR, BCG, OPV and pentavalent) were reported during cold chain inventory and needs assessment
- There are not enough reserve/buffer stocks for some vaccines, at least at the central level

Ways forward

- Establish reserve/buffer stocks for all vaccines, at all levels (25% required at central level)
- Envisage building capacity for independent procurement of vaccines in the future

3.2.3. Vaccine management, cold chain and logistics

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *EVM assessment 2015*
- *Gavi joint appraisal report 2015*
- *Gavi HSS application 2014*

With the introduction of more expensive vaccines, the quality and capacity of the cold chain throughout the country become critical.

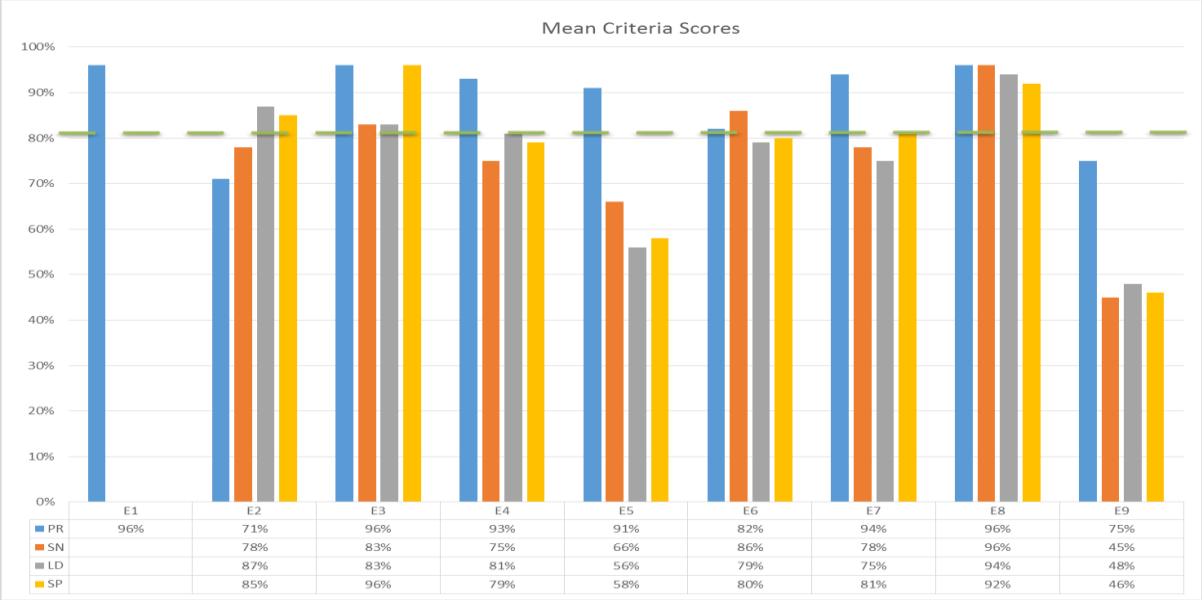
EPI undertook continuous efforts to strengthen the vaccine cold chain: in 2012, with JICA support, here were procured 230 ILRS MKF074, including spare parts and voltage regulators, 40 cold boxes (18Lt), 740 vaccine carriers (1.7Lt) and 1700 units of 30-day electronic temperature recorders (Fridge tag); using GAVI vaccine introduction grants, in 2013 country procured and installed one 30m3 cold room for the national vaccine store and 5 cold rooms x 10m3 for regional vaccine stores in Chui, Talas, Naryn, Issyk-Kul and Batken oblasts. With support from a local charity foundation in 2015 there were procured 240 refrigerators MK-144; and 216 ILRS HBC-70 were procured using System Wide Approach (SWAp) funds (supported by Government and in-country development partners).

Technical assistance was extensively provided during the years 2013-2016, an EVM assessment was conducted in September 2015 and a cold chain inventory assessment is currently being completed. Gavi HSS and Gavi Cold Chain Equipment Operational Platform (CCEOP) grants will provide funding opportunities for equipment renewal.

As for the 2015 EVM assessment, the conclusions were the followings: “Results of this EVM assessment revealed existence of high quality vaccine management practices, particularly at central level. Almost all recommendations provided in previous assessment were implemented by the NIP. Cold rooms were installed all over the country, computerized temperature monitoring system was installed in central store, 30 day temperature recorders and freeze indicators were distributed to oblasts and rayons following appropriate trainings, most cold rooms passed through

temperature mapping exercises and their installation qualities were improved, a temperature monitoring study was done at national level and its recommendations were followed, WHO's EVM standard operation procedures (SOPs) were adopted, manual stock management forms and ledgers prepared and printed centrally, new WHO recommended cold chain equipment were procured and distributed to the field and more cold chain equipment are planned to be procured soon. However there is still room for further improvements especially at the lower levels of the vaccine supply chain."

Mean criteria scores for all assessment levels – 2015 EVM assessment



	E1	E2	E3	E4	E5	E6	E7	E8	E9
PR	96%	71%	96%	93%	91%	82%	94%	96%	75%
SN		78%	83%	75%	66%	86%	78%	96%	45%
LD		87%	83%	81%	56%	79%	75%	94%	48%
SP		85%	96%	79%	58%	80%	81%	92%	46%

E1. Vaccine & commodity arrival procedures
E2. Vaccine storage temperatures
E3. Cold & dry storage capacity
E4. Buildings, CC equipment & transport
E5. Maintenance
E6. Stock management
E7. Effective distribution
E8. Good vaccine management practices
E9. Information systems and supportive management

The 2016 immunization programme review identified the following conclusions:

At the central level, it was found that the national vaccine store is continuing to meet quality standard, except for one old cold room (home made) which is supposed to be replaced, but also for the compressor of another cold room which is not working and supposed to be filled-in with refrigeration gas. The automatic temperature monitoring system installed since November 2014 did not show temperature infringements, except for the old cold room where temperature monitoring in some areas of the room demonstrated a temperature above 8°C (mainly between 8°C and 10°C).

At the field level, although most of vaccines observed were in good condition (no major VVM problem), the feedback of the teams insisted on the lack of equipment in some health facilities (missing vaccine carriers, generators) and/or refrigerators of poor quality-standard (domestic, old, not functioning). That issue started to be addressed, with 216 ice-lined refrigerators provided in 2012 under the SWAp, but also with the plan to continue to purchase more refrigerators and

other cold chain equipment under the Gavi HSS and CCEOP grants. Refrigerated trucks (Bishkek, Osh) were also to be replaced under the Gavi HSS funds.

Concerning the vaccine management and stock management, the SOPs on "Effective vaccine management" were put in place recently. However the implementation and the full follow-up of these SOPs still require some enforcement, as it was noticed at national and field levels. As an example, at national level there was neither an electronic stock management nor the full use of the new stock ledger (introduced based on WHO expert recommendations). Comments were made also from the field visits that the vaccine stock management requires improvements.

To address the issues around the maintenance, in 2015 Gavi secretariat provided technical assistance to initiate a pilot project with public and private sectors. The project aims to train technicians in the private sector for cold chain to provide maintenance and repairs: 18 private technicians were trained to repair WHO prequalified refrigerators, a repair toolkit to setup a repair workshop has been procured during 2016. Procurement of cold chain equipment spare parts is planned through GAVI HSS funding. Gavi collaborated with UNICEF country office on this project in order to provide spare-parts and technician tool kits. In addition, a cold chain expert was engaged to steer and implement the work in the country. It is planned that under the new Gavi HSS funding this initiative will be transitioned to the government to secure the maintenance of the system.

The 2016 cold chain inventory conducted with WHO support covered a total of 1,661 health facilities involved in the immunization supply chain, which represent 86% of the total number of facilities in the country. A national cold chain inventory database was established basing on Cold Chain Equipment Manager (CCEM) software and represent an important resource for equipment follow up, maintenance planning, needs assessment and equipment allocation. Despite the significant progress, a number of immunization supply chain issues continue to jeopardize immunization programme performance. Basing on the needs assessment, a cold chain rehabilitation and maintenance plan was developed for 2017-2020. Its implementation will be supported through the Gavi HSS grant, as well as the Gavi Cold Chain Equipment Optimization Platform (CCEOP). Detailed activities are provided in the section 4.

Main achievements

- Results of 2015 EVM assessment and of 2016 NIP review revealed the existence of good quality vaccine management practices and functioning cold chain
- Technical assistance provided in recent years allowed upgrading cold chain and vaccine management, including the provision of SOPs

Main challenges

- Insufficient vaccine storage and transport capacity to meet increasing volumes following introduction of new vaccines, in particular at national, sub-national and district level
- Cold chain challenges at immunization delivery sites: lack of refrigerators in 13% primary health care facilities; high proportion (52%) of inadequate cold chain equipment (domestic refrigerators) and ageing prequalified cold chain equipment (85% of PQS vaccine freezers and 32% of ILRs are older than 10 years)

- Ineffective equipment maintenance programme (implemented in 7% of facilities) and high proportion (10%) of refrigerators and freezers were not working (including 14% ILRs and 34% freezers)
- Important breaches in temperature monitoring: lack of any temperature monitoring device in 8% of vaccine refrigerators, and lack of continuous temperature monitoring in 65% of facilities; No freeze exposure monitoring during vaccine transportation
- Weak stock management: about 85% of facilities reported stock outs; no safety stock policy exists to address demand and supply variations
- Geographical access challenges: about 18 percent of health facilities are remote (more than 50 km from district stores) and health workers must travel long distances to collect the vaccine from their district store
- Limited access to continuous immunization services: About 25% of rural medical offices (FAPs) conduct one immunization session per month only
- Some vaccine stock management practices are out-dated (e.g. at national level) and are not always reflecting SOPs (electronic stock management becomes a priority)

Ways forward

- Improve vaccine management policy and practice through systematic documentation of progress, identification of problems and improvement planning (EVM assessments, cold chain inventory, temperature monitoring studies, supervision programmes & supervisory tools)
- Support personnel development and performance by setting in place quality management systems (including implementation of SOPs at all levels) backed by legal, regulatory, institutional and capacity building frameworks. Vaccine management policy guidelines and tools need to be made available throughout the supply chain levels and to the staff training and capacity building programmes
- Continue procuring and distributing quality-standard refrigerators, temperature monitoring devices, vaccine carriers and refrigerated vehicles (Gavi HSS and CCEOP grants)
- Improve vaccine stock management practices by fully implementing SOPs; Ensure the national level will use an electronic system
- Encourage repair and maintenance agreements; Distribute to oblasts the list of qualified cold chain technicians trained by UNICEF
- Advocate for more local funding support to ensure vaccines and supplies distribution within oblasts and rayons

3.3. Surveillance and reporting

3.3.1. VPD surveillance

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *SSES documents and data on surveillance*
- *RCI documents and data on surveillance*

All communicable diseases are nationally reportable through the computerised disease notification system. VPD surveillance is a part of this system. Polio and measles/rubella have case based surveillance. There is detailed information available on the cases reported at the RCI, but at the SSES, only aggregate numbers are available. National communicable disease surveillance Orders and guidelines including VPD surveillance are available. Orders from the MOH cover also specific diseases targeted for control. Surveillance guidelines and Orders are generally adequate and there is a plan to update them in 2017.

The Republican Centre for Immunoprophylaxis (RCI) is responsible for the VPD surveillance and the State Sanitary-Epidemiological Surveillance (SSES) is responsible for all other infectious disease surveillance. There are reporting for 38 communicable diseases. The RCI and SSES provide methodology, guidance, coordination, supervision to all the regions (oblasts) and districts (rayons) on disease surveillance and response. The system in RCI is paper based but the SSES is moving to the online system of reporting. At the oblast level, the surveillance is managed by SSES offices. These reporting sites are usually headed by a well-trained epidemiologist, responsible to conduct all activities related to disease surveillance, and following the standard operating procedures outlined in the guidelines for reporting and investigation of communicable diseases.

During the 2016 NIP review, the followings were observed. There was adequate amount of awareness regarding VPD surveillance at all levels. The epidemiologists were fully trained and conducting activities as outlined in the guidelines. There were immediate notification forms, investigation forms, journals filled with all required information. Weekly zero reporting was being done, but hard copy of the weekly reports could not be seen. As previously mentioned, active surveillance for AFP is not documented and it was difficult to comment if active surveillance was fully implemented. On interview with paediatricians and nursing staff, there was varying knowledge about disease surveillance and reporting of VPD in a timely manner.

Concerning laboratory for VPD, there is a well functional national laboratory able to perform virology, serology and molecular genetics. They conduct PCR, ELISA and culture. There are 2 laboratories set up in Osh and Bishkek well equipped with all required laboratory equipment and trained manpower. They have been accredited by WHO for measles and rubella testing and the staff are regularly trained by WHO and Gabriechevsky Institute. For measles/rubella the national reference laboratories in Bishkek and Osh conduct the 1st test and send the sample for 2nd test to the Gabriechevsky Institute (Moscow). For AFP cases, the stools are sent directly to the regional reference laboratory (RRL) at Chumakov Institute in Moscow for testing since 2011. The laboratory reagents are provided by WHO. Gabriechevsky Institute provided 100 molecular genetic tests for the measles outbreak and 1500 tests during the outbreak (molecular, PCR, Eliza). All the tests are conducted free of charge except for hepatitis which needs payment. Hence sustainability in the long run is an issue which will need to be addressed. Testing facilities for other VPDs like diphtheria, pertussis and mumps are not available.

Main achievements

- There is a well-established functional VPD surveillance system
- There is a recently introduced electronic disease surveillance system which is being implemented across the country

- Laboratories for polio, measles and rubella are functional and accredited

Main challenges

- There is a lack of analysis of surveillance data at all levels (data for action)
- Due to turnover of health staff and doctors, there is varying knowledge on VPD surveillance among the personnel, especially at the field level
- There are gaps in documentation of active case searches conducted for priority diseases
- There is duplication of work due to the collection of VPD surveillance data both at RCI and SSES and sometimes there is data discrepancy as they are not harmonized

Ways forward

- Conduct regular training on VPD surveillance for health staff, including doctors in family medicine, physicians and paediatricians, both for the public and private sectors
- Consider integrating the VDP surveillance into the electronic communicable disease notification system so as to have a unified system of reporting
- Implement regular analysis of surveillance data at all levels in order to improve programme performances (data for action)
- Implement active surveillance for AFP

3.3.2. AEFI surveillance

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *AEFI pentavalent investigation report 2012*

The AEFI surveillance system is in place with existing reporting and investigation procedures involving health practitioners (especially specialists in hospitals where serious AEFI cases are mainly detected), oblast and rayon SSES epidemiologists, MoH/RCI staff and national level experts. The "Yellow Card" system for sending notifications to the central level and ensuring national level control of serious AEFI cases was established in 2014.

In the recent years, few serious AEFI cases were detected. Most of the cases reported were related to pentavalent and BCG vaccines. The 2012 cases related to pentavalent generated a confidence crisis within the country. The investigation concluded that the cause of AEFI was due to a programmematic error. A 2016 incident with a serious AEFI, causing concern, was related to a doctor who was held responsible for that AEFI case. Although such concern was non-existent before, the population starts sometimes to hold responsible medical staff when AEFI event occurs.

Concerning the AEFI system sensitivity, looking at the limited number of AEFI cases detected/reported in all the years since the AEFI surveillance was set up in Kyrgyzstan, and considering the well-known global baselines on vaccine pharmacovigilance, it is difficult to confirm that the AEFI surveillance system is "sensitive" enough throughout the country. Moreover no fully defined case definition for AEFI is currently in place. In that regards, the Brighton Collaboration

(WHO collaborating centre) has been issuing for years case definitions for AEFI (currently 28 of them could be found on their website[4]).

AEFI reported cases 2010-2012

	Vaccine	No. doses administered	Total AEFI cases	Number of cases			
				Abscess	High pitch screaming	Febrile convulsions	Other
YEAR 2010							
	Pentavalent	405,388	3	-	2	1	-
	BCG	140,386	22	-	-	-	22
YEAR 2011							
	Pentavalent	403,980	7	2	2	2	1
	BCG	141,760	10	-	-	-	10
	HepB	106,080	1	1	-	-	-
YEAR 2012 (*up to June 2012*)							
	Pentavalent	38,400	22	17	3	2	-
	BCG	…	3	-	-	-	3

Source: RCI

Therefore the revision of the AEFI guidelines and related Order will provide a unique opportunity to integrate those case definitions. Technical assistance will be required to help in this matter, but also to provide training to immunization staff and specialists on AEFI case investigation, causality assessment and related communication skills.

Main achievements

- Revision of AEFI guidelines and related Order are being planed, with provision of technical assistance from WHO

Main challenges

- Few cases of AEFI type known as "vaccine product-related" (CIOMS definition[5]) were detected, challenging the sensitivity of the AEFI surveillance system
- There are no detailed case definitions in place for AEFI type known as "vaccine product-related", limiting the capacity of health staff to recognize and investigate AEFI case
- Serious AEFI cases are starting to cause concern within the medical staff and the population, with risk to challenge the immunization programme

Ways forward

- Review and strengthen the AEFI surveillance and its sensitivity
- Implement refresher training courses for hospital specialists and relevant health staff
- Ensure Brighton Collaboration AEFI case definitions are considered and used while revising the AEFI guidelines

[4] https://brightoncollaboration.org/public/what-we-do/setting-standards/case-definitions/available-definitions.html

[5] http://www.who.int/vaccine_safety/publications/Global_Manual_on_Surveillance_of_AEFI.pdf

- Ensure the Department of Drug Provision and Medical Equipment (NRA) is fully involved in serious AEFI investigation

3.3.3. Immunization coverage reporting

The below situation analysis is based on the following documents:
- *NIP review report 2016*
- *Information system and data assessment DQA 2015*
- *MICS survey 2014*
- *DHS survey 2012*
- *Vaccination coverage RCI 2010-2015*
- *WHO & UNICEF coverage estimates 2014*

Immunization coverage data have been provided in section 2, including coverage surveys. Concerning immunization registers, reporting and monitoring, the 2016 NIP review commented on the followings.

Target population is identified at the beginning of each year by the health facilities, based on twice-yearly medical censuses conducted by patronage nurses through home visits in their catchment areas. This practice is straightforward in the rural areas but can be very challenging in urban neighbourhoods where settlements are in transition, people may not be found in their houses during the day and population movement is intense mainly because of employment reasons. In addition, people living in urban peripheral areas have less incentive to register themselves in the cities and may want to retain registration in their rural hometowns not to lose some benefits. These factors reduce the reliability of denominator particularly in cities.

Target populations identified by the health facilities are aggregated at the rayon and oblast levels to make up the denominator. Rayon and oblast health administrations have also the possibility of using alternative data sources such as statistical estimates and civil registry data to crosscheck figures, but there is no standard method defined for it.

Monthly and annual reporting is timely and complete in general. Usually facilities keep separate records for children not registered there (migrants, temporary visitors, Kyrgyz people living in neighbouring countries but using the health system here). However, there are different practices on how to include those vaccinations in the reports. Some health facilities and districts add those in monthly reports, which may cause above 100% coverage at the end of the year compared to the initial target population of that facility or rayon. Others do not include, which may cause underestimating the routine immunization coverage overall in the country.

Kyrgyzstan is one of the very few countries in the European Region which does not provide a home-based vaccination record (vaccination card) to the caregivers. The lack of a home-based record is a missed opportunity to educate the parents about the immunization calendar and to ensure better follow-up of subsequent vaccine doses from the caregiver side.

Currently the whole immunization information system is manual, and quite laborious particularly at the health facility level where staff has to enter the same data into several places. It appears that health staff cannot always ensure proper records during the working day due to their other duties, and frequently has to take logbooks to home in the evening to complete the records.

In addition, the current system does not allow easy data sharing between different health facilities, or tracing the previous vaccination history of migrants who are not registered, therefore may lead to duplicate vaccination.

An electronic immunization information system was piloted in Chuy oblast but discontinued due to lack of funding. RCI plans to roll it out using Gavi HSS funds, linking it with the electronic birth registry which is functional in the whole country since last year. In case the required hardware and software infrastructure can be provided, the electronic immunization system will greatly facilitate tracking defaulters and improving the quality of data, as well as strengthening data analysis capacity at every level.

Concerning data analysis, data is not analysed at the point of use to monitor programme performances and improve services. No immunization coverage chart was observed at the health facilities visited. Charts were only available at the rayon or oblast SSES. The arrangements depend on the oblast, but in some regions FAPs do not even identify the children in their catchment areas to be vaccinated in the following month. This responsibility is given to the upper level (the FMC) reviewing the target population of all associated FAPs every month and sending them lists of children to be vaccinated. This practice not only increases the workload of FMCs unnecessarily, but reduces FAPs ownership in their own catchment area and sometimes leads to missed children.

Data analysis function is the responsibility of rayon and oblast SSES where there are epidemiologists. Computers and printers are usually present at rayon and oblast SSES, but internet connection is not always provided. Technical capacity of rayon epidemiologists vary by seniority, experience and education. In some districts the epidemiologist was found not attended any periodic training or meeting in the last couple of years. SSES does not provide regular feedback to the health facilities about their performances.

Concerning data quality, the Mandatory Health Insurance Fund in Kyrgyzstan uses an immunization related indicator “Percentage of registered children receiving vaccination on time” as a basis for payments to FMC doctors. Currently the system is punitive, so the salaries of doctors are cut if they report an immunization coverage below the national target of 95%. Interviews and anecdotal information suggest that this system is discouraging health staff to report realistic figures. The Mandatory Health Insurance Fund is planning to move to a bonus system in conjunction with the Results-Based Financing (RBF) pilot project of the World Bank, to increase FMC staff payment and attract doctors in PHC. Another factor discouraging realistic reporting is administrative punitive actions taken against health staff reporting lower coverage. During the field visits, annual vaccination reporting forms indicating as high as 99.9% coverage rates and mismatching numbers between the antigens have been encountered. It is also understood that target populations identified at the beginning of the year are adjusted by end-year not only to accommodate changes identified by twice-yearly medical censuses, but also sometimes to ‘calibrate’ immunization coverage according to managerial performance expectations.

Main achievements

- Immunization coverage was fairly high for the past 5 years (administrative coverage > 95% except MMR, MICS > 90%)

- There was progress towards electronic immunization registries (e-birth registration being implemented, pilot implementation of e-immunization software)
- Registration of BCG and HepB birth doses in maternities on immunization cards improved follow-up by health facilities
- Reporting of immunization coverage is timely and complete

Main challenges

- The extent of the measles outbreak (2014-2015) and survey data (DHS 2012, MICS 2014) indicate a lower vaccination coverage
- Administrative expectations to meet the goals, and financial punishments sometimes lead staff to report unrealistic coverage rates
- There are questions about the accuracy of denominator obtained from medical census (population movements, unregistered persons)
- Immunization registries at the health facility level are too many, fragmented and manually recorded
- There is a lack of a standard practice for recording and reporting vaccination of migrants
- There is no child vaccination card in use for the families

Ways forward

- Encourage realistic reporting of target population and vaccination coverage, avoid punishment of staff for low coverage; Consider conducting periodic coverage surveys
- Develop a systematic method to use alternative data sources (civil registry, state statistical estimates) to verify the accuracy of denominator
- Simplify immunization registries at the health facility level
- Introduce a standard practice to report vaccination of migrants
- Introduce home-based vaccination records (child vaccination card/health booklet) based on vaccination form no.63 (vaccination form/booklet on child health)
- Establish electronic immunization registry linked with the birth registry integrated with e-health database

3.4. Demand generation and communication

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *Gavi joint appraisal report 2015*
- *Communication and advocacy plan for Introduction of PCV and IPV 2014*
- *Formative Research on Immunization 2013*

The NIP faces a number of serious challenges in terms of communication. There is lack of information on immunization among the health workers, particularly at the PHC level. There is also lack of information on immunization to public (both printed and web-based) which is a disadvantage in time of increasing mistrust to vaccines. This results in growing number of parents hesitation and/or refusal for immunization, fuelled by active involvement of religious leaders in anti-vaccination campaign. In addition there is lack of basic knowledge on immunization among the migrant population which results in drop outs or missed opportunities for timely vaccination.

As it was emphasized in previous chapters, recent measles outbreak, DHS 2012 and denominator data accuracy are challenging the vaccination coverage in Kyrgyzstan and raise the question of demand generation for vaccination and of communication allowing a full understanding of the programme by all people. There is in that regard a general agreement and concern on emerging vaccine resistance and/or refusal in the country. Despite the fact that the refusal numbers proportionally are not on large scale, there is growing public mistrust in vaccines, media coverage becoming more negative and some influential stakeholders being actively advocating against immunization. The experiences such as AEFI after pentavalent in 2011, combined with anti-vaccine groups, showed also that immunization programme and health system could be in fragile status to address risks or crisis communication impacting public confidence.

During the 2016 NIP review some critical points were observed. First, although there is a dedicated good national team in MOH (Health Education Department), there is no existing comprehensive communication plan for immunization in Kyrgyzstan. There is then no subsequent communication training and almost no support material available at the field level (e.g. brochures and flyers on immunization barely available). Health workers only receive regular training in the area of outbreak response or new vaccine introduction (PCV and IPV), but the staff did not receive any comprehensive immunization or communication training since 2009 pentavalent vaccine introduction. As previously mentioned IIP and MLM training courses are necessary, especially for new recruits, including an advocacy and communication component, with risk communication.

Then on access to media and social network, with high levels of education and widespread Internet access (especially in urban areas), parents are actively searching for information on vaccines, particularly over the Internet. As there are very few or no Kyrgyz websites concerning immunization, the main source of information seems to be Russian anti-vaccine websites.

On another end, there are religious groups becoming increasingly influential that contribute to resistance/refusal of vaccines. The immunization programme has repeatedly tried to liaise with these leaders, but with limited success as the programme was not fully equipped to manage such anti-vaccine groups. During measles campaign, local authorities, immunization programme and MoH actively supported with communication, and helped reduction of number of families refusing immunization. However this support has been halted since the end of the campaign.

Another critical challenge as already highlighted is the migrant groups who are not informed, not registered and not reached by the established health system. Their immunization status is often unknown as is their attitudes or knowledge towards immunization. There is a study planned about these groups and additional communication activities targeting these groups are planned under the Gavi HSS support.

In 2013, UNICEF conducted formative research providing insight into attitudes, decision-making, information flows and reasons behind refusal. With the assistance of UNICEF, a strategy has also been developed, identifying activities to address hesitancy and resistance. Based on this, a documentary and a TV spot have been developed which were launched following the measles outbreak. However this was a time-limited and specific intervention, which now needs to be widening to a more comprehensive communication strategy and plan.

Main achievements

- There is a dedicated good national team in MoH (Health Education Department)
- Vaccine resistance/refusal issues are acknowledged at all levels and efforts to address them were undertaken
- A communication review has been conducted and some quantitative research done
- Communication actions and training for new vaccine introduction and during measles outbreak response have been implemented

Main challenges

- No comprehensive communication plan for immunization yet exists, including crisis communication
- There is a growing trend of vaccine resistance/refusal and a lack of understanding exactly on the extend and the reasons for the problem
- There is a lack of capacity building on communication skills for health workers
- There are not enough communication materials at the facilities on immunization, targeting health workers and parents, as well as vulnerable groups such as migrants

Ways forward

- Conduct monitoring and behaviours studies (e.g. household, phone)
- Draft a comprehensive communication and social mobilization strategy and plan for all stakeholders, including all components (e.g. capacity building, material development)
- Include specific strategies into the communication plan to address resistance/refusal, anti-immunization groups, but also hard to reach population (e.g. migrants); Widen initiatives sharing to Central Asia countries that have similar experiences
- Invest in the field of new technologies (e.g. social network, blog) and develop plans to engage with media at national and sub-national levels

3.5. Programme management

3.5.1. Leadership, governance and programme management

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *Gavi joint appraisal report 2015*
- *Den Sooluk health reform 2012-2016*
- *Den Sooluk joint review summary notes 2015*
- *Gavi HSS application 2014*

Health system perspective, leadership and governance

The National Health Reform Programme (NHP) called Den Sooluk, covering the 2012-2016 period, refers to immunization coverage as one of the key objectives for child health sub-programme, under MCH programme. The specific objective is to ensure that 95% of children under 2 years of age receive vaccinations that are part of the country's national routine immunization schedule. Despite the success of health reforms in Kyrgyzstan, there have been some systemic problems with management, coordination and implementation mechanisms that

cause concerns and significant delays in implementation. There is a need to increase national ownership and leadership as there has been less engagement by the Government and Parliament to Den Sooluk implementation, including immunization (except during measles outbreak). There has been a lack of commitment to match domestic resources to the investments of donors (including regular availability of national health accounts) and difficulties to engage non-traditional development partners such as Global Fund and Gavi. There is a need to assess the public sector capacity to manage and implement complex reforms, and relevant decision making processes; need to have critical look to information systems and statistical data; address the weak inter linkages of Den Sooluk activities plan, procurement plan and indicators monitoring across departments of MoH and relevant government agencies.

Programme planning

The current “National Programme Immunoprophylaxis” for 2013-2017 was approved by the Resolution of the Kyrgyz Government and is synchronized with Den Sooluk. Immunization issues are reflected in two components of the programme "Mother and Child Health Protection" (MCH) and "Public Health". The “National Programme Immunoprophylaxis” for 2013-2017, as it was written, is mainly a series of strategies, and do not list precisely priorities and activities.

The latest comprehensive Multi Year Plan (cMYP) dated 2012-2016 was neither aligned with that national programme nor used as a core planning document, expect for Partners support. A major issue will be now to synchronise the new cMYP 2017-2021 with the “National Programme Immunoprophylaxis” approved by Government Resolution. The best would be to have a single document and to use the new cMYP starting 2017 as the basis for a new Government Resolution.

Programme management

The national immunization programme (NIP) structure and management have been described in details in section 1. Following is the analysis made during the 2016 NIP review.

Although RCI has been functioning for many years to provide oversight for the national immunization programme, there are insufficient interactions between the Public Health Unit (PHU), the Department of Organization of Health Care & Drugs Policy (DOHCDP) and the RCI. It is mainly noticeable in the area of policies and strategies development for immunization, where the MoH stakeholders always should play an important role which is not the case in Kyrgyzstan. As the immunization programme becomes more complex, reconsidering the role and responsibilities of RCI, PHU and DOHCDP will be an important task.

Concerning the management of the programme itself, the RCI has experienced and dedicated staff with 6 physicians (including RCI Director), 2 assistant epidemiologists and support staff. Although the overall team functions well, it will be important that more delegation be given to senior staff, foreseeing the future increase of the programme and possible retirement for some staff. Restructuring and/or reinforcing RCI management to ensure technical leadership back up and delegation of functions will definitely enhance the management of RCI.

Advisory bodies and committees

The Inter-agency Coordination Committee (ICC) was revised in 2016, as until that time it was not effectively functioning. Based on the recommendations of the Financial Management

Assessment (FMA), Gavi initiated in September 2015 a technical assistance aimed at optimization and capacity strengthening of the ICC for the purpose of increasing the role and involvement of the committee in oversight of the programmematic and financial management aspects of the HSS programme implementation.

From now on, it will be important to see if the ICC better functions and fulfil its real functions. Monitoring them should be done on a regular basis. It is also important to remind that in the medium term, the ICC should act as a coordination body for development and implementation of immunization policy more broadly rather than just to focus on coordination of Gavi grants.

Sub-national level planning and management

As per health structure, the management of the immunization programme at the field level is in the hands of the health facilities, which respectively is under the Department of Organization of Health Care & Drugs Policy (DOHCDP). This is another reason why DOHCDP should be more involved in the national immunization programme.

Then planning immunization activities at local level (oblast, rayon) was recognized during the 2016 NIP review as an issue to be improved, as the national plan is not so widely shared. It was also mentioned that operational plans for immunization are not fully aligned between the different levels of the immunization programme.

Main achievements

- The National Health Reform Programme, Den Sooluk 3rd period, refers to immunization coverage as one of the key objectives for MCH programme
- The importance of immunization is somehow recognized and the country adopted the regional goals and objectives (EVAP)
- Legislative, guidelines and planning documents exist and several of them are currently being renewed/updated
- The Inter-agency Coordination Committee (ICC) was revised in 2016
- There is a good collaboration between the Government and the Development Partners

Main challenges

- Weak management at the Governmental level to implement SWAp, RBF, Gavi HSS leads to difficulty for alignment, harmonization and implementation of public health initiatives
- The “National Programme Immunoprophylaxis” 2013-2017 is currently not a full planning document and is not aligned with the cMYP; Immunization planning and budgeting process is also not aligned with country’s financial planning process
- There are insufficient involvement and interactions between Public Health Unit (PHU), Department of Organization of Health Care & Drugs Policy (DOHCDP) and RCI, in the area of policies and strategies development for immunization; The management of RCI also does not use enough delegation among its senior staff
- Although revised in 2016, the ICC still faces the challenge to be fully functional (due to its size and structure)

- There is a lack of sharing and alignment of operational planning with the sub-national levels; There is also a lack of involvement from local health authorities into supporting the immunization programme

Ways forward

- Ensure the national immunization programme continues to be a high priority programme; Advocate the Parliament and Government for strengthening its management and implementation
- Ensure the "National Programme Immunoprophylaxis" and the cMYP are fully aligned, and if possible become a single planning document approved by Government Resolution; Build capacity for utilization of that planning document for better decision making, planning, and management of the immunization programme
- Ensure PHU and DOHCDP play a stronger role in immunization policies and strategies, and ensure interactions with RCI are reinforced; Consider strengthen/revise/restructure the organization and management of NIP within the frame of MoH Departments and RCI; Redefine as necessary roles and responsibilities of the different stakeholders at all levels
- Ensure the ICC is fully functional and that all stakeholders are regularly meeting and actively participating
- Advocate local health authorities to provide more political and financial support to the immunization programme; Align operational planning at all levels, involving local heath authorities into active planning

3.5.2. Human resource management

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *Gavi joint appraisal report 2015*
- *Den Sooluk health reform 2012-2016*
- *Den Sooluk joint review summary notes 2015*
- *Health systems in transition 2011*

Health work force is a major issue at all levels in Kyrgyzstan. Shortage of qualified health staff, high turnover, aging work force, low motivation, mainly due to low salaries and no incentives, all of that put the immunization programme (as well as other public health programmes) at risk. It is particularly acute for Primary Health Care (PHC). Many epidemiologist posts are also vacant. There was an initiative in the recent years, through a governmental decision, to retain health staff for 2-3 years in their position, but it has yet to be implemented (for new graduates promotions). Other initiatives, such as incentives provided to health staff depending on their performance under the Results-Based Financing (RBF) supported by the World Bank, is currently being piloted at PHC level.

Concerning the skills and knowledge of family doctors and specialists in immunization, it was mentioned to be of sub-standard. In addition, there is a lack of the training opportunities at the local level to increase knowledge of health workers about immunization. Capacity building for health staff on immunization has been mainly implemented in the recent years through training sessions related to new vaccines introduction. All these challenges cause multiple concerns and are related to some problems like for example the wide range of false contraindications given to

the patients. There were also observations during the 2016 NIP review that essential courses like Immunization in Practice (IIP) and Mid Level Management (MLM) need to be conducted, as health workers knowledge and skills on immunization are not always updated/upgraded.

Main achievements

- Most health staff are dedicated to their work despite being overloaded and with limited salary, and are willing to learn more and improve their work

Main challenges

- Health work force is a major issue at all levels, with shortage of qualified health staff, high turnover, aging work force, low motivation, mainly due to low salaries and no incentives
- Skills and knowledge of family doctors and specialists, regarding immunization, are of sub-standard

Ways forward

- High level advocacy and other systemic changes should be implemented to attract and retain health staff in PHC where needed
- Initiatives, such as incentives provided to health staff under the Results-Based Financing (RBF) should be finalized and implemented to attract and retain health staff
- Implement refresher training courses on a regular basis, like Immunization in Practice (IIP) and Mid Level Management (MLM)
- Include up-to-date immunization/VPD topics/modules into curriculum of pre- and post-graduate education

3.5.3. Programme costing and financing

The below situation analysis is based on the following documents:

- *NIP review report 2016*
- *Gavi joint appraisal report 2015*
- *RCI financial data 2016*

This chapter will be completed with costing and financial data in section 6. A short summary however is given below, reflected in the situation analysis made during the 2016 NIP review.

Over the time, the Government funding for immunization has been steadily increasing as shown in the total Government share in the below table. However the co-financing have not been increasing during the last 5 years (around 10%), and the total Government share only increased of 9% for routine vaccines between 2011 and 2014 (2015 should be excluded due to MR campaign).

Also existing asynchrony between the NIP budget and Health Sector budget planning processes and insufficient linkages between these two processes result in underfunding of recurrent costs of the programme and full donor reliance on financing operational costs of the programme and other ad-hoc requests.

Year	Gavi grant for new vaccines	Co-financing Government (Gvt)	Co-financing Government share	Gvt budget for other vaccines	Currency change	Gvt budget for other vaccines	Total budget for all vaccines	Government share
	USD	*USD*	*%*	*Som (million)*	*For 1 USD*	*USD*	*USD*	*%*
2010	1,130,500	122,000	11%	23.7	44.22	535,957	1,788,457	37%
2011	1,188,000	127,000	11%	34.8	47.48	732,940	2,047,940	42%
2012	1,301,000	169,000	13%	35.6	46.80	760,684	2,230,684	42%
2013	890,000	89,500	10%	35.6	47.60	747,899	1,727,399	48%
2014	893,000	91,500	10%	43.0	50.60	849,802	1,834,302	51%
2015 *	886,000	93,500	11%	91.6	59.89	1,529,471	2,508,971	65%
2016 **				75.0 ***				

Source: RCI ** including MR vaccines for the campaign (44 million)*

*** year of introduction of PCV and bOPV* **** up to July 2016, 32 million Soms*

Financial sustainability

Immunization programmes can improve the health of children only when the programmes have adequate and reliable funding, combined with efficient procurement and use of resources. Secure financing for the long term helps to make possible continuity in services and continuous increases in coverage, quality and access to both traditional and new vaccines. Thus, understanding programme's current financial status and future needs, and identifying and implementing a financing strategy that allows the programme to achieve its goals, are fundamental tasks in the planning and management of all immunization (and other health) programmes. Currently, there are several issues in the financial management of the programme in Kyrgyzstan:

- Weak forecasting of needs (vaccine and other operational costs) for short, medium and long term planning;
- Lack of capacity to use existing tools such as cMYP for overall management of the programme;
- Lack of financial planning and management with focus on sustainability which requires wider health sector collaboration to achieve self sufficiency for the immunization programme;
- Inconsistent financial reporting and lack of quality financial data that can be used for decision-making and management.

Main achievements

- Vaccines are integral part of the MoH national budget as a line item
- There was a steady increase of Government funding for vaccines

Main challenges

- Distribution of funds by MoH under the SWAp mainly focuses to curative services which are directed to primary care facilities, thus hindering the preventive service provision

- The national immunization programme still much depends on funding from Partners (80% to 85%) particularly for operational costs (e.g. capacity building) and cold chain equipment
- The immunization planning and budgeting process is not aligned with the country's financial planning process; Forecasting and budget management are weak
- Gavi HSS implementation has been significantly delayed (HSS finalized in 2014)

Ways forward

- High level advocacy is required for the Government to increase the overall immunization budget in the coming years, especially in view of Rotavirus and HPV vaccines introduction
- Ensure future immunization budget covers recurrent/operational and capital costs such as training, supervision and cold chain equipment, in line with the multi-year plan
- Implement capacity building in forecasting, budgeting and planning and synchronize the health budget and immunization budget processes; Partners should engage for technical assistance on immunization financing including fiscal space analysis, management of immunization budget towards building capacity for financial sustainability
- Resolve bureaucratic issues in order to implementing Gavi HSS grant as soon as possible

Note: As of December 2016, an agreement has been found between the Government, WHO and UNICEF for the implementation of Gavi HSS grant.

4. Immunization programme objectives, strategies and key activities

The Global Vaccine Action Plan (GVAP) highlights 6 strategic objectives, which will enable the achievement of the goals for the Decade of Vaccines (2011-2020). The GVAP also identifies key indicators, which can be used at the national level to monitor progress towards meeting these global objectives. The 6 strategic objectives are the followings:

1. All countries commit to immunization as a priority
2. Individuals and communities understand the value of vaccines and demand immunization as both their right and responsibility
3. The benefits of immunization are equitably extended to all people
4. Strong immunization systems are an integral part of a well-functioning health system
5. Immunization programmes have sustainable access to predictable funding, quality supply and innovative technologies
6. Country, regional and global research development innovations maximize the benefits of immunization

In September 2014, the Member States of the WHO European Region unanimously adopted the European Vaccine Action Plan 2015-2020 (EVAP). The EVAP is a regional interpretation of the Global Vaccine Action Plan developed to address the specific needs and challenges related to immunization in the WHO European Region. Aligned with Health 2020 and other key regional health strategies and polices, EVAP was endorsed by the European Technical Advisory Group of Experts (ETAGE) on Immunization before submission to the 64th session of the Regional Committee for Europe in September 2014.

EVAP's aim is to guide Member States in the European Region towards their joint vision of a Region free of vaccine-preventable diseases. It establishes 6 goals and outlines a path to achieve them through 5 defined objectives, priority action areas, proposed actions and an evaluation and monitoring framework.

EVAP goals	EVAP objectives
1. Sustain polio-free status	• All countries commit to immunization as a priority
2. Eliminate measles and rubella	• Individuals understand the value of immunization services and vaccines and demand vaccination
3. Control hepatitis B infection	• The benefits of vaccination are equitably extended to all people through tailored, innovative strategies
4. Meet regional vaccination coverage targets at all administrative levels throughout the Region	• Strong immunization systems are an integral part of a well-functioning health system
5. Make evidence-based decisions about introduction of new vaccines	• Immunization programmes have sustainable access to predictable funding and high-quality supply
6. Achieve financial sustainability of national immunization programmes	

Objectives, strategies and key activities for Kyrgyzstan cMYP 2017-2021

It was decided to align the objectives and the strategies of the Kyrgyzstan cMYP 2017-2021 to the 5 defined objectives of EVAP and its subsequent priority action areas, formulated as strategies. That decision was made in order to "synchronise" the Country multi-year plan with the European multi-year plan, allowing a better tracking and monitoring of Country and Regional achievements. It obviously changed the way the Plan of Action (following pages) is organized. In the previous cMYP, it followed the classical scheme of the list of immunization components (often 10 of them), when now it follows the 5 defined objectives of EVAP.

The key activities listed in this new Plan of Action are based on the situation analysis of the section 3 and on all "ways forward" identified. As a reminder, this situation analysis was based on all Kyrgyz documents reviewed, but mainly on the outcomes of the 2016 NIP review, on the outcomes of the 2015 Gavi joint appraisal and on the Gavi HSS list of activities identified.

The following Plan of Action will therefore list objectives, strategies and key activities, but also the origin(s) of funding, the organization(s) in charge and the implementation timetable.

As it was previously mentioned, this Plan of Action could be the basis for the next "National Programme Immunoprophylaxis" approved by Government Resolution, and therefore avoid having two different planning documents for the next five years.

Objectives (EVAP aligned)	Strategies (EVAP aligned)	Key Activities	*Funding*	*In-Charge*	Implementation Year				
					2017	*2018*	*2019*	*2020*	*2021*
1. Kyrgyz Government commits to immunization as a priority Governance & Management	1.1 Enhance governance and management of the national immunization programme (NIP) within MoH Departments and RCI	Study the feasibility to strengthen/revise/restructure the organization and management of NIP within the frame of MoH Departments and RCI; Redefine as necessary roles and responsibilities of different stakeholders at all levels		MoH ICC	√				
		Revise and strengthen legislative basis for immunization to enhance financial and programmematic sustainability of NIP; Establish a monitoring and evaluation mechanism to assess that sustainability		RCI DPH	√	√	√	√	√
		Revise and strengthen existing coordination and collaboration mechanisms (e.g. ICC) between immunization stakeholders to enhance performance of NIP; Combine Republican Immunization Committee and ICC together		MoH Partners	√		√		√
		Use immunization coverage as one of the key performance indicators for the national functionality of the overall health system (i.e. Swap indicator)		MoH Partners	√				
	1.2 Inform and engage opinion leaders and stakeholders with regard to the value of immunization to enhance commitment	Establish and support mechanisms to engage opinion leaders and stakeholders to build a strong alliance for the promotion of immunization at all levels (e.g. committee on social issue, education, science, culture, health care in Parliament)		MoH	√	√			
		Advocate for inclusion of immunization in the agendas, plans and policies of the Government, civil society and non-governmental organization		MoH	√	√	√	√	√
		Train immunization programme core staff and provide tools to build alliances, advocate for immunization and facilitate exchange of information	TBD	RCI DPH		√	√		
	1.3 Strengthen the national immunization technical advisory mechanism to formulate and implement evidence-based policies	Assess the performance and impact of NITAGs against indicators set by WHO; If necessary revise and strengthen the roles and responsibilities of NITAG		MoH Partners		√			
		Develop and disseminate audience-targeted evidences on the value and benefits of immunization (public health value, averting diseases and deaths, eliminating and eradicating diseases, minimizing risks, social and economic costs)		NITAG MoH	√	√	√	√	√
		Establish, or strengthen existing, links with equivalent regional (European Technical Advisory Group of Experts) and global (Strategic Advisory Group of Experts) advisory bodies		NITAG MoH		√	√		

Objectives (EVAP aligned)	Strategies (EVAP aligned)	Key Activities	*Funding*	*In-Charge*	Implementation Year				
					2017	*2018*	*2019*	*2020*	*2021*
2. All individuals understand the value of immunization services and vaccines and demand vaccination **Advocacy & Communication**	2.1 Ensure that individuals receive information about the risks of vaccine-preventable diseases and the benefits of vaccination, and that trust in vaccines and immunization services is enhanced	Conduct Knowledge, Attitude, Practice (KAP) survey on immunization to have a baseline for the communication interventions and end line at the end of the cycle	HSS	UNICEF MoH	√				√
		Develop a communication and social mobilization strategy and plan to increase trust and demand for vaccination	HSS	UNICEF MoH	√				
		Implement the communication and social mobilization strategy and plan to increase trust and demand for vaccination	HSS	UNICEF MoH		√	√	√	√
		Adapt existing WHO modules such as "Communication for Immunization Programmes" and UNICEF guidelines and materials	HSS	UNICEF MoH	√				
		Train 18 trainers (2 for each oblast and Bishkek and Osh) for PHC physicians, nurses and feldshers on communication with patients and care takers	HSS	UNICEF MoH		√	√		
		Support training at oblast level PHC and hospital level staff (1 from each FGP and 2 from each territorial and oblast level hospitals)	HSS	UNICEF MoH		√	√		
	2.2 Engage new partners, advocates, champions and ambassadors to convey messages and maintain a positive media environment *Note: Strategy 2.2 interlinked with 2.1 (communication plan)*	Map and recruit new voices and agents of change, including educators, religious leaders, traditional and social media personalities, family physicians, community health workers, health mediators and trained immunization champions		RCI DPH DHCDP	√	√			
		Cultivate relationships with media, encouraging balanced immunization reporting and immunization training of national and subnational media, ultimately increasing the share of voice in the media for the benefits of vaccines		RCI DPH DHCDP		√	√	√	√
		Engage, enable and support in-country professional associations and societies, academic institutions and civil society organizations, to advocate the value of vaccines to communities, policy-makers and the media		RCI DPH DHCDP		√	√	√	√
	2.3 Build risk communication capacity of national and local health authorities	Ensure that research-practice mechanisms are in place to assure evidence-informed communication and messaging		MoH Partners	√	√			
		Develop Standard Operating Procedures (SOPs) for risk/crisis communication (linked to AEFI activities)		MoH Partners		√	√		
		Provide training to Governmental and other relevant partners on risk/crisis communication	TBD	MoH Partners			√	√	

Objectives (EVAP aligned)	Strategies (EVAP aligned)	Key Activities	Funding	In-Charge	Implementation Year				
					2017	2018	2019	2020	2021
3. The benefits of vaccination are equitably extended to all people through tailored, innovative strategies Access & Equity	3.1 Identify underserved populations and the causes of inequities on a regular basis	Make use of NIP coverage and epidemiology data and other information sources to continue identifying/following up underserved populations (e.g. migrants); Utilize operational research and social sciences to identify underlying causes of inequities		RCI DPH DHCDP	√	√			
		Establish where necessary working group on immunization (immunologist, epidemiologist, pediatric, health worker, village committee, religious leader) to identify problems and develop local plan to eliminate those problems		RCI DPH DHCDP	√	√	√	√	√
		Identify if there is any legal or administrative barriers to accessing immunization services by underserved populations (social and vulnerable people)		MoH	√	√			
	3.2 Design and implement tailored, innovative strategies to address underserved populations and causes of inequities	Continue further development and implement tailored approaches that address underserved populations and underlying causes of inequities (e.g. mobile team, campaign, European Immunization Week, "Reaching Every District" strategy)		RCI DPH Partners	√	√	√	√	√
		Involve local authorities, civil organizations and representatives of underserved populations for developing and delivering tailored approaches		RCI DPH DHCDP	√	√	√	√	√
		Provide resources for the RBF (performance based system) for selected facilities in hard-to-reach areas and areas of settlements of internal migrants around Bishkek and Osh	HSS	WHO MoH	√	√	√	√	√
		Support with operating costs to mobile teams for selected hard-to-reach areas and areas of settlements of internal migrants around Bishkek and Osh	HSS	WHO MoH	√	√	√	√	√
		Implement polio and measles-rubella catch-up immunization activities for unimmunized and/or not completely immunized children	TBD	MoH Partners		√		√	
	3.3 Create a system and capacity to ensure equitable delivery	Track each individual's immunization status, through the introduced electronic immunization registries		RCI DHCDP	√	√	√	√	√
		Supervise implementation and monitor performance of tailored approaches in reaching underserved groups and reducing inequities		RCI DHCDP	√	√	√	√	√
		Document and disseminate best practices in reaching underserved populations and addressing causes of inequities		RCI DHCDP			√	√	√

Objectives (EVAP aligned)	Strategies (EVAP aligned)	Key Activities	Funding	In-Charge	Implementation Year				
					2017	2018	2019	2020	2021
4. A strong immunization system is an integral part of a well-functioning health system **Immunization systems & Data management**	4.1 Develop comprehensive, coordinated approaches within the national immunization programme and the health system	Ensure that the national immunization programme components (such as vaccine procurement, regulation, pharmacovigilance, laboratory-based VPD surveillance, information systems) are well integrated with the broader health system components		MoH Partners	√	√			
		Ensure that new vaccines (rotavirus, human papilloma virus vaccine) introduction are accompanied by comprehensive plans to control targeted diseases and epi surveillance		MoH WHO	√	√	√		
		Ensure coherence and alignment with broader health policies (child and adolescent health, public health and health systems policies)		MoH Partners	√	√	√		
		Develop and/or revise plans and standard operating procedures for timely and effective response to VPD outbreaks and crisis		RCI WHO		√			√
	4.2 Strengthen monitoring and surveillance systems	Improve the quality of immunization data and promote its analysis and use on a regular basis at all administrative levels (health facility, subnational and national levels); Consider CDC course on epidemiology analysis for health staff		RCI DPH DHCDP	√	√	√	√	√
		Purchase of computers to be used for Immunization Services Registry to be placed with vaccination nurse/immunologist in FMCs, independent FGPs, oblast, rayon SSES & RCI	HSS	WHO MoH	√	√			
		Support to PHC facilities to ensure they have internet connection during the initial scale-up with gradual phase-out	HSS	WHO MoH		√	√		
		Establish electronic immunization registry linked with the birth registry integrated with e-health database; Training of 280 health workers (1 vaccination nurse/immunologist and a back-up from each FMC and independent FGP, plus 1 staff of the rayon SSES)	HSS	WHO MoH		√	√	√	
		Introduce home-based vaccination certificate (child vaccination card/health booklet) based on vaccination form no.63	Swap	RCI DPH DHCDP		√	√		
		Analyse the current method to verify the accuracy of coverage (denominator issue) using alternative data sources (civil registry, state statistical estimates)		RCI DPH	√	√			
		Conduct nationwide immunization coverage survey, considering studying specific groups like migrants	HSS	WHO MoH	√				
		Strengthen AFP surveillance by implementing seminar and/or simulation training with specialists; by enhancing active surveillance, at least twice a year in large health facilities; by implementing environmental surveillance with supplying reagent	TBD	RCI Partners	√	√	√	√	√

Objectives (EVAP aligned)	Strategies (EVAP aligned)	Key Activities	*Funding*	*In-Charge*	Implementation Year				
					2017	*2018*	*2019*	*2020*	*2021*
4. A strong immunization system is an integral part of a well-functioning health system *(continued)* **Immunization systems & Data management**		Strengthen measles and rubella epidemiological and laboratory-based surveillance by implementing training for public heath and health facility specialists; by supplying reagent	TBD	RCI Partners	√	√	√	√	√
		Ensure the annual accreditation of the polio and MR laboratories		WHO SSES	√	√	√	√	√
		Issue annual documentations for NRPCC (polio) and NRMREC (measles rubella)		RCI WHO	√	√	√	√	√
		Pilot sero-surveillance in selected regions (Bishkek city and Chui oblast)	TBD	RCI Partners		√			
		Conduct a national workshop to discuss data obtained during measles outbreak, lessons learnt and strategies to prevent any future VPD outbreak and strengthen measles surveillance to elimination standards	TBD	MoH Partners	√				
		Revise standard case definitions of AEFI and reporting protocols; Revise guidelines for diagnosis and treatment of AEFI; Print new guidelines on diagnosis, treatment and reporting protocols of AEFI – Consider AEFI surveillance review (system sensitivity)	HSS	WHO MoH	√	√	√		
	4.3 Strengthen the capacity of managers and front-line workers.	Ensure that immunization programme have adequate human resources to plan and deliver high-quality services (impact of incentive mechanism, e.g. RBF); Conduct separate evaluation on impact of RBF on immunization		MoH WHO	√	√	√	√	√
		Increase levels of pre-service and in-service training for human resources, and develop new, relevant curricula that approach immunization as a component of comprehensive disease control		MoH	√	√	√	√	√
		Oblast level training of 840 physicians, nurses and feldshers (1 from each FGP and 2 from each territorial and oblast level hospitals) on “Immunization in Practice”, focusing on new vaccines and AEFI surveillance	HSS	WHO RCI		√	√	√	
		Train rayon level managers of SSES on supply chain management, including safe transportation	HSS	WHO SSES		√	√	√	
		Support of operational costs for conducting epidemiologic supervision visits for assessing the compliance with immunization safety and AEFI standards and effective vaccine management requirements	HSS	WHO RCI SSES	√	√	√	√	√

Objectives (EVAP aligned)	Strategies (EVAP aligned)	Key Activities	*Funding*	*In-Charge*	Implementation Year				
					2017	*2018*	*2019*	*2020*	*2021*
4. A strong immunization system is an integral part of a well-functioning health system *(continued)* **Immunization systems & Data management**		Utilize new learning techniques to intensify capacity building efforts, and promote and support learning at all levels (such as e-learning, mentoring, networking)		MoH Partners	√	√	√	√	√
		Support of operational costs for conducting integrated supervisory visits for basic MCH services, including vaccine-preventable diseases and IMCI in accordance with existing guidelines for supportive supervision	HSS	WHO MoH	√	√	√	√	√
		Explore possibility for language course (English) for RCI staff in order to better access to international immunization and epidemiology materials	TBD	MoH Partners	√	√	√	√	√
	4.4 Strengthen infrastructure and logistics	Support the implementation of EVM improvement plan Ensure SOPs are fully implemented at all levels	HSS	MoH	√	√	√		
		Procurement and purchase of walk-in cold rooms, specialized refrigerators and voltage stabilizers; of refrigerated vehicles; of equipment to transport vaccines; of temperature monitoring equipment	HSS	MoH	√	√	√	√	√
		Procurement and purchase of equipment under the CCEOP	CCEOP	MoH Partners	√	√	√	√	√
		Ensure health facilities are prepared to receive all materials (refer to WHO 2002 guidelines on establishing norms and standards for cold stores) Conduct full supervision checking that all above equipment are installed as per SOPs (hire some staff if necessary)		RCI SSES DHCDP	√	√	√	√	√
		Support for repairing/refurbishment and maintenance of oblast/rayon level vaccine stores (e.g. to ensure protection from freezing temperatures)	HSS	MoH	√	√	√	√	√
		Support of maintenance and repairing costs of cold rooms and refrigerators for vaccines at oblast/rayon/service provision level	HSS	MoH	√	√	√	√	√
		Update regularly the cold chain inventory		RCI DHCDP	√		√		√
		Conduct a new EVM assessment	TBD	RCI WHO			√	√	
		Assess the immunization waste management system (involve different stakeholders)		MoH Partners			√		

Objectives (EVAP aligned)	Strategies (EVAP aligned)	Key Activities	*Funding*	*In-Charge*	Implementation Year				
					2017	*2018*	*2019*	*2020*	*2021*
5. Immunization programme have sustainable access to predictable funding and high-quality supply Financing & Regulation	5.1 Allocate adequate financial resources to national immunization programme to achieve their objectives in the context of achievement of financial self-sufficiency	Advocate for benefits of immunization to sustain financial commitment to immunization to sustain and take forward immunization achievements (in alignment with Objective 1)		MoH ICC	√	√	√	√	√
		Establish commitment from the Government to allocate adequate financial resources to immunization as required, to meet programme objectives, increase the co-financing, and introduce new vaccines		MoH ICC	√	√	√	√	√
		Progressively allocate adequate funding for operational activities to improve the quality of immunization services, such as training, supervision, monitoring, surveillance, advocacy and communication		MoH ICC		√	√	√	√
		Increase reliability of funds through earmarking and ensuring timely disbursement of funds; Establish 25% funds reserve for procuring vaccines		MoH		√	√	√	√
		Issue a complete immunization budget document covering all costs of immunization, as specified in national planning documents		MoH	√	√	√	√	√
		Conduct nationwide representative customized health utilization and expenditure survey (HUES)	HSS	WHO MoH		√	√		
	5.2 Increase access to quality-assured vaccines at affordable prices	Continue procuring childhood vaccines through UNICEF Supply Division		MoH UNICEF	√	√	√	√	√
		Start to build capacity for independent vaccine procurement		MoH WHO			√	√	√
	5.3 Strengthen regulatory mechanisms to ensure access to and use of quality-assured vaccines in national immunization programme	Conduct an assessment of national regulatory authorities (against established international standards for required functions) and formulate institutional development plans that address challenges		WHO			√		
		Implement institutional development plan activities and recommendations to strengthen national regulatory authority functions, including AEFI surveillance		MoH Partners			√	√	√
		Initiate link to other international regulators to share best practices and to improve quality assurance capacities		WHO MoH			√	√	

5. Monitoring and evaluation framework (indicators and targets)

In order not to overburden Kyrgyzstan with new indicators and targets, already existing indicators will be considered for the monitoring and evaluation framework of the cMYP 2017-2021. The Joint Reporting Form (JRF) already highlights the core data which are reported to the Regional and Global levels. Then the Gavi HSS five years grant provides a comprehensive set of indicators and targets, reflecting also data existing in the JRF. Finally the EVAP has a regional set of indicators and targets that Member States need to report upon.

Therefore it will be judicious to base this cMYP monitoring and evaluation framework on the HSS identified indicators and targets, complemented by the EVAP indicators and targets. That will be reflected in the following table providing indicators, source of data, baseline value and target values.

For information, in the resolution WHA65.17, the World Health Assembly urged Member States to report every year to the regional offices on lessons learnt, progress made, remaining challenges and updated actions to reach the national immunization targets and requested the WHO Secretariat to monitor progress and report annually to the Health Assembly on progress towards achievement of global immunization targets, using their own regional monitoring and evaluation framework.

HSS/EVAP Objective	Indicators *	Source of data	Baseline value	Target values (by years)				
				2017	*2018*	*2019*	*2020*	*2021*
HSS impact indicators								
1	Under five mortality rate	MOH	23.0 (2014)	20.3	19.5	19.0	18.5	18.0
2	Proportion (%) of deaths among children under 5 years due to infectious disease	MOH	4.1 (2014)	3.8	3.6	3.4	3.2	3.0
3	Morbidity with VPD among children under 5 years	MOH	31.5 (2012)	30.2	29.6	29	28.4	27.8
HSS immunization outcome indicators								
1.4	DTP3 coverage -% of surviving infants receiving 3 doses of the diphtheria-tetanus-pertussis containing vaccine	RCI admin data	96.6 ** (2015)	96,6	96,6	96,7	96,7	96,8
1	MCV1 coverage -% of surviving infants receiving 1st dose of measles containing vaccine	RCI admin data	99.0 ** (2015)	97.5	98.1	98.2	98.3	98.4
2	Geographic equity of DTP 3 coverage - % of facilities with DTP3 coverage above 90% by district/region	RCI admin data	n/a (2015)	80	85	90	95	98
3; 4; 5	Drop out rate - percentage point difference between DTP1 and DTP3 coverage	RCI admin data	4.6 ** (2012)	4	3	2	2	2
3	Proportion of children fully immunized -% of children aged 12-23 months who receive all basic vaccinations in a country's routine immunization programme	DHS survey	69.6 (2012)	-	-	-	-	80
2; 3	DTP3 coverage (rural) -% of surviving infants receiving 3 doses of the diphtheria-tetanus-pertussis containing vaccine	DHS survey	82.9 (2012)	-	-	-	-	90
2; 3	DTP3 coverage (Bishkek) -% of surviving infants receiving 3 doses of the diphtheria-tetanus-pertussis containing vaccine	RCI admin data	93.7 ** (2014)	> 95	> 95	> 95	> 95	> 95
2; 3	Drop-out rate (rural) - percentage point drop out between DTP1 and DTP3 coverage	DHS survey	15.1 (2012)	-	-	-	-	4
2; 3	Fully Immunized Children (rural) -% of children aged 12-23 months living in rural areas who receive all basic vaccinations	DHS survey	71.4 (2012)	-	-	-	-	82

HSS/EVAP Objective	Indicators *	Source of data	Baseline value	Target values (by years)				
				2017	*2018*	*2019*	*2020*	*2021*
HSS output/intermediate results indicators								
1	% of medical staff that acquired immunization skills after the training	KSMI	0 (2015)	90	90	-	-	-
1	% of health facilities (by PHC and hospitals) whose medical staff was trained on communication with patients and their care takers	KSMI	0 (2015)	50	> 95	-	-	-
1	% of caregivers/parents that demonstrate readiness for immunization	KAP Survey PHD	0 (2015)	-	80	-	95	-
1	% of caregivers/parents that demonstrate readiness for selected MCH services	KAP Survey PHD	0 (2015)	-	75	-	90	-
2	DTP3 coverage (%) of children in hard to reach areas served by mobile teams (disaggregated by PHC facilities)	DMSP	0 (2015)	80	85	90	90	90
2	DTP1-DTP3 drop out rate among the children in hard to reach areas served by mobile teams (disaggregated by PHC facilities)	DMSP	n/a (2015)	9	7	6	5	4
2	% of health facilities with at least one staff member providing immunization services trained in some aspect of EPI in last two years	DMSP	n/a (2015)	50	100	100	100	100
2	% of health workers passing health worker knowledge surveys	RCI	n/a (2015)	80	-	95	-	99
3	Number of AEFIs reported using standardized guidelines and reviewed by expert committee (meaning serious AEFI)	RCI	0 (2015)	> 0	> 0	> 0	> 0	> 0
4	% of PHC facilities that experienced stock out of any vaccine in routine immunization calendar in reporting period	RCI	56 (2016)	20	15	10	5	2
4	% of vaccination points equipped with cold chain equipment meeting WHO prequalification requirements	RCI	43 (2016)	57	70	80	91	98
4	% of vaccination points using continuous temperature monitoring devices	RCI	25 (2016)	50	71	90	98	98
4	% of sub-national level facilities with cold chain capacities adequate to meet the new immunization schedule needs	RCI	36 (2016)	85	95	100	100	100

HSS/EVAP Objective	Indicators *	Source of data	Baseline value	Target values (by years)				
				2017	*2018*	*2019*	*2020*	*2021*
5	% of newborns recorded in the immunization register	RCI	0 (2015)	15	30	50	70	95
5	% of primary health care facilities (PHCs) with at least one health worker trained in new software	RCI	n/a (2015)	50	60	80	100	100
EVAP goals indicators								
Goal 1	No wild poliovirus transmission re-established in the Region (number of wild polio cases)	NCCPE	0 (2015)	0	0	0	0	0
Goal 2	Interruption of endemic measles and rubella transmission & achievement of Regional Goal 2 (number of measles and rubella cases & achievement of Goal 2)	NVCMR	Meas. 0 Rub. 101 (2015)	Meas. 0 Rub. 50 NO	Meas. 0 Rub. 25 NO	Meas. 0 Rub. 0 NO	Meas. 0 Rub. 0 YES	Meas. 0 Rub. 0 YES
Goal 3	Hepatitis B infection control *** (number of cases of acute Hepatitis B before 14 years old)	MoH	6 (2015)	5	4	3	2	1
Goal 4	⩾ 95% coverage with three doses of DTP-containing vaccine at national level (immunization coverage percentage)	RCI admin data	96.6 ** (2015)	97	97	98	98	99
Goal 5	Informed decision on new vaccines, following the review of the relevant evidence by their NITAG	MoH	n/a (2015)	Rota	-	HPV	-	-
Goal 6	Financially self-sufficient for procuring routine vaccines (Government share for all vaccines purchase)	MoH RCI	51% (2014)	60	70	80	90	100
EVAP objectives indicators								
Objective 1	Presence of a NITAG	MoH	Yes (2015)	Yes	Yes	Yes	Yes	Yes
Objective 1	Domestic expenditure for routine vaccines per newborn	MoH	941,302 USD (2014)	TBD (Rota)	TBD	TBD (HPV)	TBD	TBD
Objective 2	Presence of a communication plan	MoH	No (2015)	Process	Yes	Yes	Yes	Yes
Objective 3	⩾ 95% coverage with three doses of DTP-containing vaccine at national level (immunization coverage percentage)	RCI admin data	96.6 ** (2015)	97	97	98	98	99

HSS/EVAP Objective	Indicators *	Source of data	Baseline value	Target values (by years)				
				2017	*2018*	*2019*	*2020*	*2021*
Objective 3	⩾ 90% of districts with ⩾ 90% coverage with three doses of DTP-containing vaccine (percentage of districts)	RCI admin data	n/a (2015)	100	100	100	100	100
Objective 4	< 5% drop-out rate between first and third dose of DTP-containing vaccine	RCI admin data	4.6 ** (2012)	4	3	2	2	2
Objective 4	Sustained coverage with DTP-containing vaccines of ⩾ 90% for three or more consecutive years	RCI	Yes (2015)	Yes	Yes	Yes	Yes	Yes
Objective 4	Immunization coverage data assessed as of high quality by WHO and UNICEF	WHO UNICEF	No (2015)	Yes	-	Yes	-	Yes
Objective 4	Case-based surveillance for vaccine-preventable diseases	RCI SSES	Yes (2015)	Yes	Yes (Rota)	Yes	Yes	Yes
Objective 4	Sustained access to WHO-accredited polio and measles-rubella laboratories	SSES RCI	Yes (2015)	Yes	Yes	Yes	Yes	Yes
Objective 4	Expert review committee to assess causality for AEFI	MoH	None (2015)	Yes	Yes	Yes	Yes	Yes
Objective 4	No stock-outs for any routine vaccine at national level (existing stock out?)	RCI	None (2015)	None	None	None	None	None
Objective 5	Fully functional national regulatory authority (assessed by WHO criteria; applied to 2 functions only as UNICEF SD procured vaccines)	MoH DDPME	Not (2015)	Not	50% (1 f9)	100% (2 f9)	100% (2 f9)	100% (2 f9)

** More details on how to measure the indicators are provided in the HSS Monitoring and Evaluation Framework (2015)*

*** Administrative data slightly differ from 2012 DHS data (refer to HSS M&E Framework for more details on indicators baseline)*

**** Regional indicator for Hepatitis B control still to be established*

6. Immunization programme costs, financing and funding gaps

SECTION TO BE DRAFTED BY THE TEAM COVERING THE COSTING AND FINANCING

"In this section, provide information on the current and future cost and financing of the immunization programme and on scenarios and strategies that will improve the financial sustainability of the programme."

6.1. Health sector analysis

"Provide information on qualitative assessment of the (financial) environment in which the immunization programme operates, in order to understand how the availability of resources and immunization services might be affected in the future. programme costs and financing, for instance, the budgetary process (planning and execution process), the budget space available, trends in external financial support (donor funding), trends in health and immunization programme, competing priorities financing will help to better understand and estimate the availability of future financing for immunization more reliably."

6.2. Costing and financing of the cMYP

"Provide information on inputs required calculating cost of the programme and how attributes of those inputs (such as unit cost, share of input utilized) are calculated or estimated for different cost categories (vaccines, supplies, personnel, transportation, cold-chain equipment, recurrent and capital cost categories). And then cost of the programme for the baseline year and projection/calculation of future costs during the cMYP cycle years.
Provide information on the programme financing for the baseline year for each category by funding source. And then information on available funding (secured and probable) from each funding source for the cMYP years.
Provide information on composition of the funding gap (if exists) by comparing cost and available (secured and probable) funding at category level by years."

6.3. Alternative scenarios to achieve programme objectives

"Provide information on identified alternative ways of achieving programme objectives by developing scenarios, together with their cost estimates and, on comparison of scenarios with regards to resources required and funding gap for each of them."

6.4. Interpretation of cost, financing and funding gap

"Provide information on evaluation conducted in order to obtain a comprehensive picture of financial sustainability prospects. This sub-section should conduct an analysis on potential efficiency gains by optimizing cost of inputs and/or maximizing benefits and, should guide decision-makers in making an informed decision on scenarios."

6.5. Financial sustainability strategies

"Provide list of identified strategies to achieve the maximum financial sustainability in the country context, strategies to:

- *Mobilize required additional resources to achieve programme objectives;*
- *Improve the programme efficiency to minimize additional resources needed;*
- *Increase the reliability of resource availability."*