

Financing Immunization for results in Nigeria: Who funds, who disburses, who utilizes, who accounts? Financing bottlenecks and accountability challenges

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Abstract

Immunization is one of the most cost effective public health interventions to reduce child mortality. In Nigeria, vaccine-preventable diseases account for approximately 22% of childhood deaths, per year. It is the policy of the Federal Government of Nigeria to provide immunization services and potent vaccines free to all population at risk of vaccine preventable diseases. However the cost of vaccines is spiraling with new ones being introduced. Also current international financing for vaccines is not sufficient to sustain both progress in coverage and the introduction of the new vaccines. Therefore it has become pertinent to explore how immunization is financed in Nigeria.

Internet searches were conducted in Pubmed and Medline databases and Journal hosts including African Journal Online (AJOL) and Health Inter Network Access to Research Initiative (HINARI) using specific search terms and strategies. Grey literature was obtained by soliciting reports from the federal Ministry of Health and major organizations involved immunization and from international reports.

The Nigerian health system is generally funded from federation account. Funding of immunization services is the collective responsibility of all tiers of government through statutory budgetary allocation from the Federal, State and Local Government Areas. Other sources include external donors, development partners, private sector and the community. However, these funds are disproportionately captured by the rich at the expense of the poor and by the urbanites at the expense of the rural dwellers as depicted in measles immunization coverage. There are lots of financing bottle neck in financing immunization including inadequate funds, delays in release of designated funds, inefficient use of funds, non-sustainable financing by donors, unintended consequences of Polio eradication initiative and poor integration as well as non-profitability of vaccines. Furthermore, some accountability challenges exists and include undefined roles and responsibilities within the routine immunization, unclear linkages across the different levels of government, disconnect

of responsibility and authority due to the concurrency of responsibility for health by all levels of government, lack of political commitment, poor accountability among the workforce, lack of feedback to community and poor community engagement.

Strong financial support for immunization is evident from Federal Ministry of Health, and donors. However, there are financing bottlenecks and accountability challenges that need to be addressed to ensure adequate financing of immunization services in Nigeria.

Introduction

Immunization is one of the most cost effective public health interventions to reduce child mortality.⁽¹⁾ It involves administration of vaccines to persons to confer immunity or resistance to infectious diseases. With strategies that make it accessible to even the most hard-to-reach and vulnerable populations, immunization has been proven as a tool for controlling and eliminating life-threatening infectious diseases. It is estimated to avert between 2 and 3 million deaths each year worldwide.⁽²⁾

In Nigeria with a teeming population of 160 million, women and children under five make up two fifths of the entire population.⁽³⁾ Under-five Mortality rate is 138 deaths per 1000 live births.⁽⁴⁾ Of these, vaccine-preventable diseases account for approximately 22% of childhood deaths, amounting to over 200,000 deaths per year.⁽⁵⁾ Out of the 6 million Nigerian children born every year in the country, more than 1 million fail to get fully vaccinated by their first birthday.⁽⁴⁾ Immunization is one of the non-focal sectors in the Nigerian Country Support Strategy (CSS) and immunization programmes are in line with the Government commitment to invest in Primary Health Care (PHC), as a contribution to poverty alleviation.

Routine immunization schedule in Nigeria involves administration of six vaccines to children to prevent the childhood killer diseases. The vaccines include BCG, OPV, DPT, Measles, Yellow fever and Hepatitis B. In addition, Tetanus toxoid vaccine is given to women of child-bearing age (usually at ante natal clinics) and Meningitis vaccine is given to high-risk groups. However, in the year 2012, Nigeria replaced the childhood DPT and Hepatitis B vaccines with the Pentavalent vaccine which contain both the DPT, Hepatitis B and H-influenza type B vaccines.⁽⁶⁾ In 2013 also the Pneumococcal Conjugate Vaccine (PCV) was introduced in the country however this is yet to be scaled up to all states of the federation. Plans are on the way to introduce the Rotavirus vaccine in 2017.⁽⁷⁾

It is the policy of the Federal Government of Nigeria to provide immunization services and potent vaccines free to all population at risk of vaccine preventable diseases. This is achieved through the National Primary Health Care Development Agency (NPHCDA), other tiers of government and stakeholders. The main goal and objective of the Nigeria immunization policy is to develop and promote immunization programmes geared towards reduction of childhood morbidity and mortality through adequate immunization coverage of all at-risk populations.⁽¹⁾ The operational components of immunization system are vaccine supply and quality, logistics, advocacy and communication, surveillance and at the center is service delivery.

However the cost of vaccines is spiraling with new ones being introduced, including combination vaccines which are much more expensive.⁽³⁾ The projected cost of vaccines per LGA was \$167,831 in 2008 while in 2012 the cost increased to \$194,697.⁽³⁾ This represents a 16% increment in cost in just four years. As we aim for higher coverages in immunization, there will be higher marginal costs. Also current international financing for vaccines is not sufficient to sustain both progress in coverage and the introduction of new, crucial vaccines.⁽¹⁾ Thus immunization resource needs adequate planning, and budgeting which should include the comprehensive multi-year plan (CMYP) as well as cost and financing plan for efficient service delivery. Against the foregoing, It has become pertinent to explore how immunization is financed in Nigeria.

Methodology

This was a desk review of electronic and non-electronic materials on immunization in Nigeria

Electronic sources of information:

Internet searches were conducted in Pubmed and Medline databases and Journal hosts including African Journal Online (AJOL) and Health Inter Network Access to Research Initiative (HINARI). Search Engines such as Google scholar were also

used to obtain data.

Key words:

The key words for the search were routine immunization, financing, accountability, challenges, barriers, bottlenecks, Nigeria, Africa, Low income countries and interventions to perform a broad search. These key words were combined in different formats using OR, AND and truncation (*) to arrive at the final number of articles that were used for this manuscript. Following the PubMed search which yielded only abstracts, the full articles were searched on HINARI and AJOL. However where there was inaccessibility to full text, the abstracts were considered if they had the relevant context and content. The reference lists of the identified studies used in this review were also hand searched to uncover potentially relevant studies. Such uncovered published articles were obtained using the Google scholar search engine.

Non Electronic sources:

Grey literature was obtained by soliciting reports from National documents and other publications from the Nigerian Federal Ministry of Health (FMOH). Documents and Reports from Institutions, international and bilateral agencies including WHO, World Bank, USAID, Johns Hopkins University.

Inclusion Criteria:

- Only Scholarly articles written in English were considered in order to avoid misinterpretation of concepts following any translations of languages in other articles to English.
- Articles published in peer reviewed journals from 2000 – 2013 were included in order to get the current literature and not to miss out on any trend.
- The geographic region of the search was restricted to studies done in Nigeria and other low and middle income countries.
- Data extracted from each article included key findings, discussion and conclusions.

Exclusion criteria

- Non scholarly articles like news paper publications were not considered.
- Conference abstracts and other publications that did not meet the above criteria were not included

Results

As shown in figures 1 and 2 above, the most common source of healthcare financing in Nigeria is

Health care financing in Nigeria:

The Nigerian health system is generally funded from federation account to the states and LGAs, both of which also generate about 20% internal revenue from taxes, rates and levies. The allocation of federal revenues is fixed by the Revenue Mobilisation Allocation and Fiscal Commission (RMAFC) and approved by the National Assembly for five years. The allocation formula assigns 48.5 percent to the federal government, 24 percent to the states and 20 percent to local government, with 7.5 percent retained for ‘special’ federally determined projects. Once set, the revenue sharing formula provides limited room for manoeuvres on fiscal policy. ⁽⁸⁾

In Nigeria, the financing of PHC come from different sources and from different financing agents as shown in figures 1 and 2.

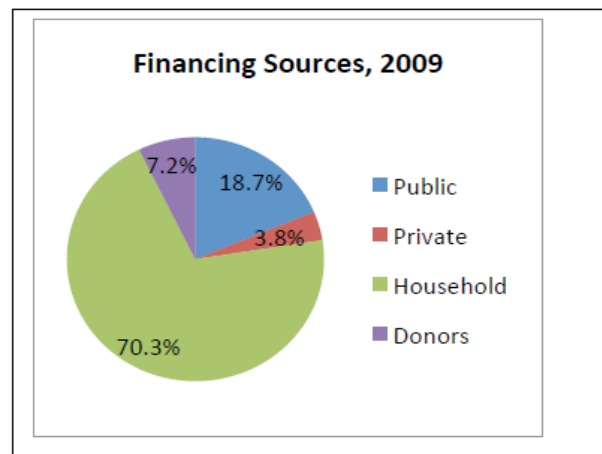


Fig.1: Funding sources in Nigeria

Source: NHA 2006-2009(9)

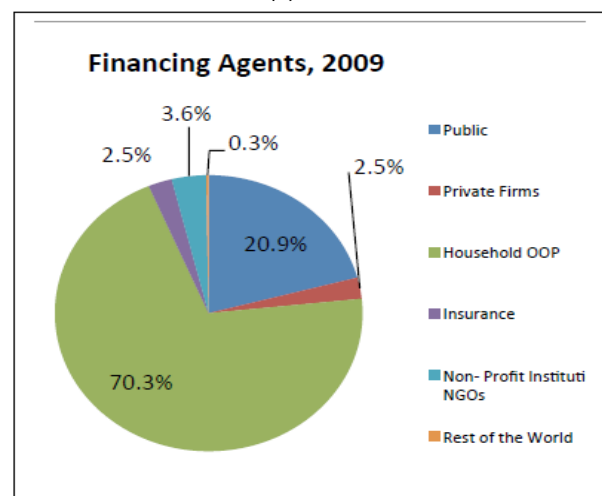


Fig.2: Financing agents in Nigeria.

Source: NHA 2006-2009(9)

out-of pocket payment from households which is estimated at 70.3% and regarded as one of the

highest in the world. This is followed by government financing with allocation from the Federation Account's general revenue allocated to the various levels of government based on an agreed revenue allocation formula. Due to low share of government in total health care expenditure and the presence of user fees in many public facilities, households are prone to bear most of the expenses in the event of any health shock. The catastrophic consequences thus push some into poverty, and aggravate the poverty of others.

Financing Immunization:

According to the National Immunization Policy, ⁽¹⁾ funding of immunization services should be a collective responsibility of all tiers of government exploring the following sources of funds for the financing of immunization services on a sustainable basis:

- a) Statutory budgetary allocation from the Federal, State and Local Government Areas.
- b) Promotion of private sector funds mobilization, e.g. Nigerian Immunization Fund (NIF) managed by reputable financial institutions in Nigeria and the involvement of established NGOs, Rotary International and non-traditional immunization partners in the organized private sector.
- c) External donors: development partners e.g. World Bank, European Commission, United States Agency for International Development (USAID), Canadian Agency for International Development (CIDA), Japan International Cooperation Agency (JICA), U.K. Department

for International Development (DFID), World Health Organization (WHO), the United Nations Children's Fund (UNICEF), Global Alliance for Vaccines and Immunizations (GAVI) and friendly foreign governments.

- d) Promotion of innovative ways for community participation to enhance community ownership of the immunization programme.

The federal government provides and pays for the traditional and other vaccines through the National Primary Health Care Development Agency (NPHCDA) and also provides immunization guidelines and technical support to the states and Local Government Areas (LGAs). ⁽⁴⁾ The States and LGAs are responsible for funding and implementing immunization programs at the sub-national levels ⁽⁴⁾ These include provision of administrative manpower and logistics needed to deliver the vaccines to the end users at their respective domains.

Sources of funds for immunization:

In practice today, immunization is financed mainly from statutory budgetary allocation from the Federal, State and Local Government Areas and donor partners. A majority of the funding still comes from the government accounting for about 76% of the total funds, followed by GAVI (12%), EU (4%), WHO (3%) and UNICEF 3%. ⁽¹¹⁾ In the last four to five years donor support from WHO, UNICEF, GAVI and the EU have been significant in terms of direct systems related interventions and those related to campaigns as shown in the table below ⁽³⁾

Table 1: Cost of funding immunization by the Government of Nigeria in 2013

	RI	PEI
Vaccine	1,010,543,000	8,525,000,000
Injection materials	1,144,49,000	
Cold chain	272,838,796	
Waste management	59,600,000	
Transportation	571,842,000	97,599,000
Training	739,207,060	
Supervision	285,322,071	86,211,340
Others	1,260,395,000	697,867,678
State and LGA personnel		3,500,000,000
Total	5,344,244,926	12,906,678,018

RI- Routine Immunization PEI-Polio Eradication initiative. All costs are in Naira; Source: NPHCDA, 2014⁽¹⁰⁾

Generally, as shown in table 1, immunization financing goes beyond purchase of vaccines and injection supplies but includes the cost of health

personnel, including management and supervision; vaccines; safe injection and other supplies; training, cold chain equipment and maintenance; recording

and reporting tools; social and community mobilization; transportation and vehicles; and, cold stores and facilities and research. ^(1,12) Personnel cost account for 48% of the funds, while vaccines and injection supplies account for 33% and other recurrent costs account for 19% respectively ⁽¹¹⁾

A good number of donors are committed to RI in

Nigeria as shown below. Activities covered include social mobilization, trainings, AFP surveillance, data quality, cold chain equipment and vaccine purchase (see table 2). However the EU has been unique amongst donor partners in addressing issues of both infrastructure and human capacity development through provision of equipment and training.

Table 2: Donors and areas of activity

DONOR	AREAS OF ACTIVITY								
	Training	Social Mobilization	Vaccine supply & quality	Cold chain facility	Transport & supervision equipment	Logistics	Data Quality	Surveillance	Epidemic P & R
UNICEF									
WHO									
USAID									
World Bank									
EU									
Rotary International									
Government of Japan/JICA			SIA						
CIDA									
GAVI									
CDC									
DFID									
Bill & Melinda Gates Foundation			SIA						
KfW			SIA						
Norway									
MSF, RED CROSS, CHAN									

Source: Pomatto V, Uzochukwu B and Moore G 2010 ⁽¹³⁾ (Supplemental immunization activities)

A number of donors also made commitment towards immunization activities that were carried

out within the last 3 years. The secured funding from donors as at 2010 is as shown in figure 3

	2010	2011	2012	2013	Total commitment
UNICEF					\$31 739 227
WHO					\$76 128 468
USAID					\$6 940 958
World Bank					\$23 737 778
EU					\$12 243 971
Rotary International					\$427 008
Government of Japan/JICA					\$0
CIDA					\$0
GAVI					\$59 264 643
CDC					\$0
DIFID					\$2 691 499
Bill & Melinda Gates Foundation					\$15 000 000
KfW					\$2 000 000

Fig.3: Donors commitment for RI Source: Pomatto V, Uzochukwu B and Moore G 2010 ⁽¹³⁾

In 2013, the Bill and Melinda Gates Foundation finalized a \$25 million agreement with the World Bank to support the purchase of more than 100 million doses of oral polio vaccine (OPV) for Nigeria ⁽¹⁴⁾ Furthermore, the GAVI Alliance also approved

the sum of US\$ 21 million to help improve vaccine supply chains in Nigeria as part of a partnership aimed at scaling up routine immunization. The funds will be used by Nigeria's National Primary Health Care Development Agency to procure vital equipment for storing vaccines and to improve data

collection, both of which have been identified as key pillars in protecting children's lives as enshrined in the government's Saving One Million Lives Initiative⁽¹⁵⁾ Furthermore, the total commitments as of September 2013 amount to US\$ 698 million, out of which US\$ 438 million have been approved and US\$ 241 million have been disbursed. Nigeria has

submitted an application for a second phase of HSS support with a country ceiling of US\$ 100 million over five years, effective from 2014⁽¹⁵⁾.

On the whole these funds are disproportionately captured by the rich at the expense of the poor and by the urbanites the expense of the rural dwellers as depicted in the measles immunization coverage

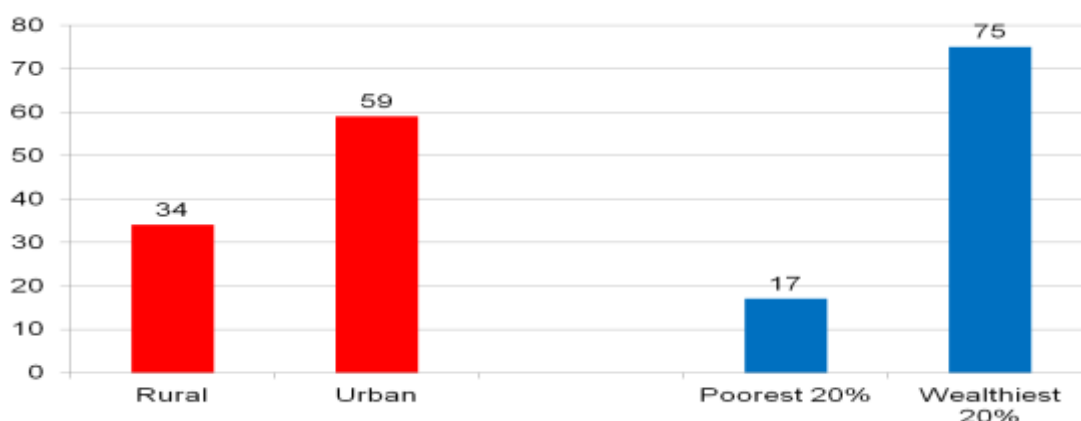


Fig.4: Inequity in Measles immunization coverage

Financing bottlenecks in routine immunization:

Although strong support for RI is evident from the NPHCDA and the Federal Ministry of Health, and funds for RI have been consistently included in the federal budget, it is difficult to understand why financing for immunization remains a challenge, when it is largely accepted that immunization is among one of the “best buys” for the health sector, and that its financing is primarily a national public responsibility. Some of the bottlenecks include:

Inadequate funds:

Allocation to health from the federal budget has remained around 4-5% for the last decade, until it reached 6% in 2012, a far cry from the recommended 15%. Inadequate funding disrupts all aspects of supply and service delivery especially at the local level. The financing package comprises strategies to guarantee predictable government and flexible donor financing, including state-level basket funds, a recurrent federal budget line for vaccine procurement and financial guarantees from donors. In 2012, the Health Reform Foundation of Nigeria and International Vaccine Access Center (IVAC) held an interactive session with the Senate committee on Health to advocate for improved financing for immunization activities in the country and facilitate the reassignment of immunization from capital budget list to recurrent among other things.⁽¹⁶⁾ With fiscal decentralization, states and

LGAs directly manage funding for RI implementation. Even when funds are budgeted for RI at the sub-national level, their timely release to LGAs and Primary Healthcare Centers (PHCs) is not guaranteed.⁽⁴⁾ Funding for RI is a major issue across all levels. The recent vaccine audit report indicated 76% of states and 65% of LGAs assessed did not have funds available for vaccine distribution⁽¹⁷⁾This limited availability of funds results in fluctuations in the supply of vaccines and devices to service delivery points, thus impacting on the RI coverage. Weak financial management and lack of fiscal oversight also compound the situation.

Delays in release of designated funds (at all levels):

There are federal and state budget line items for routine immunization, but the release of such funds is neither guaranteed nor timely⁽⁴⁾ The same thing happens at the LGAs, and to an even greater extent here, provisions are made but funding disbursements are not. Delayed funding release during the 2011 fiscal year caused stock-outs.⁽⁴⁾ In the Landscape analysis of routine immunization (LARI) in Nigeria by IVAC some respondents suggested funding vaccine procurement as a recurrent rather than a capital expense to avert the problem of delayed release of funds. Recurrent classification will likely regularize funds release, with the caveat that efforts to optimize the recurrent/capital spending balance may target recurrent expenses.⁽⁴⁾ Other options include donor-

backed revolving funds or financial guarantees to avoid supply interruption when federal funds are delayed. At the national level, the timely release of adequate funding for vaccine procurement is crucial to avoiding any delay in delivery; yet disbursement can be affected due to budgetary approval delays. Thus, even though funds for procurement might be available, irregular disbursement can impact the vaccine supply chain with a detrimental effect on immunization coverage.

Inefficient use of funds:

Even when funds are adequate and released in good time, there is still gross inefficiency in the utilization of funds for RI. This was a main finding in the IVAC study on Landscape analysis of RI in Nigeria⁽⁴⁾

Non-sustainable financing by donors:

It seems likely that key donors and international organizations will continue to contribute to the immunization program. However, some fluctuations in funding have been observed over the last five years with the likelihood that some may be planning to phase out of the programme altogether. For example EU Prime, ended its project by 2009 leaving a funding gap. The strategies for exit should focus on alternatives for funding these areas of cost covered by the exiting donor.⁽³⁾

Poor coordination between RI and PEI:

The global drive to eradicate polio has resulted in polio eradication activities being executed in tandem, and sometimes in competition with, RI programs. Supplemental Immunization Activities (SIAs) for polio also occur multiple times per year. Rather than being integrated with RI programs, PEI tend to attract resources away from other immunization activities as the PEI activities are more likely to have financial incentives attached – having significant impact on the success of RI programs, particularly in low resource states and LGAs⁽¹⁸⁾ NRISP, 2013-2015).

Appropriation of RI-designated funds for non-RI projects:

This is closely related to that discussed above. There are instances where funds designated for RI are diverted to non- RI projects showing an absolute lack of financial accountability

Non Profitability of Vaccines:

Most developing countries have difficulties affording

vaccines. International initiatives such as the Global Alliance for Vaccines and Immunization (GAVI) have the much needed funding that have helped increase immunization coverage and the number of vaccines provided. Vaccines are much less profitable than medicines, and thus pharmaceutical firms are understandably reluctant to make the huge investments necessary to develop vaccines against infectious diseases, realizing that the largest pool of potential customers are governments that likely will not afford to pay enough for these products to ensure a profit.⁽¹⁹⁾

Accountability challenges:

Accountability has been simply defined as answerability between sets of actors in relation to specific activities or interventions⁽²⁰⁾ Undefined roles and responsibilities within the RI system greatly impact ownership and accountability. The overall health system is managed in silos, with unclear linkages across the different levels of government (federal, zonal, state, LGA and ward) that play a role in the delivery of PHC in Nigeria. Poor accountability among the workforce, especially at the states and LGAs, Limited feedback and accountability for outcomes at and between levels means there is little incentive to improve the current state of RI in the country. Nigeria will benefit from the deployment of an accountability framework that will lead to results-based performance monitoring, redefining of roles and responsibilities, alignment of resources, and transparent reporting and data management.⁽¹⁸⁾

One of the presenters at the roundtable on Accountability framework for RI in Nigeria cited a Ugandan study, which showed that accountability interventions do work and that both quality and quantity of health services provision improved with implementation of accountability interventions. The study also reported an increase in weight of infants and a reduction in the number of under-five deaths due to the institution of an accountability framework.⁽²⁰⁾ Some of the other accountability challenges include a disconnect of responsibility and authority due to the concurrency of responsibility for health by all levels of government.

Government led initiatives to address key bottlenecks:

The federal Government has instituted some initiatives to address the key bottlenecks and these included:

1. The National Routine Immunisation Strategic Plan 2013-2015 (NRISP) has been developed

by the (FMoH) and (NPHCDA), in close collaboration with all routine immunisation partners on the ground, in an effort to address fragmentation in the sector and agree on a way forward.

2. The RI Supply Chain initiative within the framework of the Saving One Million Lives initiative (SOML) was launched in April 2013 to address the acute problems related to supply of vaccines through the federal and state level cold-chain system.
3. The MoH together with RI partners are developing the Accountability Framework for Routine Immunisation in Nigeria (AFRIN) with the objective to address accountability challenges in the PHC structure and put PHC activities under one roof. This is goal-directed expenditure, result-based performance monitoring, re-defined roles and responsibilities, synergistic alignment of resources, transparent reporting and data management, and mutual consensus on pre-determined consequences for falling short of articulated targets. It is expected to lead to results-based performance monitoring, redefining of roles and responsibilities, alignment of resources, and transparent reporting and data management.

Solutions to the bottlenecks and accountability challenges:

The solutions to these bottlenecks must be implemented at the state and LGA level, because most barriers are occurring in these areas. To help mitigate the above mentioned financing and accountability problems the following are recommended:

1. Increase political will at all levels of government especially at the Local government level
2. Direct financing of PHC from the federation account as obtains in Universal Basic Education
3. Build accountability system that ensures that immunization funds are released as needed and used efficiently e.g creation of a basket/pool fund which is being implemented by various States in the country e.g. Zamfara, Borno, Jigawa, and Kano States. This State basket fund pools financing from the state with funds from each LGA, delivering funds for service provision, vaccine logistics, equipment maintenance and other important expenses. Flexible funding from donors could also improve cash flow at the service provider level by targeting peripheral supply points. True and lasting accountability will take a wider spectrum of stakeholders working together to generate the desired results. The government, public sector workers, donor community and private sector all working transparently and in synergy will result in mutual accountability
4. Re-designating vaccine budget line from capital to recurrent will help address any delay in release of budgeted funds
5. Flexible funding for vaccine logistics will improve access to hard –to- reach areas.
6. Donor harmonization and alignment consistent with the Paris declarations on aid effectiveness
7. For programme sustainability, donor funds are best used for long-term investments, such as infrastructural development, e.g cold chain; critical systems such as disease surveillance and capacity building. Gradual reduction in the use of external funds for financing operational costs can be achieved through various means including increased budget allocations by governments at all levels and mobilization of local resources such as health insurance schemes.
8. Adoption by all stake holders of the National Routine Immunisation Strategic Plan 2013-2015. The NRISP was developed through a consultative process that included stakeholders from all levels of government and various facets of society. It was developed to fit within the National Strategic Health Development Plan 2010-2015 (NSHDP) and expand upon the comprehensive Multi-Year Plan 2011-2015 (CMYP).
9. Operationalizing an accountability feedback process/mechanism that ensures that Stakeholders are constantly informed of immunization activities including financing in Nigeria.
10. Accountability challenges can be addressed through the establishment of State PHC Boards. About 27 States of the Federation have formed their board.
11. Formation of a Nigerian Alliance for Vaccines and Immunization (NAVI), a public private partnership that will raise funds to bridge financing gaps in vaccination program delivery.
12. Strong collaboration between the health insurance scheme (HMOs and NHIS) and the immunization program to expand access to live-saving vaccines.
13. Engage with private sector partners to leverage additional funding for routine immunization.
14. Development of State and LGA Health Accounts to track income and expenditures.
15. The government should encourage local production of vaccines by establishing pro-active policies and the necessary infrastructure.

Conclusion

Strong financial support for immunization is evident from Federal Ministry of Health and donors. However, there are financing bottlenecks and accountability challenges to be addressed. When the National Health Bill becomes law, the bill will act as a rapid propellant to strengthening the Nigerian health system. In particular, it has provisions that will substantially increase the level of financial resources that will be available to fund primary health care services managed by the Local Government Areas.

Although in the aspect dealing with accountability we have tried to focus on harmonization and reporting we did not link financing (improved funding) to immunization services coverage which could help tell the story better. We acknowledge this as a limitation of the study and this could be explored in further reviews.

References

1. National Primary Health Care Development Agency (2009). Revised national immunization policy. (Online) Available at http://www.thephss.org/ppep/resource/National_Immunization_Policy_with_frwd_and_acknwdg.pdf (Accessed 17-11-2013).
2. World Health Organization (2013). Health topics: Immunization. (Online) Available at <http://www.who.int/topics/immunization/en/> (Accessed 16-11-2013).
3. Ojo Kenneth, Ibrahim Yisa, Adedoyin Soyibo, Lekan Olubajo and Paul Schoen. (2011). Cost of Routine Immunization in Nigeria Centre for Health Economics and Development, CHECOD working paper series June 2011.
4. Wonodi Chizoba, Cecily Stokes-Prindle, MuyiAina, Gbolohan Oni, tope Olukowi, Muhammad Ali Pate, Lois Privor-Dumm and Orin Levine. (2012). Land Landscape Analysis of Routine Immunization in Nigeria International Vaccine Access Centre (IVAC) (Online) Available at <http://www.jhsph.edu/research/centers-and-institutes/ivac/projects/nigeria/IVAC-Landscape-Analysis-Routine-Immunization-Nigeria-Brief.pdf> (Accessed 17-11-2013)
5. World Health Organization (2010). Child survival fact sheets: Immunization schedule in Nigeria. (Online) Available at <http://childsurvivalnetwork.info/resources/Immunizations+Factsheet.pdf> (Accessed 17-11-2013).
6. WHO Regional office for Africa (2012). Nigeria launches Pentavalent vaccine. (Online) Available at <http://www.afro.who.int/en/nigeria/press-materials/item/4735-nigeria-launches-penta-vaccine.html> (Accessed 17-11-2013).
7. Federal Ministry of Health Nigeria. Nigeria's 1st vaccine summit, 2012. Town hall meeting Report
8. World Bank (2010). Immunization financing tool kit. A resource for policy makers and program managers
9. Federal Ministry of Health, Nigeria. Draft National Health Accounts 2006-2009
10. National Primary Health Care Development Agency (2014). Cost of financing Immunizing in Nigeria
11. National Primary Health Care Development Agency (2009). Comprehensive Multi Year Plan (CMYP) 2009-2014
12. African Routine Immunization System Essentials Project ARISE. Available at <http://arise.jsi.com/routine-immunization/> (Accessed 20-04-2014)
13. Pomatto V, Uzochukwu B, Moore G and Edu A. (2010). Formulation of a Health Project for Nigeria for the 10th European Development Fund (Final Report) for the European Union.
14. Bill and Melinda Gates Foundation Press release: Bill gates visits Nigeria to boost global fight against Polio. (Online) Available at <http://www.gatesfoundation.org/Media-Center/Press-Releases/2009/02/Bill-Gates-Visits-Nigeria-to-Boost-Global-Fight-Against-Polio> (Accessed 24-11-2013).
15. GAVI. 2013. GAVI aims to improve access to vaccines in Nigeria through supply chains project. (Online). Available at <http://www.gavialliance.org/library/news/press-releases/2013/gavi-aims-to-improve-access-to-vaccines-in-nigeria-through-supply-chains-project/> (Accessed 24-11-2013).
16. Health Reform foundation of Nigeria and International Vaccine Access Centre (2011). Report of the interactive session with the senate committee on Health for improved financing and oversight of immunization in Nigeria, 2011.
17. National Primary Health Care Development Agency, NPHCDA (2009). Routine Immunization Programme of Nigeria Vaccine. Audit Report.
18. Federal Ministry of Health Nigeria. National Primary Health Care Development Agency National Routine Immunization Strategic Plan (NRISP) 2012-2015.
19. Health Access and Integrated Development (HAID) Initiative's Blog (2013). Problems Facing Immunization In Africa <http://haidinitiative.blogspot.com/2013/04/problems-facing-immunization-in.html>
20. Round table on Accountability Framework For Routine Immunization in Nigeria 2012, Report of proceedings.