



Nigeria: Nationwide Forecast and Funding Gap Analysis

Maternal, Newborn, and Child Health Commodities



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Commodities

USAID | DELIVER PROJECT, Task Order 4

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Abstract

In July and August 2012, the Federal Ministry of Health (FMOH) of Nigeria, with technical assistance from the USAID | DELIVER PROJECT, Task Order 4, conducted a forecast of and funding gap analysis for commodities for maternal, newborn and child health (MNCH) in Nigeria for one year. The forecast and funding gap analysis would be used to inform the FMOH strategy for achieving Millennium Development Goals 4 and 5 by 2015 by focusing on integrated maternal and child services at public health facilities.

This report includes the findings of the forecast, as well as the funding gap analysis, which can be used for advocacy with key stakeholders to increase the level of funding and, eventually, the availability of commodities for MNCH conditions in Nigeria.

Cover photo: This photograph taken in Bauchi State of Nigeria shows a mother holding an infant, along with the child's completed vaccination card. JSI. 2010.

USAID | DELIVER PROJECT

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Acronyms

ANC	antenatal care
CHAI	Clinton Health Access Initiative
FGON	Federal Government of Nigeria
FMOH	Federal Ministry of Health
GDP	gross domestic product
GON	Government of Nigeria
HMB	Hospital Management Board
IPT	isoniazid preventive therapy (TB)
LGA	local government area
MCH	maternal and child health
MDGs	Millennium Development Goals
MMR	measles, mumps, rubella (incidence)
MSS	Midwives Service Scheme
NHA	National Health Accounts
NPHCDA	National Primary Health Care Development Agency
PFSCM	Partnership for Supply Chain Management
PHC	primary health care or primary health centers
PMTCT	prevention of mother-to-child transmission
SAM	severe acute malnutrition
SMOH	State Ministry of Health
STI	sexually transmitted infection
SURE-P MCH	Subsidy Reinvestment and Empowerment Program for Maternal and Child Health
THE	Total Health Expenditure
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
VVF	vesico-vaginal fistula
WHO	World Health Organization

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Finally, we wish to express sincere gratitude to everyone that contributed to the development and review of this report, starting with the USAID | DELIVER PROJECT Country Director, Peter Hauslohner; Deputy Country Director, John Durgavich; and Associate Director of Public Health, Elizabeth Igharo, as well as other staff of the USAID | DELIVER PROJECT in Nigeria.

Executive Summary

The Federal Ministry of Health (FMOH) of Nigeria and partners have made considerable efforts to combat maternal, newborn, and child health illnesses. Despite this, the burden of these conditions in Nigeria remains high. Results from the latest *Demographic and Health Survey* (Measure DHS 2008) of 2008 showed that Nigeria is still a long way from meeting the Millennium Development Goal (MDG) goals 4 and 5, which relate to reducing the burden in child and maternal deaths by 2015, respectively. In this survey, the infant mortality rate (per 1,000 live births) was estimated at 75 and the percentage of births attended by skilled health personnel was 38.9 percent. Immunization rates remain low, especially among rural populations.

To accelerate progress toward meeting the MDG goals, the FMOH and partners have developed a number of strategic interventions, especially at primary health care level. These interventions aim at increasing basic antenatal, newborn, and child care for the most vulnerable populations, with the goal of saving approximately one million lives by 2015. The key to these interventions is to provide medicines and health commodities. In July and August 2012, the office of the honorable Federal Minister of State for Health, with technical assistance from the USAID | DELIVER PROJECT, Task Order 4, conducted a forecast and funding gap analysis of commodities for maternal, newborn, and child health (MNCH) in Nigeria for one year.

Using morbidity information from various sources, the USAID | DELIVER PROJECT carried out a morbidity-based forecast. This report includes the findings from the forecast, as well as the funding gap analysis that can be used for advocacy with key stakeholders to increase the level of funding and eventual availability of commodities for MNCH conditions in Nigeria. The project quantified the main commodities needed for a comprehensive MNCH program in Nigeria, by commodity groups. These groups were nutrition, antimalarials, essential medicines, HIV and AIDS medicines and supplies, vaccines, family planning commodities, and general health consumables (e.g., syringes, giving sets, mama kits, etc.). In total, the project estimated the funding requirements for 135 medicines and 67 general health supplies. The quantification team used purchase prices that states and program representatives reported. If local prices were not available, we used the *International Drug Price Indicator Guide* (MSH and WHO 2011) median prices.

The USAID | DELIVER PROJECT estimated an annual funding requirement of approximately U.S.\$859,496,126¹. Using information from the state-level ministry of health (MOH) officials, the FMOH, and partners, we estimated that \$361,719,211, of this is currently funded, leaving a funding gap of approximately \$497,776,915. In Nigeria, this is an annual expenditure of approximately \$5.00 per person. Using the *Lives Saved* tool in the Spectrum set of models, we estimated that providing these medicines and commodities to a level of coverage sufficient to reach the 2015 MDG targets would result in a significant reduction in maternal, newborn, and child deaths by 2015. For example, the team estimated the potential reduction for child deaths only if the MDG targets were met by

¹ In this document, all dollar amounts are U.S. dollars.

2015 could be up to 750,000 lives. Ensuring that the necessary commodities are available in public health facilities for the trained service providers will definitely contribute to saving the lives of mothers, newborns, and children, and to meeting the Government of Nigeria’s ambitious, “Saving One Million Lives Initiative.”

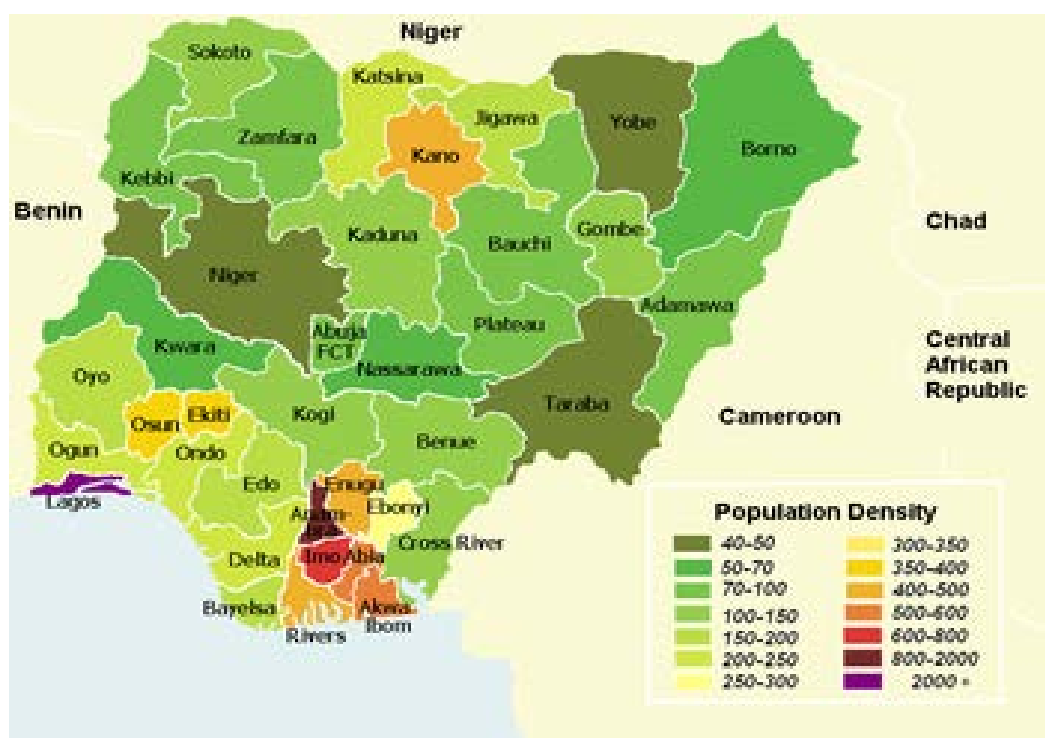
Going forward, the USAID | DELIVER PROJECT recommends that the results of this forecast and funding gap analysis should be used by the FMOH and partners to source for funding. Concurrently, a supply plan that takes into account existing stock levels, as well as commodities that may already be on order needs to be developed in order to inform the procurement of these commodities. Finally, a national forum for all stakeholders (including state-level representatives) needs to be created to meet regularly and chart a way forward toward creating MNCH commodity security for Nigeria.

Background

Overview of Health Care Delivery System

The Federal Republic of Nigeria is the seventh most populous country in the world. The national population census from 2006 estimated that the country will have a population of about 171,468,040, by 2012; maintaining its position as the most populous African country. Also according to United Nations (UN) estimates, 50.2 percent of the population is located in rural areas and 49.8 percent in urban areas (United Nations 2012). The population density is 167.5 people per square kilometer. Figure 1 shows the distribution of population, by state.

Figure 1. Nigerian States by Population



Source: Nigeria 2006 Census

Nigeria has three tiers of government: the federal government (the supreme administrative unit of the country), state governments (the administrative unit in charge of each state), and local governments that have jurisdiction over specific areas within a state. Health care provision in Nigeria is a concurrent responsibility of these three tiers. The federal, state, and local governments have broad responsibilities for tertiary, secondary, and primary health care, respectively. The concurrent nature of these obligations sometimes leads to an overlap and/or neglects to provide the necessary inputs.

Level 1, or the primary level, includes all the primary health centers (PHC), dispensaries, health posts, and community-based providers. Typically, local government authorities manage level 1. The medical staff at level I include nurses and community health extension workers. The health workers at this level are trained to manage uncomplicated cases; they focus on clinical symptoms to identify diseases before initiating the appropriate treatment. They are also trained to provide pre-referral treatments before referring cases of severe ailments to the next level.

Level II is the second administrative level; facilities managed at this level may include health centers, comprehensive health centers, cottage hospitals, general hospitals; and some private hospitals, as well as all state secondary hospitals, which are the states' responsibility. Some of these facilities may or may not have diagnostic laboratories. The responsibility for health programs is shared by the State Ministry of Health (SMOH) and the Hospital Management Board (HMB). The State Commissioner of Health, who heads the SMOH, is responsible to the State Executive Council and is assisted by the Permanent Secretary in the SMOH. Their responsibilities include planning and co-ordinating the state health systems; operating and maintaining secondary hospitals and some primary health facilities; implementing public health programs; training nurses, midwives, and auxiliary staff; and assisting the local government areas (LGAs) with managing and operating some primary health facilities. Each state has at least one health training institution.

Level III, or the tertiary level, includes teaching hospitals, specialist hospitals, and federal medical centers. This level represents the highest level of care in the country; clinicians and medical staff are trained to make highly specialized diagnoses and to handle complicated cases.

The federal government, through the FMOH, provides policy guidance and technical assistance to the 36 states and the Capital Territory (Abuja), and they coordinate the state efforts toward the goals set by the national health policy. The FMOH also monitors and evaluates the implementation of the national health policy. Additionally, the FMOH has direct operational responsibility for training medical doctors; operating teaching, psychiatric, and orthopedic hospitals; monitoring and controlling contagious and communicable diseases; and ensuring adequate availability of vaccines and essential drugs. Formal linkage between the FMOH and the SMOHs is through the National Council of Health, which the Federal Minister of Health chairs; it comprises all state commissioners of health. This council meets once a quarter to discuss national health concerns.

In 2005, the FMOH estimated a total of 23,640, health facilities in Nigeria, of which 85.5 percent are primary health care facilities, 14 percent secondary, and 0.2 percent tertiary. The private sector owns 38 percent of these facilities.

Maternal, Newborn, and Child Health Situation in Nigeria

At the current annual population growth rate of 3.2 percent, the population is expected to double by 2030. The rapid population growth rate can be attributed to the high total fertility rate of 5.7, a large percentage of women in the reproductive age group, and a low contraceptive prevalence rate of 15 percent. Life expectancy at birth for women and men is estimated at 47.1 years and 46 years, respectively. Nigeria has a high burden of MNCH conditions. Every year, in Nigeria, an estimated one million children die from preventable diseases. Every day in Nigeria, approximately 700 babies die (around 30 every hour). This is the highest number of newborn deaths in Africa and the second highest in the world.

With the current estimated maternal mortality ratio of 545 per 100, 000 live births (Measure DHS 2008), Nigeria still has one of the highest maternal mortality rates in the world. According to 2008

DHS, about four maternal deaths occur in Nigeria per hour, 90 per day, and 2,800 per month, for a total of 34,000 deaths annually, with wide regional and local variations.

For pregnant women, aged 15–49 years, 57.7 percent received antenatal care from skilled providers, while skilled attendance at birth remains low at 39 percent. The 2008 DHS puts delivery in health facilities at 35 percent, while home deliveries were rated at 62.1 percent. It is also estimated that for every maternal death, at least 30 women suffer short- to long-term disabilities, such as vesico-vaginal fistula (VVF). Each year, some 50,000–100,000 women in Nigeria sustain obstetric fistulae.

Annually, it is estimated that more than 600,000 induced abortions take place in Nigeria. Abortions are often done under unsafe conditions, with an estimated 40 percent performed in privately owned health facilities. The consequences for the poor state of pregnant women in Nigeria are numerous and affect maternal as well as child mortality. The under-five mortality ratio in Nigeria is 201 per 1000 live births meaning that one in five Nigerian children never reach the age of 5. Infant deaths, which account for half of child mortality have increased from what they were in 1990. With a 13 percent immunization rate for children between 12–23 months, Nigeria is the African country with the lowest vaccination rate. Substantial presence of acute respiratory infections and diarrhea also contribute to the elevated mortality rates for children. Malaria is a leading cause of death of children under five years in Nigeria. Indeed it affects all ages, however its burden of mortality and disability is felt more acutely in children ages 0 to 4 years.

- 1 million child deaths per year due to preventable illnesses.
- Only two out of five mothers receive intermittent preventive treatment for malaria.
- On average, children under five years suffer 3 to 4 episodes of diarrhea each year.

The neonatal mortality rate in Nigeria is 40 deaths per 1,000 pregnancies. It is highest amongst teenage mothers and mothers aged 40–49 years (50 and 55 percent, respectively). Pregnancies that occur at less than 15-month interval have the highest neonatal mortality rate (76 deaths per 1,000 pregnancies). Birth asphyxia or intra-partum-related neonatal deaths remain a major cause of newborn deaths and disabilities in Nigeria—more than 25 percent for all causes. For each asphyxia-related newborn death, many more babies are left with permanent disabilities. Low birth weight and preterm babies are another group of babies who die daily. Infections, including neonatal tetanus, diarrhea, and pneumonia, account for about 34 percent; although contributions from each of these vary by region.

FMOH Interventions in MNCH

During the past year, the FMOH has instituted a number of interventions to improve the MNCH situation in Nigeria. The signature intervention is the Government of Nigeria's (GON) maternal and child health (MCH) program, which is under the subsidy reinvestment program: SURE – P. The program has been renamed SURE–P MCH.

The SURE–P objective is to mitigate the impact of the oil subsidy reduction on vulnerable populations in Nigeria by initiating a robust social safety net program to improve their lives. The goal of the MCH component is to contribute to the reduction of maternal and newborn morbidity and mortality and to put Nigeria on track to achieve the MDGs 4 and 5.

Given its previous experience with the Midwives Service Scheme (MSS), the MCH project is likely to launch before other SURE-P programs, which may serve as an implementation model for the other programs. The program will run for four years, from 2012–2015. Using a conditional cash transfer program, the program builds on the MSS and will focus on increasing maternal access to health services during pregnancy and at birth.

The MSS, backed by an MDG that mobilizes midwives, includes those newly qualified from the Nigerian Schools of Midwifery; unemployed midwives; and retired, but able, midwives. They will undertake one year of community service to health facilities in rural communities. The one-year service commitment would be mandatory for the newly graduated basic midwives, preparatory to being fully licensed to practice midwifery in Nigeria. The project will help increase skilled attendance at birth, which will facilitate a reduction in maternal, newborn, and child mortality and morbidity. Given the high level of fragmentation in the governance of the Nigerian health system, a crucial initiative for the MSS program was for state and local governments to sign a memorandum of understanding with the federal government agency responsible for primary health care (PHC) in Nigeria—the National Primary Health Care Development Agency (NPHCDA)—which is also the implementing agency for MSS. The state governments are expected to match with naira (N)20,000–N30,000 monthly remuneration that the federal government, through the NPHCDA, will pay the midwives.

In addition to the monthly stipend, the federal government provided basic health insurance coverage for all the midwives; provided midwifery kits for each of the participating PHC facilities and for each midwife; and supplied a personal health record booklet, basic maternal and child health equipment, rugs, registers, and monitoring tools.

The number of facilities in each of the six geopolitical zones of Nigeria was selected based on their maternal mortality burden. Nigeria was divided into three zones, based on the measles, mumps, rubella incidence (MMR): very high MMR (North-East [NE] and North West [NW]); high MMR (North Central [NC] and South South [SS]); and moderate MMR (South East [SE] and South West [SW]). The NE and NW have six clusters per state, SS and NC have four clusters per state, and SW and SE have three clusters per state. In Nigeria, the project currently serves an estimated aggregate of 15 million people (Abimbola et al. 2012).

The outcome of the MSS after one year was an uneven improvement in maternal, newborn, and child health indices in Nigeria's six geopolitical zones. Major challenges included retention, availability and training of midwives, and varying levels of commitment from state and local governments across the country. Despite the availability of skilled birth attendants at MSS facilities, in some parts of the country, women still deliver at home.

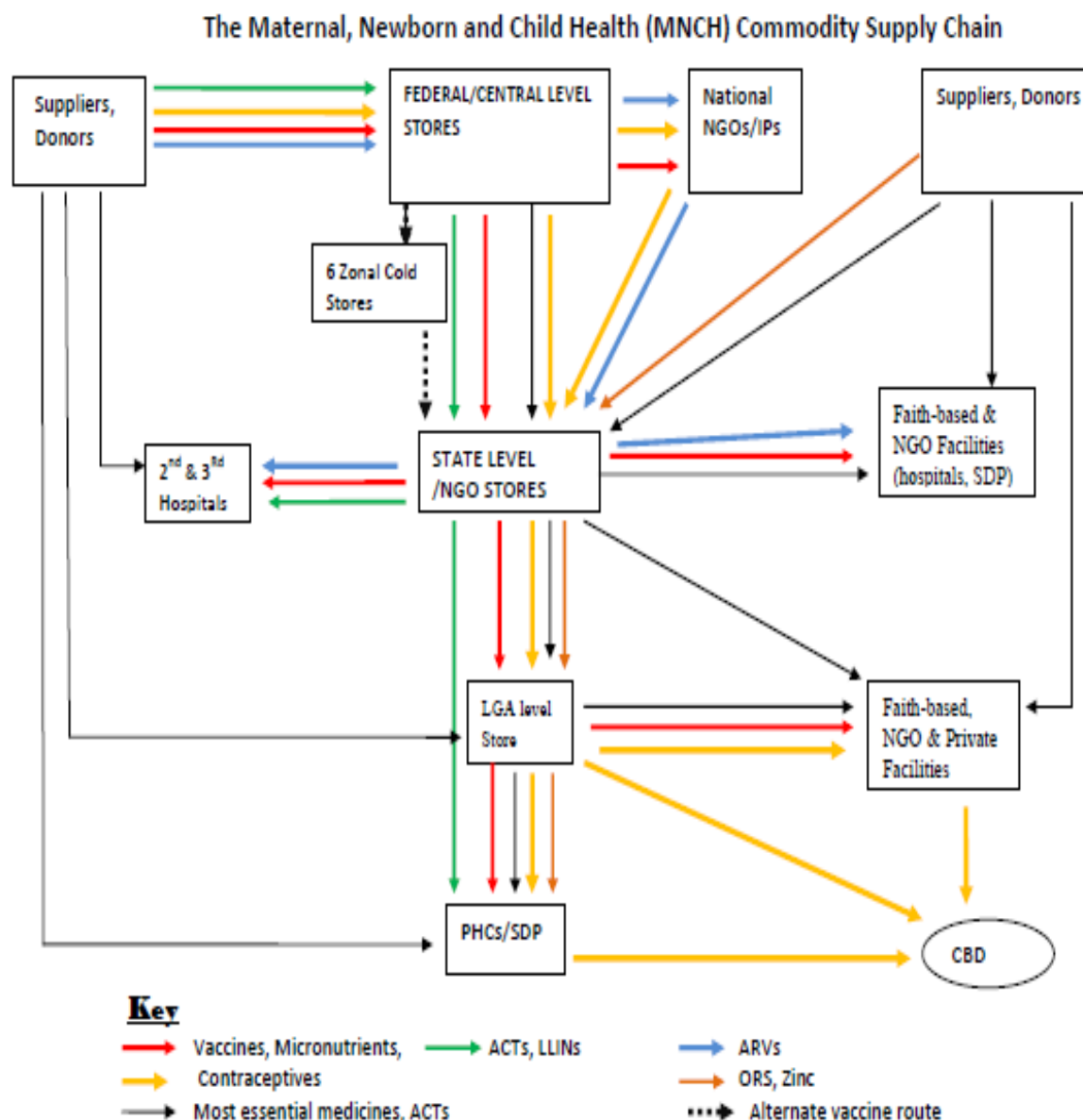
Supply Chain System for Drugs and Health Commodities

Despite a considerable investment in the health sector over the years, available evidence suggests that health services throughout Nigeria are delivered through a weak health care system (see figure 2). The latter is characterized by inequitable distribution of resources, decaying infrastructure, poor management of human resources for health, negative attitude of health care providers, weak referral systems; poor coverage, with high impact cost-effective interventions, unavailability of essential drugs and other health commodities, lack of integration, and poor supportive supervision.

Consequently, the health care system cannot provide basic, cost-effective services for preventing and managing common health problems, especially at the LGA and ward levels. The Essential Drugs

Program, including the first national essential drug list in the country, was developed in 1988, after the 1987 Bamako Initiative, which aimed at strengthening PHC by ensuring sustainable quality drug supply systems. In Nigeria, this was reinvigorated in all LGAs in 1998, under the Petroleum Trust Fund. These initiatives are now ineffective because the commitment to establish systemic procurement systems for health commodities was weak. This resulted in a loss of confidence and decreased use of public sector health facilities because of the drug stockouts.

Figure 2: Maternal, Newborn, and Child Health Commodity Supply Chain



One consequence of a lack of trust in public health facilities is the proliferation of patent medicine vendors and drug hawkers who compound the problem of irrational drug use. The market is filled with substandard and fake drugs. In recent years, however, confidence has been growing for the

drug regulatory framework, which is operated by the National Agency for Food and Drug Administration and Control (NAFDAC). A significant, concerted effort is required to address the weak and fragmented logistics and supply chain system for drugs and health commodities in the country.

Health Care Financing

Health Care Financing in Nigeria

- Total Health Expenditure (THE) as a share of gross domestic product actually declined from 12.25 percent in 2003 to 8.56 percent in 2005.
- Household out-of-pocket expenses remain, by far, the largest source of health spending in Nigeria (about 69 percent).
- In terms of contribution from different levels of the government, the National Health Accounts 2003–2005 estimates that the federal government contributes more than one-tenth of the total sum (12.1 percent); state governments, about 7.6 percent; and local government areas, about 4.5 percent.

The National Health Accounts (NHA) for Nigeria during 2003–2005 estimate that the Total Health Expenditure (THE) in Nigeria has grown from N661.662 billion in 2003 to N976.69 billion in 2005. While the THE has grown in absolute terms by nearly one-third during this period; the THE, as a share of the gross domestic product (GDP) has actually declined, from 12.25 percent in 2003 to 8.56 percent in 2005. The federal government health expenditure was estimated to have grown threefold, from N47.02 billion in 2003 to N130.76 billion in 2005; while the estimated expenditures for the same period, by states, grew from N48 billion to N78.8 billion. The LGAs nearly doubled, from N28.63 billion to N44.64 billion. This trend is supported by figures from the Central Bank of Nigeria, which reveals that the proportion of the federal government's total expenditure on the social sector between 2001 and 2005 ranged between 12–19 percent. Other sources confirmed that the absolute expenditure on health during 2001–2005 has increased by more than 150 percent. Households out-of-pocket expenses remain, by far, the largest source of health expenditure in Nigeria (about 69 percent) and, in absolute terms,

increased from N489.79 billion in 2003 to N656.55 billion in 2005. The estimated health expenditure of private firms grew from N20.32 billion in 2003 to N29.67 billion in 2005. The contributions from the development partners to the health sector in Nigeria are estimated to have increased from N48.02 billion in 2003 to N78.78 billion in 2005.

There are, however, notable differences in the share of out-of-pocket expenditures across the states; some states in the northern zones estimated their household share as high as 86 percent. This underscores the huge economic burden of health care expenditure on households, especially the poorer households.

Scope of the Quantification

To implement the GON MNCH program, the USAID | DELIVER PROJECT aimed to estimate an annual requirement of commodities for MNCH interventions. The timeframe for the quantification was, therefore, set for August 2012–July 2013. The results represent a 12-month national forecast of demand for MNCH commodities in Nigeria.

In defining the scope of the quantification, lists of the standard interventions for women of child bearing age (15–49 years), newborns (0–28 days), and children (1–59 months) were compiled based on information from relevant, reputable literature. These interventions and commodity groups are summarized in Table 1, Table 2, and Table 3.

Table 1: Scope of Commodities Quantified for Women of Reproductive Age (15–49 years)

Category	Interventions	Commodities
Pre-pregnancy	family planning	Contraceptives
	management of sexually transmitted infections	antibiotics (penicillin, macrolides, cephalosporins)
	screening for HIV and PMTCT	antiretrovirals, HIV test kits
Pregnancy (antenatal care)	intermittent preventive treatment for malaria	sulphadoxine-pyrimethamine, long-lasting insecticide-treated bed nets (LLINs)
	screening and prevention	iron and folic acid, tetanus immunization
	pre-eclampsia and eclampsia	magnesium sulphate, hydralazine, nifedipine, methyldopa, calcium
	pre-term rupture of membranes and complications	antibiotics, corticosteroids, uterotonics (misoprostol, oxytocin)
Childbirth	normal delivery	prophylactic antibiotics, uterotonics, IV fluids, mama kits
	caesarean section	prophylactic antibiotics, IV fluids, analgesics, anesthetics, oxygen
	hemorrhage	uterotonics, IV fluids
Postnatal care	postpartum sepsis	antibiotics (ampicillin, gentamicin, metronidazole, etc.)

These lists were compiled based on a list of essential, evidence-based interventions to reduce morbidity and mortality in women of reproductive age, newborns, and children less than five years old (PMNCH 2011).

Table 2: Scope of Commodities Quantified for Newborns

Category	Interventions	Commodities
Immediate essential newborn care	hygienic cord and skin care	antiseptic solutions (e.g., chlorhexidine), dressings
	newborn immunizations	bacillus Calmette-Guérin, polio, treatment for hepatitis B virus
	resuscitation	ambulatory bag, bag mask
Infection management	presumptive antibiotic therapy for at risk newborns	antibiotics
	neonatal sepsis	antibiotics, IV fluids
	meningitis	antibiotics, IV fluids, corticosteroids
	malaria	artemisinin-based combination therapy, LLINs, quinine, rapid diagnostic kits
	diarrhea	IV fluids, zinc, oral rehydration salts
	pneumonia	antibiotics, IV fluids
	prevention of mother-to-child transmission (PMTCT) for at-risk newborns	ARVs, co-trimoxazole
Interventions for small and ill babies	premature baby care	corticosteroids, antibiotics, kangaroo slings, naso-gastric tubes
	birth asphyxia	surfactants, oxygen
	jaundice	IV fluids, exchange transfusion kit, antibiotics

These interventions were prioritized using the following criteria:

- Interventions that were expected to have a significant impact on maternal, newborn, and child survival; addressing the main causes of maternal, newborn, and child mortality, as articulated in health surveys from these population groups in Nigeria (e.g., Measure DHS 2008, UNICEF 2010).
- Interventions that were suitable for implementation in low- and middle-income countries.
- Interventions delivered primarily through the health sector, from the community to the highest referral level of public health service provision, excluding delivery of care through one-off or periodical campaigns.

Table 3: Scope of Commodities Quantified for Children

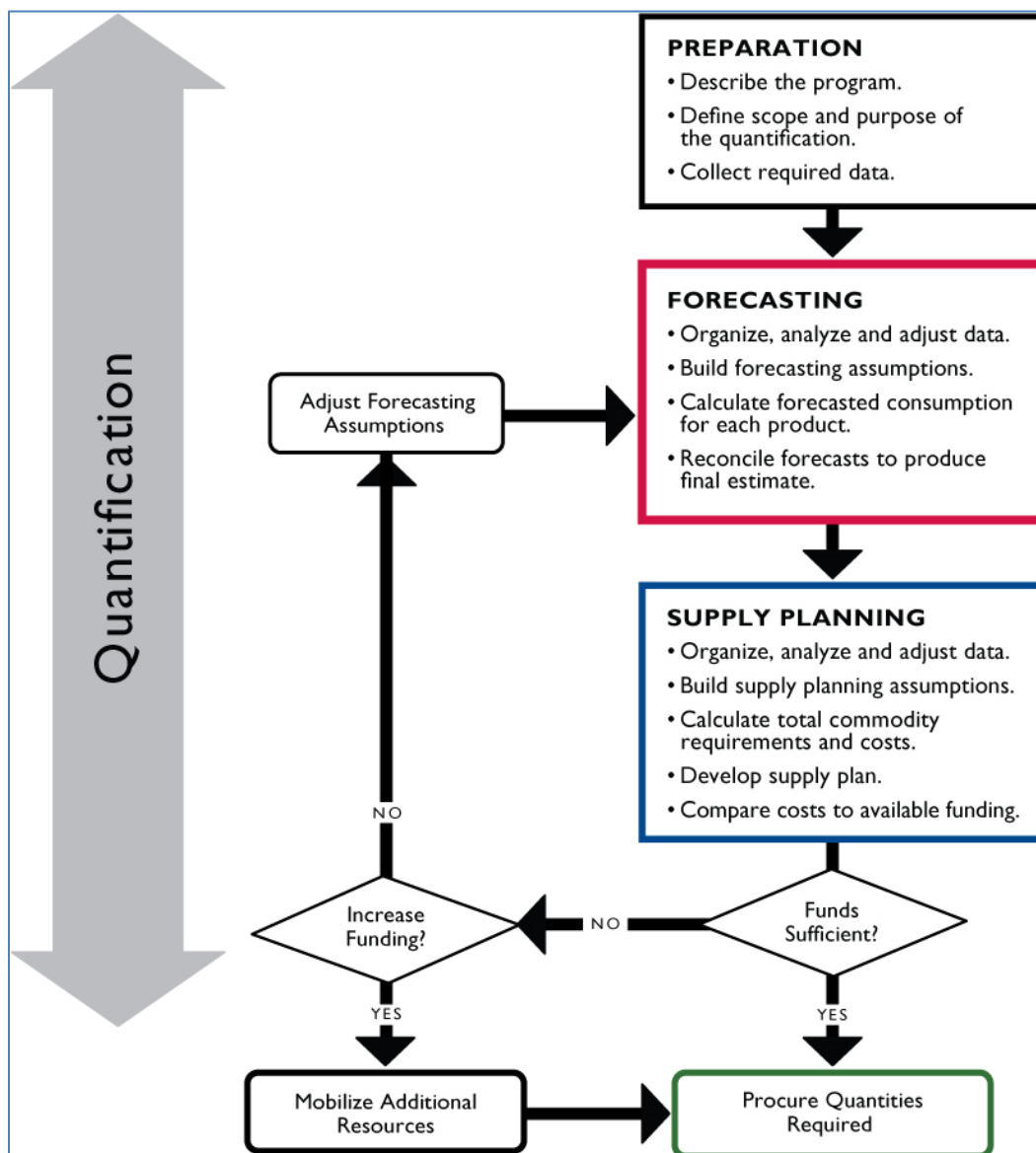
Category	Interventions	Commodities
Vaccinations	tuberculosis	tuberculosis vaccine, bacillus Calmette-Guérin syringes,
	diphtheria, pertussis, tetanus, hemophilus influenza, hepatitis B	pentavalent vaccine, reconstitution syringes, safety boxes
	measles	measles vaccine, syringes
	polio	oral polio vaccine
	meningitis	meningococcal vaccine, syringes
Prevention and management of childhood illnesses	meningitis	antibiotics, IV fluids, corticosteroids
	malaria	artemisinin-based combination therapy, long-lasting insecticide-treated bed net, quinine, rapid diagnostic tests
	diarrhea	IV fluids, zinc, oral rehydration salts
	pneumonia	antibiotics, IV fluids
Management of severe and acute malnutrition	nutritional support	ReSoMal, F75 therapeutic diet, folic acid, therapeutic spread, vitamin A
Others	helminthiasis	mebendazole, albendazole
	non-specific fevers	anti-pyretic medications

Methodology

Quantification Approach

Figure 3 summarizes the quantification approach that we adopted for this exercise. Because the quantification was not going to be used immediately for procurement, we omitted the supply planning step.

Figure 3. Steps in Quantification



The methodology used for this quantification incorporated background document reviews, workshop discussion groups, as well as key informant interviews. The lack of timely and reliable consumption information at the national level meant that we were unable to carry out a consumption-based estimate of MNCH commodity dispensing. In Nigeria, consumption data on MNCH commodities is not reported at the national level. We could have used proxy consumption data from service statistics, but they were not available at the national level. Obtaining data on consumption would, therefore, have required us to visit at least 200 facilities in order to have a meaningful sample; given our time and budget constraints, it was impossible to do this.

The quantification team, therefore, carried out a one-year (August 2012–July 2013) morbidity-based estimate by determining the *incidence* of the main MNCH conditions common in Nigeria. This method requires information about the frequency of common health problems, treatment guidelines, regimens, and number of people to be treated.

Quantification Workshop

The USAID | DELIVER PROJECT convened two quantification workshops to generate assumptions and validate results for this quantification. At the first workshop (July 23–24, 2012), state MOH representatives and other stakeholders were tasked with creating a list of major MNCH conditions, and also commodities used, in their states, as well providing information on how MNCH services are funded.

We compared this information to the international best practice guidelines and, by consensus, with all participants, created a standard list of conditions and commodities. The quantification team then proposed some assumptions for the forecast that we refined, based on feedback from the participants.

We used this information to estimate the commodity needs for the national MNCH program, as well as to estimate a funding gap for Nigeria. We then met the participants for a second workshop (August 24, 2012) to review the assumptions and validate the results of the quantification.

Creation of a Model List of MNCH Commodities

A national list of commodities for the MNCH program in Nigeria was not available before this quantification, but the USAID | DELIVER PROJECT created this list:

First, we invited relevant health officials from the states (e.g., directors of primary care services and directors of pharmaceutical services) and partners working on MNCH issues in Nigeria to a two-day quantification workshop in Abuja. (See appendix A for a list of attendees and their designations.) At this workshop, the quantification team presented a sample list of conditions and treatment protocols to all the participants. The participants were divided into working groups, based on Nigeria's six geopolitical zones; each group was asked to—

- review the sample list provided
- populate one master list with the major MNCH conditions prevalent in their states, then add their incidence, how they are treated, and the source of funding.

The groups were reconvened in a plenary session; each group/region presented its results to the main plenary. At each presentation, the plenary adjusted the list based on feedback from other participants; one master list was generated at the end of the sessions.

Where there was no agreement between the states/regions, we used international best practice guidelines from the World Health Organization (WHO) as the default. After the lists were generated, we used Quantimed software to quantify the commodity requirement. We presented the results to a second workshop, attended by state level and partner participants, in August 2012. (See appendix B for a list of attendees and their designations). Participants were given a second chance to review the list of commodities, based on the results, and to make final adjustments.

Key Informant Interviews

The quantification team held a number of individual meetings with stakeholders at the central level to discuss the plans for the quantification exercise; and to gather data on morbidity, patterns of consumption, and commodity funding. In addition, stakeholders were asked to discuss relevant issues or challenges they encountered, when trying to ensure adequate supplies of MNCH commodities in both the public and private sectors.

The team met with the CHAI, UNICEF, SURE-P MCH, NPHCDA, FMOH, and UNFPA.

Data Collection and Document Review

A key part of our process was the review of national policy and technical documents; we familiarized ourselves with the recommended treatment guidelines and previous activities that could impact the quantification. In addition, we reviewed policy documents to assess information on other major policy decisions that may affect the MNCH program; several documents are listed below:

- *Standard treatment guidelines for Nigeria* (FMOH 2008)
- *National strategic health sector development plan 2010–2015* (FMOH 2010)
- *Nigerian 2006 Census Figures* (available at <http://www.nigeriamasterweb.com/Nigeria06CensusFigs.html>) (accessed on 01-23-2013)
- *National Demographic and Health Survey* (Measure DHS 2008)
- *Multiple Indicator Cluster Survey* (Nigeria) (UNICEF 2010)
- *Saving newborn lives in Nigeria: Newborn health in the context of the Integrated Maternal, Newborn and Child Health Strategy* (FMOH 2011)
- *Standards for Maternal and Neonatal Care* (WHO 2007).

Organizing and Analyzing Data

In carrying out the forecast, the team used the Quantimed software, developed by Management Sciences for Health (MSH). Quantimed facilitates the process of determining the quantities of medicines and related supplies that are required for any health program. For each condition, we used incidence rates to determine the total number of patients who will require treatment for one year. We then entered information on all medicines and related supplies; and added the total requirement and costs by the maternal, newborn, and child categories. Whenever possible, we used local prices for commodities procured locally in Nigeria. Otherwise, prices were taken from the latest *International Drug Price Indicator Guide* (MSH and WHO 2011).

We also estimated commodity requirements for the core 13 MNCH commodities stipulated by the UN commodities commission as vital to every MNCH program (see table 4).

Table 4: Thirteen Core MNCH Commodities (UN commodities commission)

Core commodities
oxytocin
misoprostol
magnesium sulphate
injectable antibiotics
antenatal corticosteroids
chlorhexidine
resuscitation devices
amoxicillin
oral rehydration salts
Zinc
female condoms
contraceptive implants
emergency contraception

The UN commission underscored that, although this list of commodities is not sufficient to run a comprehensive MNCH program, these items must always be available for MNCH conditions because they are key lifesaving commodities.

The quantification team collected information from partners, states, and the Federal Government of Nigeria (FGON) about the current level of funding of commodities for the MNCH program. We totaled this information to determine the current level of expenditure (commitment) for these commodities. We estimated a funding gap as the difference between the results of the forecast and the current level of funding commitment.

The quantification team used Spectrum 4.0 software, developed by The Futures Institute, to model the effect of increasing funding for MNCH commodities on key MNCH indicators. Spectrum is a system of policy models that help analyze, plan, and advocate for improved programming. It can be used to project the impact of increasing the provision of services on key health and social outcomes, at the national level. We used the *Lives Saved* tool in Spectrum to model the impact of increasing the provision of health commodities to levels indicated in the national Integrated Maternal Newborn and Child Health Strategy targets, by 2015. We compared the cumulative number of maternal, newborn, and child lives saved by increasing funding for commodities to meet these targets between 2012 and 2015 to the goal of continuing the current level of funding (i.e., no increase in funding for commodities) for the same period.

Assumptions

Quantification is an estimation of the drugs that will be required over a specific period. The results of any quantification are highly dependent on the accuracy of the data available and the key assumptions made when organizing and analyzing the data to arrive at an estimate. If data are not available, or if the available data are not accurate, complete, or reliable, the accuracy of the quantification results will be affected. These limitations do not mean that quantification cannot be performed with less-than-perfect data. It is crucial that there is a clear understanding of the available

data and assumptions by all users of the quantification results. More important, it is vital that the implications are understood—financial and otherwise—when these assumptions, data, and results are used.

The USAID | DELIVER PROJECT invited the SMOH representatives for a two-day prequantification workshop in Abuja, Nigeria. To generate broad consensus and understanding of the assumptions for this quantification, the workshop participants were divided into six groups, based on the geopolitical regions of Nigeria. Each group discussed a set of prepared assumption questions that were generated using the available data. Each group reviewed the available data and used that data to develop a consensus on broad assumptions, which included the methodologies for determining incidence rates for major MNCH conditions; and defining population groups, targets for different patient groups, and number of episodes in the different population groups.

Following are the key assumptions that were used for the national quantification of MNCH commodities.

Service Population

The quantification team determined the service population based on recent population census results. We backed this up with relevant information from national surveys, such as the Measure DHS 2008. The population projections for August 2012–July 2013 were based on the 2006 Nigeria Census and the annual natural increase of 3.2 percent (Nigeria 2006 Census), which has held constant since 2006. From this, we determined that our target population would include approximately 35 million women of childbearing age (15–49 years), just over seven million newborns (0–28 days), and just under 35 million children less than 5 years of age (1–59 months). See table 5Table 5 and table 6 for more details.

Table 5: Description of Target Maternal Population for the MNCH Quantification

Descriptor	Variable Factor (%)	2012
Total population		171,468,040
Projected annual population growth	3.20	5,486,977
Female population	48.12	82,510,421
Women of childbearing age	21	35,493,884
Proportion of pregnant women of the total population	5	8,573,402
Proportion of pregnancies likely to result in live births	85	7,287,392
Maternal mortality (/100,000)	545/100,000 (not %)	
Percentage of pregnant women likely to attend antenatal clinic in public health facilities	45	3,858,031
Percentage of pregnant women who delivered in health facilities	35	3,000,691
Percentage of pregnant women likely to deliver at home	62	5,324,083
Percentage of women that may require assisted delivery by skilled staff (out of those who receive antenatal care (ANC) in public health facilities)	20	771,606
Percentage of women that may present with pregnancy-	21	1,530,352

related complication (out of pregnancies that result in live births)		
Percentage of pregnant women that receive isoniazid preventive therapy (IPT) at ANC	8.70	745,886
Total percentage rate	5.7	
Contraceptive prevalence rate	15	5,324,083
Percentage of women of child bearing age may present with fistula	1	85,734
Percentage of pregnant women on PMTCT program	2	171,468

Table 6: Description of Target Child Population for the MNCH Quantification

Descriptor	Variable Factor (%)	2012
Children population under 5 years (1–59 months)	20.4	34,979,480
Proportion of children of age 0–12 months	4	6,858,722
Neonatal mortality	0.4	34,294
Proportion of children under five that may present with anemia	28.6	10,004,131
Proportion of children under five that may present with malaria fever	36.4	12,732,531
Proportion of under-five fever cases that uses public health facilities	32	11,193,434
Prevalence of severe acute malnutrition (SAM)	7	2,448,564
Incidence of SAM over for children over one year	1.5	524,692
Health facilities providing immunization	40	13,991,792
Malaria 2006–2010*, under-fives sleeping under long-lasting insecticide-treated bed nets	29	10,144,049

Estimated Requirements for Existing Program Commodities

Several of the target MNCH commodities are already part of the national health programs in Nigeria, or they are provided through partners like UNICEF and UNFPA. The USAID | DELIVER PROJECT, therefore, approached these partners and programs for information on their commodity estimates, if available; as well as any planned changes in coverage for the period of this quantification. From this information, we extracted projections for the relevant MNCH commodities. Where forecasts were available from programs or partners, we compared and reconciled our forecasts with existing forecasts.

Malaria quantification variables were adopted from the national malaria quantification of 2010–2012, which JSI completed on behalf of the National Malaria Control Program (NMCP) (Tecomariam and Mwencha 2010). The SCMS project provided the HIV and AIDS estimates. UNICEF–Nigeria provided the nutrition and vaccine estimates. Family planning commodity figures were extracted from estimates provided by the national family planning program.

Estimation of Percentage of Mothers and Newborns Receiving Post-Natal Care

Data from the Measure DHS 2008 shows that the majority of mothers in Nigeria give birth at home (62 percent). We used data from existing reports to estimate the percentage of newborns and mothers receiving post-natal care in Nigeria. A report from the FMOH, published in 2011, revealed that 38 percent of home births had skilled post-natal care within 48 hours (FMOH 2011). We also found from the same source that 35 percent of deliveries occur in health facilities. We assumed that all deliveries occurring in health facilities would receive postnatal care.

We therefore, estimated the percentage of newborns and mothers receiving postnatal care:

Postnatal care = 35% who deliver in a health facility + 38% of the home births

Treatment Protocols

To obtain an accurate estimate of national needs for MNCH commodities, it is important to have specific treatment protocols for the dosage, frequency of administration, and duration of treatment. To estimate a standard list of medicines and supplies in the entire country, we assumed that treatment in primary PHCs and hospitals follows the standard treatment guidelines for Nigeria. If no guideline exists, treatment will follow the international best practice guidelines. Where we found a discrepancy in treatment protocols between states, we followed the international best practice guidelines from WHO.

We also assumed that admissions (in-hospital stay) for severe infections would last approximately one week (seven days). For adults who receive intravenous (IV) medications during this period, two giving sets would be required. For children and neonates, two giving sets and one nasogastric tube for feeding would be required.

Estimation of Funding Gap

We contacted the FMOH officials, SMOH, and partners for funding commitments for the MNCH commodity groups that were relevant to this forecast. For nutrition expenditures, we contacted the UNICEF–Nigeria office for details about their current estimates and projected expenditures for the next 12 months. We obtained projected figures for PMTCT coverage and estimated expenditure from the SCMS–Nigeria office. We also referred to a 2010 national quantification of malaria commodity requirements. The quantification projected commodity needs for five years, from 2010 to 2015. We extracted the projected requirement for 2012. For family planning commodities, we referred to the latest quantification of contraceptive requirements and funding commitments completed by the USAID | DELIVER PROJECT in 2010.

Using information from the *National Strategic Health Plan for Nigeria 2010–2015* (FMOH 2010), we estimated the percentage of expenditures for out-of-pocket and private health care. For each commodity group, we added these quantities to determine the current level of funding available for commodities. We determined the funding gap by subtracting this number from the cost of the national commodity estimate in this quantification.

Results

The results of the forecasted requirement and financing needs, based on the assumptions made at the stakeholders' workshops, are shown in the following tables and figures. The estimates are shown by target population, commodity category, and health condition.

Overall Estimates

Figure 4 shows the annual national requirement for MNCH commodities for Nigeria. We estimated a total requirement of \$859,496,126. Of this requirement, 68 percent was for children less than 5 years of age.

Figure 4: Forecasted Annual National Requirement of All Commodities for the MNCH Program in Nigeria

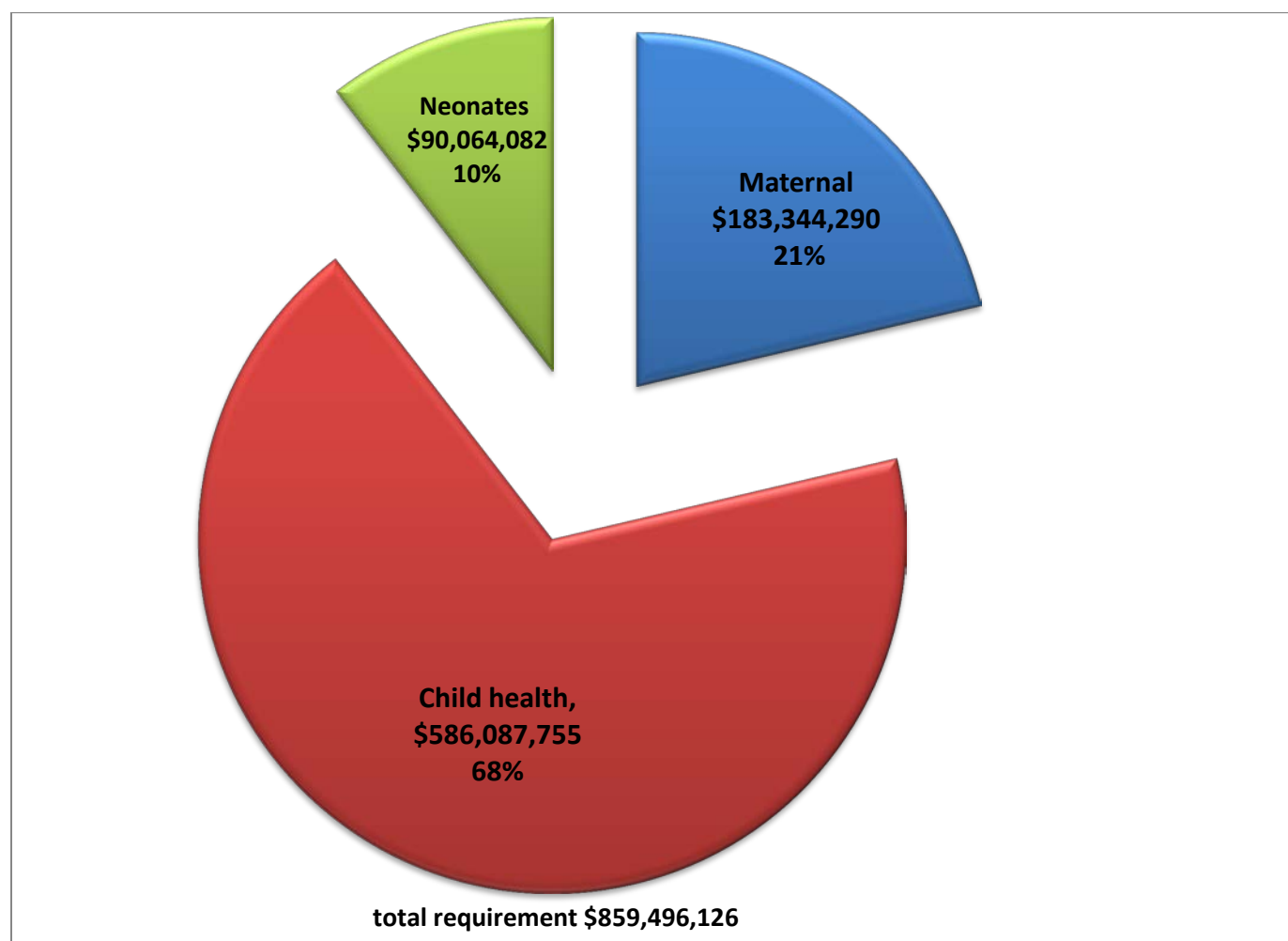
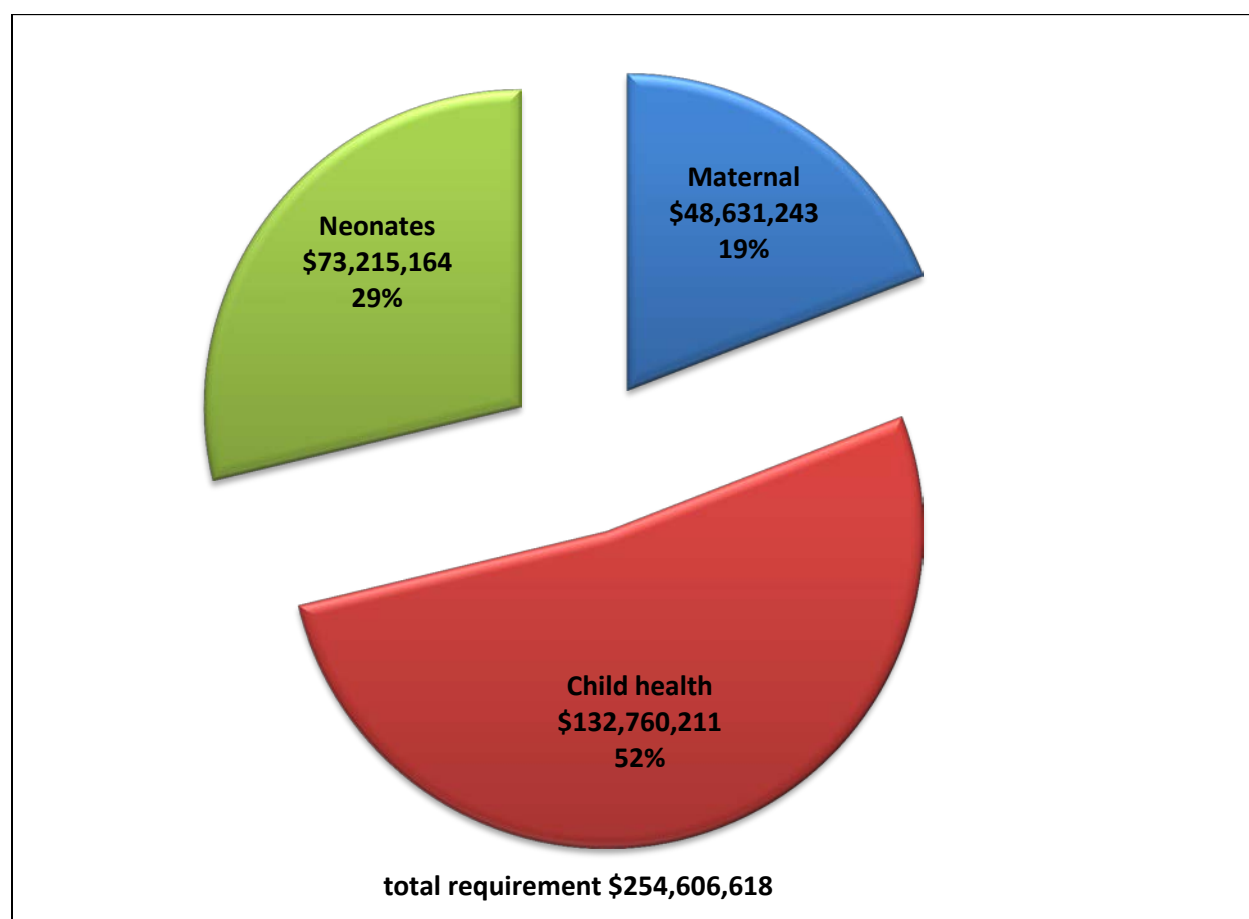


Figure 5 shows the overall cost for the 13 core MNCH commodities recommended by the UN commodities commission. (See Table 4 for a list of these commodities). Of the total requirement, 19 percent would be for women of childbearing age. Of this, \$26,507,588, would be required for essential medicines; \$7,172,734, for family planning commodities; and \$14,950,922, for supplies. Just over half the total requirements would be for children less than 5 years old. Of this, \$94,219,008, would be required for essential medicines, while \$38,541,202 would be required for supplies. For neonates, \$63,212,674, would be required for essential medicines; while \$10,002,491, would be required for supplies.

Figure 5: Forecasted Annual National Requirement for UN Commission 13 Core Lifesaving MNCH Commodities



Maternal Health Estimates

Figure 6: Forecasted Annual Cost (in millions of U.S\$) of Commodities for Maternal Health (women 15–49 years)

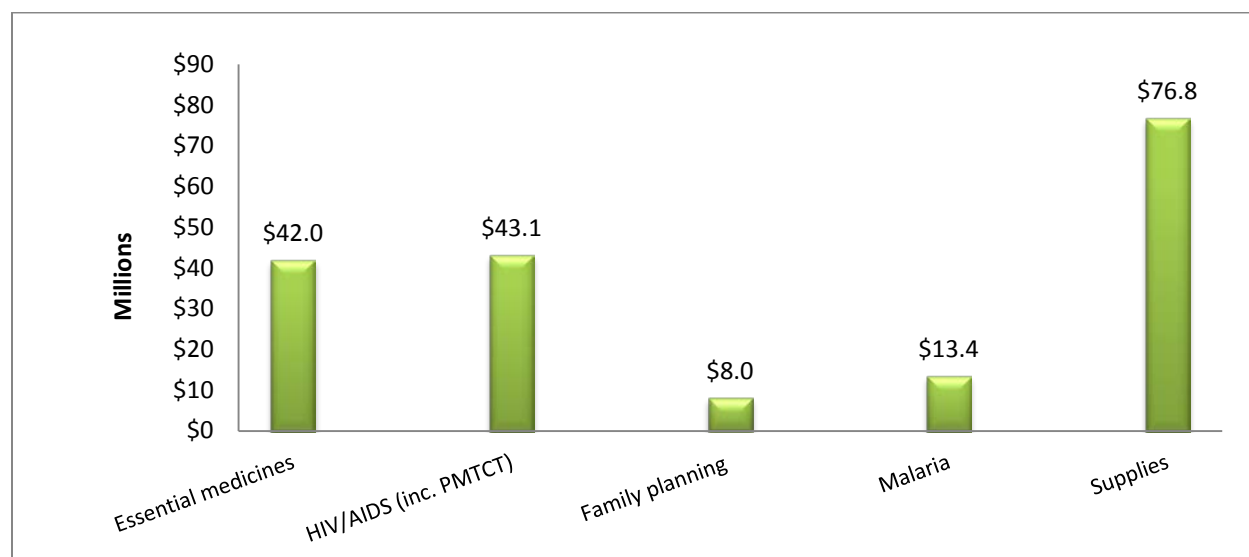
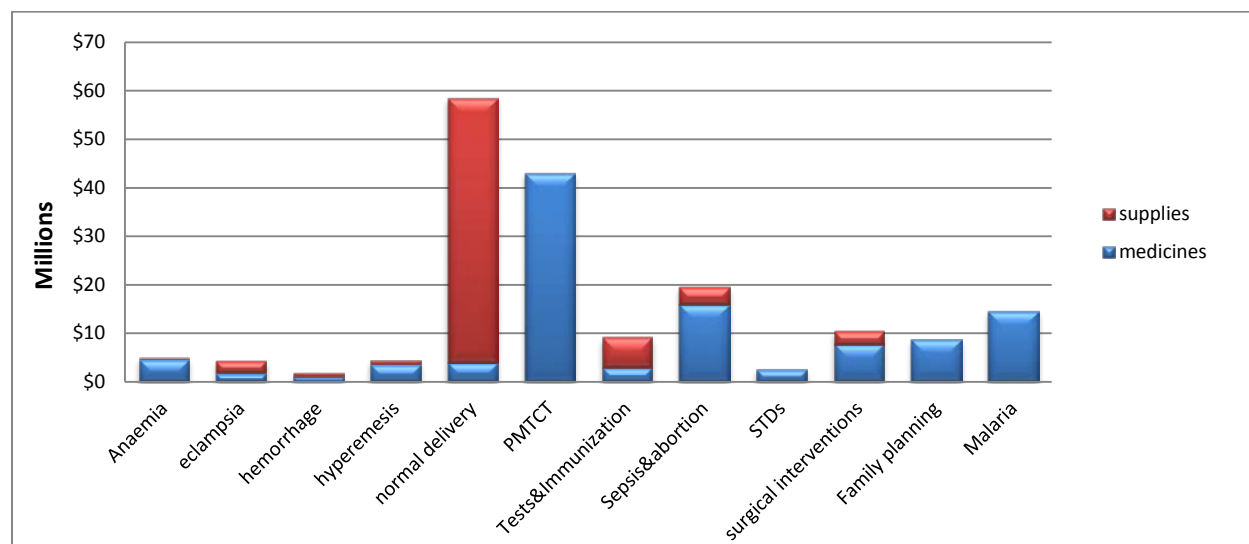


Figure 66 and Figure 7 show the forecasted commodity requirement, by commodity group and by health condition. The largest requirement was for commodities for a normal delivery at \$58,623,542, with mama kits accounting for \$51,011,743, of this, per annum. Medicines for PMTCT were the next highest cost, at \$31,193,294, per annum. Other significant costs were commodities for sepsis and abortion (\$19,627,014) and malaria (\$14,647,958). See appendix D for a detailed list of maternal commodities and the cost of the annual requirement.

Figure 7: Estimated Annual Requirement for Maternal Health Commodities by Health Condition



Child Health Estimates

Figure 8: Forecasted Annual Cost (in millions of U.S.\$) of Commodities for Child Health (1–59 months) by Commodity Category



Figure 8, figure 9, and figure 10 show the annual estimated cost by commodity group and by health condition. Out of the total cost of requirements for essential medicines, medicines and supplies for diarrhea alone accounted for \$95,035,239, which was almost half of the annual requirement. A detailed list of child commodities and cost of the annual requirement is available in appendix E.

Figure 9: Estimated Annual Requirement (in millions of U.S.\$) for Child Health Commodities by Health Condition

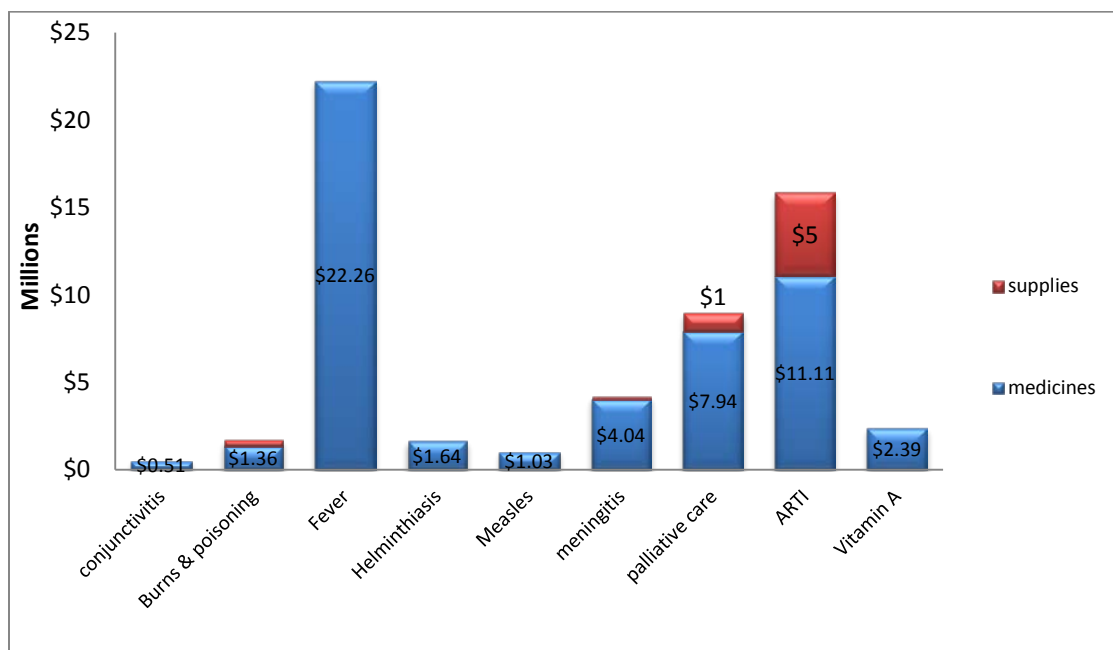


Figure 10: Estimated Annual Requirements (in millions of U.S.\$) for Child Health Commodities for Major Health Conditions

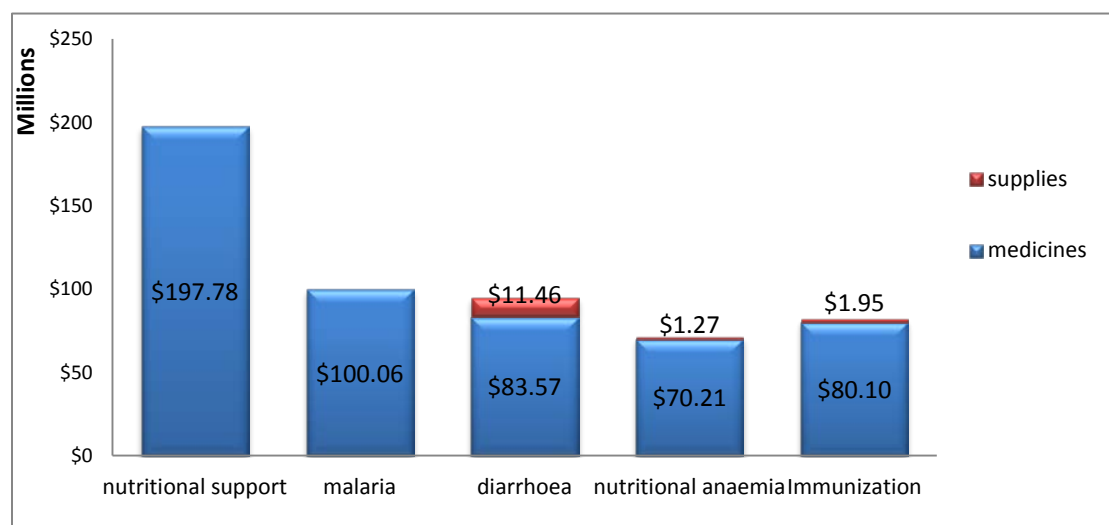


Table 7 shows the estimated cost of commodities for nutritional support for the MNCH program in Nigeria. This forecast was heavily supported by information provided by UNICEF–Nigeria. Given an estimated prevalence of severe acute malnutrition of 7 percent and a therapeutic feeding target number of admissions of 3,505,404, we estimated that, in the next year, Nigeria will need to procure nutrition supplies at a total cost of \$197,784,399. The estimate takes into account the nutrition supplies currently in stock in-country and in the pipeline, including 10 percent for wastage and leakage.

The most costly commodity was therapeutic spread, mainly because there is no local source. It would have to be procured from international suppliers.

Table 7: Estimated Annual Requirement of Nutritional Commodities for Nigeria

Nutrition supplies	Unit cost	Quantity required	Estimated cost of supplies	International freight costs*	Total cost of supplies
ReSoMal, 42g sachet/IL/CAR-100	\$26	771	\$19,755	\$1,056	\$20,811
F75 Therapeutic diet, sachet 102.5g/CAR-120	\$58	9640	\$558,156	\$15,977	\$574,133
Folic acid 5mg tabs/PAC-1000	\$4	386	\$1,664	\$6	\$1,670
Therapeutic spread, sachet 92g/CAR-150	\$54	3496056	\$188,787,078	\$6,213,977	\$195,001,055
Retinol 100,000IU soft gel.caps/PAC-500	\$7	7712	\$55,218	\$496	\$55,714
Retinol 200,000IU soft gel.caps/PAC-500	\$9	7712	\$70,719	\$347	\$71,066
Mebendazole 500 mg tabs/PAC-100	\$3	38559	\$104,498	\$806	\$105,304
Amoxici.pdr/oral sus 125mg/5ml/BOT-100ml	\$0	3470346	\$1,596,359	\$100,828	\$1,697,187
Estimated total cost (Usd)			\$191,440,263	\$6,344,137	\$197,784,399

(Source: UNICEF 2010)

Newborn Estimates

Figure 11 and figure 12 show the annual requirement of commodities for newborns by commodity category and by health condition. The USAID | DELIVER PROJECT estimated a total cost of requirement of \$71,512,444, for essential medicines and \$11,597,118, for supplies. The bulk of this was for neonatal sepsis at \$10,943,268, followed closely by medicines for PMTCT (\$6,954,519) and diarrhea (\$ 4,832,066).

Figure 11: Forecasted Annual Cost (in millions of U.S.\$) of Commodities for Newborns by Commodity Category

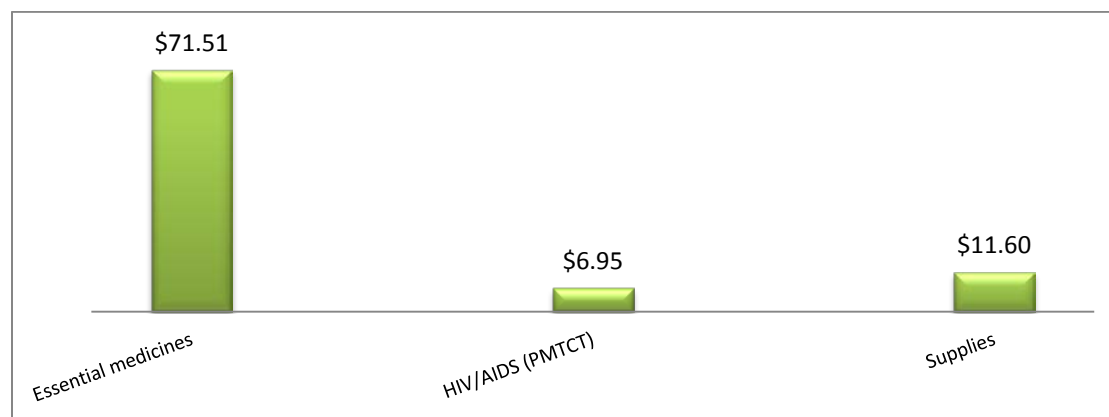
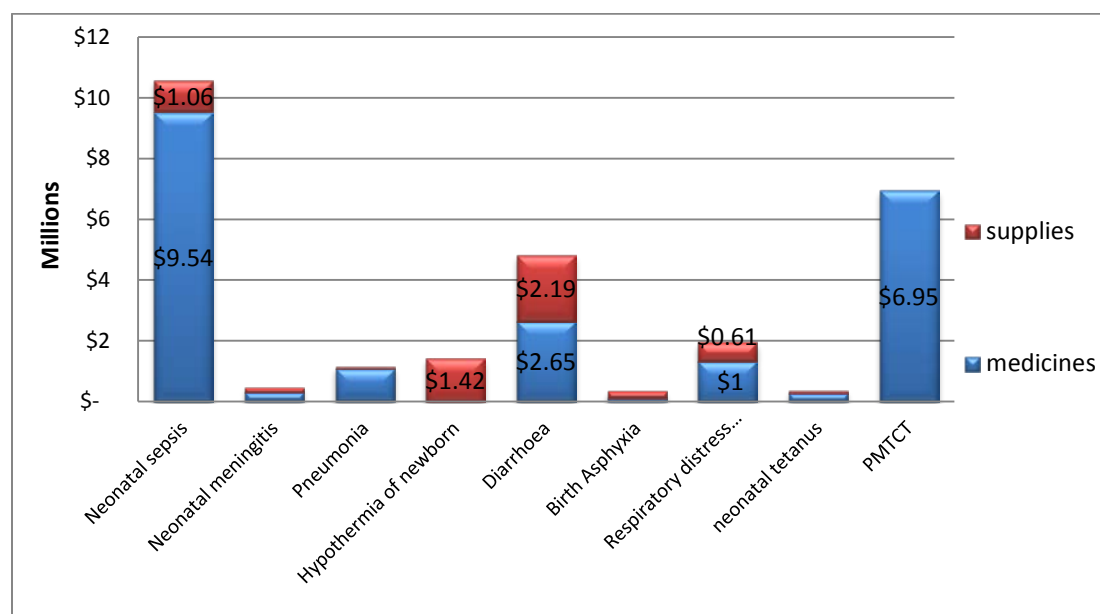


Figure 12: Estimated Annual Requirement (in millions of U.S.\$) for Newborn Health Commodities by Health Condition



A detailed list of all newborn commodities and cost of the annual requirement is available in appendix F.

Funding Gap Analysis

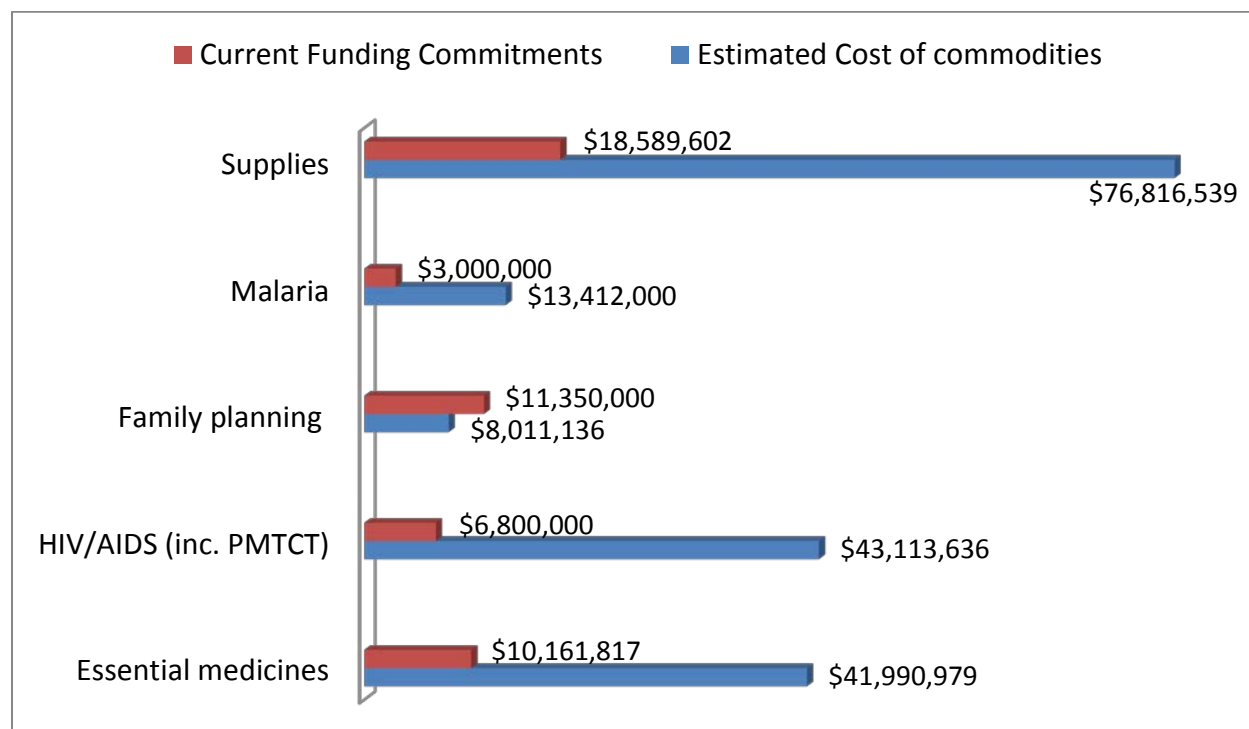
The quantification team found an annual requirement of \$859,496,126, for commodities and supplies for Nigeria's MNCH program. According to the Nigeria health sector strategic development plan, 12.1 percent of this requirement is funded by FGON, 7.6 percent by the state governments through drug revolving funds and other sources, and 4.5 percent by local government authorities. Using information provided by the state MOH representatives, FGON, and development partners, we were able to estimate a current level of funding commitment toward the purchase of these commodities of approximately \$361,719,211. The remaining annual funding gap was approximately \$497,776,915. See appendix C for a detailed breakdown of current levels of funding.

The team found the biggest gap in funding for maternal commodities—approximately \$49,901,419. Out of the total annual requirement for maternal supplies of \$76,816,539, we found a current level of funding commitment of only \$18,589,602. Most of this was estimated to be currently provided by the states and the local government authorities, through their federal grants.

For family planning commodities, the team found an annual requirement of \$8,011,136. However, information from FGON, UNFPA, DFID, and CIDA showed a current level of commitment of \$11,350,000, for the next fiscal period. This meant that there was an excess of \$3,338,864, for family planning commodities, which will probably be carried into the next fiscal period.

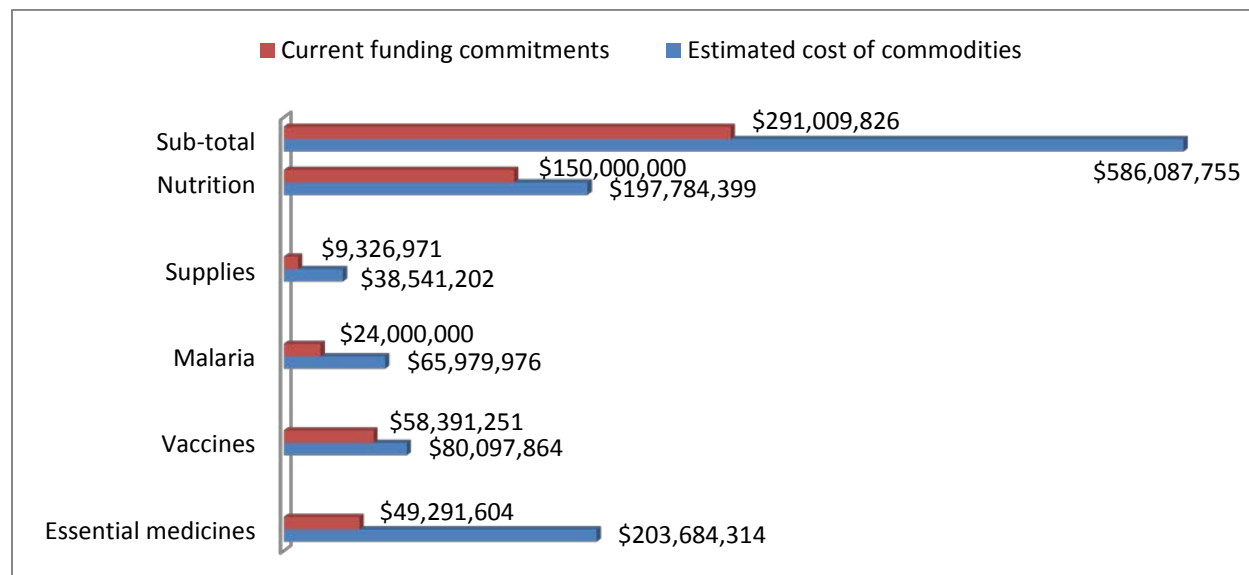
Figure 13, figure 14, and figure 15 illustrate the current level of funding commitments and the estimated annual requirement for newborn, child, and maternal health commodities.

Figure 13: Estimated Cost and Current Funding Commitments for Maternal Health Commodities



For maternal health commodities, we estimated an annual requirement of \$174,599,420, and current funding commitments of \$49,901,419, leaving a gap of about \$124,698,000.

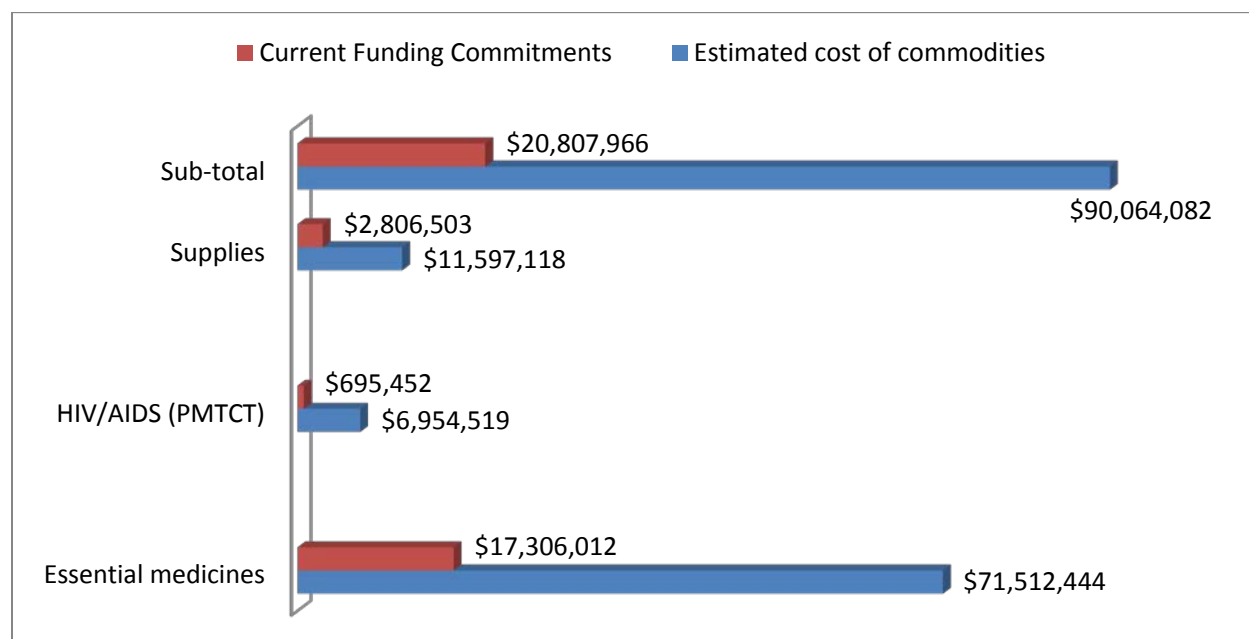
Figure 14: Estimated Cost and Current Funding Commitments for Child Health Commodities



For child health commodities, we estimated an annual requirement of \$620,167,755, and current funding commitments of \$291,009,826, leaving a gap of \$329,157,929.

For newborn health commodities, the team estimated an annual requirement of \$90,064,082, and current funding commitments of \$20,807,966, leaving a gap of about \$69,256,116.

Figure 15: Estimated Cost and Current Funding Commitments for Newborn Health Commodities



Discussion

This forecast does not include guidance on the logistical support that needs to be in place to ensure these supplies reach the mothers, newborns, and children in need after they have been procured, or the program management costs. The quantification team estimated an annual commodity requirement of \$859,496,126, which is an annual spend of approximately \$5.00 for each Nigerian. Our results show that significant reductions in newborn mortality can be achieved by making comparatively small, but highly effective, investments in maternal health interventions. We found that to provide the total annual requirement of maternal commodities would require approximately \$133 million in additional funding, while neonatal commodities would require \$295 million. By increasing provision and coverage of timely antenatal care, especially to rural communities, it is possible to offset a substantial percentage of newborn mortality and morbidity for full-term pregnancies.

Projections of Increased Coverage

Our projections show that by significantly increasing commodity availability only for Nigeria's MNCH program, it is possible to save approximately 1,800,000 lives by 2015. We used the *Lives Saved* tool in Spectrum to model the impact of increasing the provision of health commodities to levels indicated in the national *Integrated Maternal Newborn and Child Health Strategy* targets by 2015. We compared the cumulative number of maternal, newborn, and child lives saved by increasing funding for commodities to meet these targets between 2012 and 2015 to continuing with the status quo of funding (i.e., no increase in funding for commodities) for the same period. 16, Figure 17, and 18 show the results of the estimated projections of lives saved for newborns, children less than 5 years old, and mothers, respectively. We estimated that by 2015, about 274,856 women of reproductive age would be saved by increasing commodity availability compared to continuing with the current level of funding. Similarly, we estimated that by 2015 about 475,072 newborns and about 1,139,810 children less than five years old would be saved by increasing the availability of commodities alone.

Figure 16: Cumulative Neonatal Lives Saved by Provision of Health Commodities to Meet IMNCH Strategy Targets

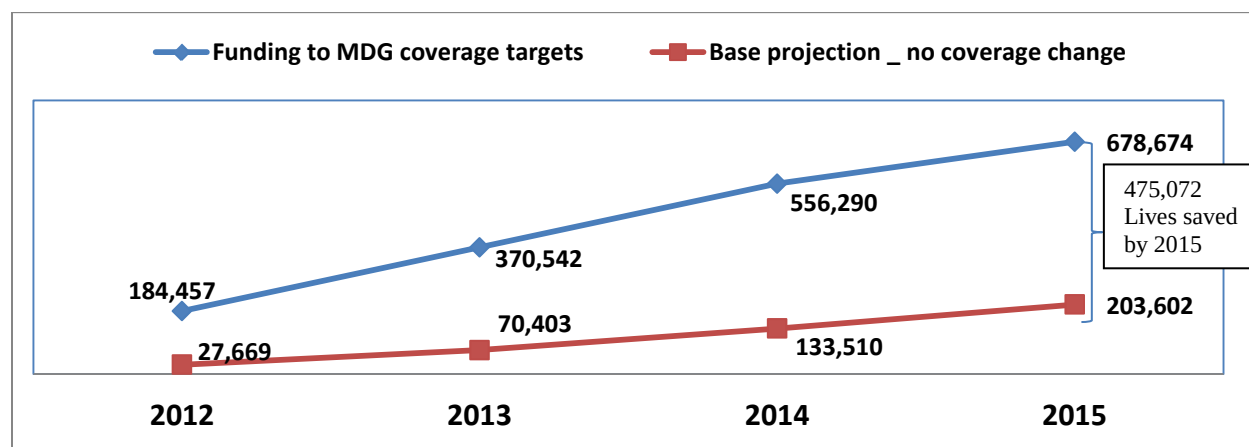


Figure 17: Cumulative Number of Child Lives Saved by Provision of Health Commodities to Meet IMNCH Strategy Targets

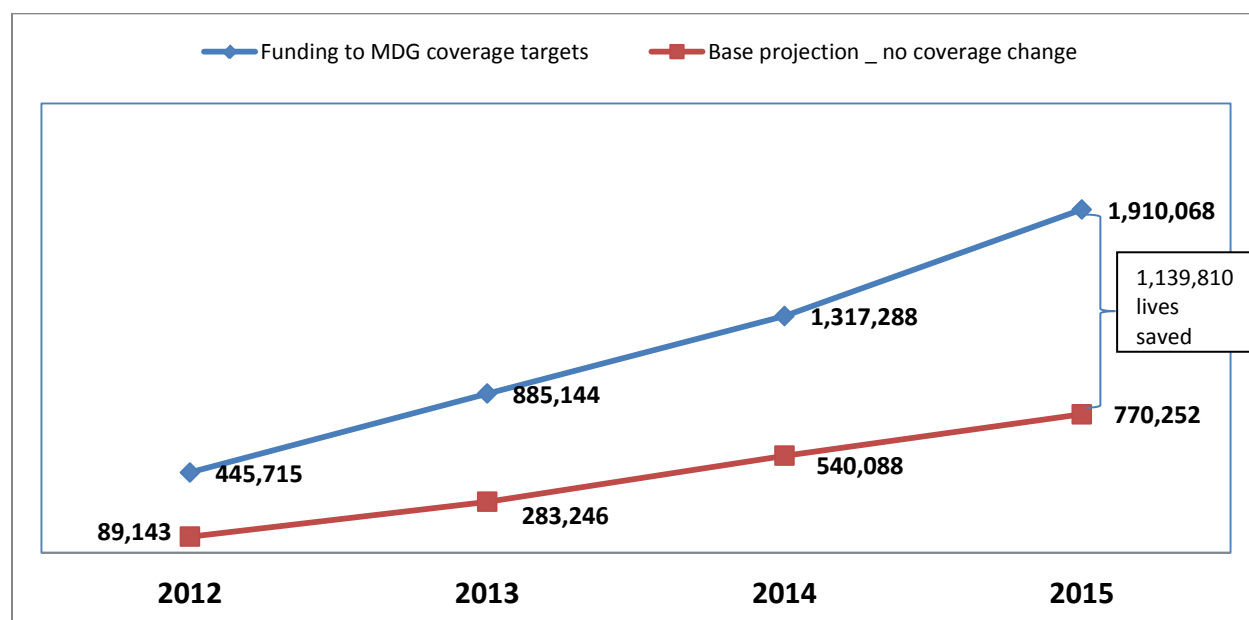
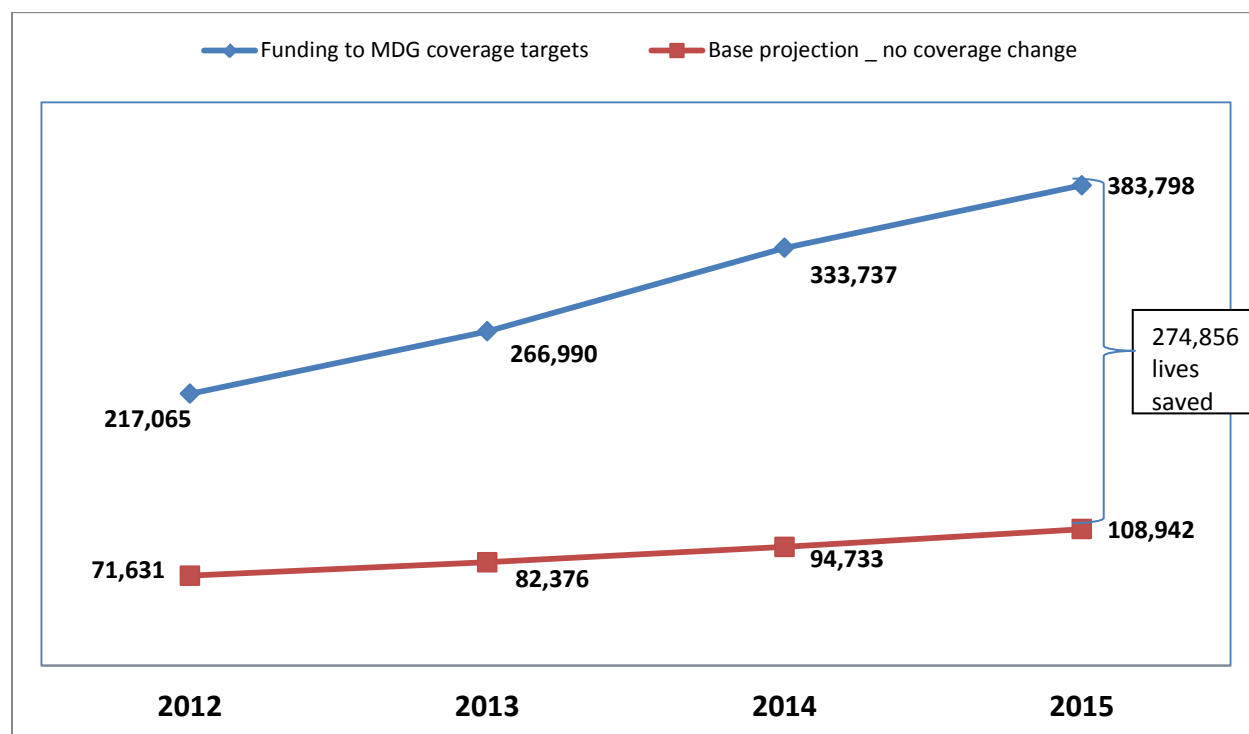


Figure 18: Cumulative Number of Maternal Lives Saved by Provision of Commodities to Meet IMNCH Strategy Targets



Further work is required to determine the timing and methods of procurement for these commodities each year. Therefore, it is necessary to develop a procurement plan that considers the existing stock levels and commodities that may already be on order through the states or partners. To ensure a constant availability of all MNCH medicines and supplies in Nigeria, this plan should match the procurement and timing of commodities with the fluctuating levels of demand. In other words, it is important to develop a supply plan.

Furthermore, the quantification team recommends that the FMOH and its partners use the results of this forecast to source for funding. The creation of an MNCH commodity security group that brings together key stakeholders to review the status of MNCH commodities in the country would go a long way toward achieving this goal. The success of the similar reproductive health commodity security group in finding sufficient resources for contraceptives for 2012 should offer encouragement to all MNCH stakeholders that this strategy could pay dividends in Nigeria. Also, given the high level of fragmentation in the governance of the Nigerian health system, it is important to involve states in this coalition. It is through this forum that innovative ways of procurement—such as framework contracting and pooled procurement, which have the potential to significantly the return per dollar spent—should be discussed with all stakeholders.

Finally, approximately 95 percent of the commodity requirement for nutritional support would be spent on therapeutic spread annually. From our estimates, this accounted for just over \$195 million. This high cost is mainly due to a lack of local sources for this commodity. It is imperative that the FGON and partners agree to accelerate efforts to produce therapeutic spread locally. This would offset a significant proportion of the nutritional commodity cost.

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Appendix A: Quantification Workshop I Participants List

PARTICIPATION LIST
NATIONAL MNCH QUANTIFICATION ASSUMPTION BUILDING WORKSHOP
TOP RANK HOTELS GALAXY, UTAKO, ABUJA
23RD – 24TH JULY, 2012

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Appendix B: Quantification Workshop 2 Participants List

ATTENDANCE SHEET

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Appendix C: Estimated Annual Cost of MNCH Commodity Requirements and Funding Gap

	Product Category	Estimated Cost Commodities	Current Funding Commitments	Funding Gap
Maternal Health	Essential medicines	\$ 41,990,979	\$ 10,161,817	\$ 31,829,162
	HIV/AIDS (inc. PMTCT)	\$ 34,368,766	\$ 6,800,000	\$ 27,568,766
	Family planning	\$ 8,011,136	\$ 11,350,000	(3,338,864)
	Malaria	\$ 13,412,000	\$ 3,000,000	\$ 10,412,000
	Supplies	\$ 76,816,539	\$ 18,589,602	\$ 58,226,936
	Sub-total	\$ 174,599,420	\$ 49,901,419	\$ 124,698,000
Child Health (1–59 months)	Essential medicines	\$ 203,684,314	\$ 49,291,604	\$ 154,392,710
	Vaccines	\$ 80,097,864	\$ 58,391,251	\$ 21,706,613
	Malaria	\$ 100,059,976	\$ 24,000,000	\$ 76,059,976
	Supplies	\$ 38,541,202	\$ 9,326,971	\$ 29,214,231
	Nutrition	\$ 197,784,399	\$ 150,000,000	\$ 47,784,399
	Sub-total	\$ 620,167,755	\$ 291,009,826	\$ 329,157,929
Newborns (0–1 months)	Essential medicines	\$ 71,512,444	\$ 17,306,012	\$ 54,206,433
	HIV/AIDS (PMTCT)	\$ 6,954,519	\$ 695,452	\$ 6,259,067
	Supplies	\$ 11,597,118	\$ 2,806,503	\$ 8,790,615
	Sub-total	\$ 90,064,082	\$ 20,807,966	\$ 69,256,116
		\$ 884,831,256	\$ 361,719,211	\$ 523,112,045

Appendix D: Maternal Health Commodity List for Nigeria MNCH Program

Maternal Health		Product	Units	Quantity Required	Unit Price	Extended Price (\$)	Subtotal (\$)	Total Cost (\$)
Anaemia	medicines	folic acid 5MG/tab TABLET (PO)	tab	861,930,020	0.0023	2,165,127	4,745,430	
		ferrous salt 200MG/tab TABLET (PO)	tab	861,930,020	0.0023	2,165,127		
		iron dextran 50MG/amp AMPOULE (INJ)	amp	1,648,500	0.2306	415,176		
	supplies	Blood Bags	pcs	667,250	0.102	74,331	283,108	
		Giving Set IV	pcs	70,650	0.09375	7,234		
		Giving Set Blood	pcs	667,250	0.2342	170,671		
		Canula IV 18g	pcs	70,650	0.3126	24,120		
		Syringe + Needle 5ml	pcs	82,425	0.075	6,752		5,028,538
eclampsia	medicines	magnesium sulfate 500MG/vial VIAL (INJ)	vial	1,802,360	0.0983	193,499	1,878,382	
		methyldopa 250MG/tab TABLET (PO)	tab	32,437,770	0.0303	1,073,438		
		hydralazine 20MG/amp AMPOULE (INJ)	amp	182,905	1.98749995	397,024		
		dextrose in water 50MG/ml SOLUTION (IV)	ml	16,092,500	0.0009	15,818		
		calcium gluconate 100MG/amp AMPOULE (INJ)	amp	80,463	2.25999999	198,603		
	supplies	Giving Set IV	pcs	64,370	0.09375	6,591	2,471,158	
		Antishock garment				2,416,099		
		Canula IV 20g	pcs	64,370	0.3126	21,976		
		Syringe + Needle 5ml	pcs	323,420	0.075	26,492		4,349,540
hemorrhage	medicines	oxytocin 10IU/amp	amp	1,609,250	0.1495	262,753	1,111,886	

		AMPOULE (INJ)						
		metronidazole 200MG/tab TABLET (PO)	tab	9,655,500	0.0052	54,835		
		dextrose-normal saline 50MG+9MG/ml SOLUTION (IV)	ml	96,555,004	0.0009	94,908		
		dextrose in water 50MG/ml SOLUTION (IV)	ml	80,462,502	0.0009	79,090		
		Misoprostol 200MCG/tab TAB-CAP (PO)	tab	724,163	0.78430003	620,300		
	supplies	Chlorhexidine Surgical Scrub	ml	4,023,125	0.00140325	6,166	673,401	
		Blood Bags	pcs	193,110	0.102	21,512		
		Foley's Catheter 18g	pcs	64,370	0.625	43,939		
		Examination Gloves	pairs	1,931,100	0.0625	131,816		
		Face Masks	pcs	965,550	0.00626	6,601		
		Giving Set IV	pcs	643,700	0.09375	65,908		
		Giving Set Blood	pcs	193,110	0.2342	49,394		
		Canula IV 20g	pcs	643,700	0.3126	219,764		
		Suture chromic Catgut I	pcs	128,740	0.25	35,151		
		Syringes + Needle 10ml	pcs	321,850	0.1125	39,545		
		Urine Bag	bags	32,185	0.025	879		
		Sanitary Pads	pcs	1,931,100	0.025	52,726		1,785,287
Hyperemesis	medicines	dextrose in water 50MG/ml SOLUTION (IV)	ml	117,750,006	0.0009	115,741	3,693,679	
		promethazine hcl 25MG/tab TABLET (PO)	tab	33,558,751	0.0044	161,266		
		cyclizine 50MG/tab	tab	1,766,250	0.122	235,340		
		promethazine 12.5MG/ml AMPOULE (INJ)	ml	13,423,500	0.21699999	3,181,332		
	supplies	Giving Set IV	pcs	235,500	0.09375	24,113	881,522	
		Canula IV 18g	pcs	235,500	0.3126	80,401		

		Syringe + Needle 2ml	pcs	13,423,500	0.053	777,007		4,575,200
normal delivery	medicines	nifedipine 10MG/tab TABLET (PO)	tab	2,747,500	0.0129	38,709	4,054,083	
		oxytocin 10IU/amp AMPOULE (INJ)	amp	2,512,000	0.1495	410,152		
		metronidazole 200MG/tab TABLET (PO)	tab	94,200,001	0.0052	534,980		
		sodium chloride 9MG/ml SOLUTION (IV)	ml	1,256,000,037	0.001	1,371,744		
		sulfamethoxazole - trimethoprim 400MG+80MG/tab TABLET (PO)	tab	75,360,004	0.0109	897,121		
		dexamethasone 4MG/amp AMPOULE (INJ)	amp	2,001,750	0.0945	206,598		
		betamethasone 4MG/amp AMPOULE (INJ)	amp	294,375	1.85000002	594,780		
	supplies	Chlorhexidine Surgical Scrub	ml	7,850,000	0.00140325	12,031	54,569,458	
		Cotton Wool	Roll	392,500	0.1446	61,986		
		Examination Gloves	pairs	4,710,000	0.0625	321,503		
		Giving Set IV	pcs	6,280,000	0.09375	643,005		
		Canula IV 20g	pcs	6,280,000	0.3126	2,144,036		
		Syringe + Needle 5ml	pcs	1,962,500	0.075	160,751		
		Mama Kit	pcs	6,672,500	7	51,011,743		
		Partograph	pcs	6,280,000	0.03126	214,404		58,623,542
PMTCT	medicines	sulfamethoxazole-trimethoprim 800MG+160MG/tab TABLET (PO)	tab	2,826,000	0.0225	69,445	31,193,294	
		3TC-AZT 150MG+300MG/tab TABLET (PO)	tab	2,552,443	0.43250001	1,205,662		

		AZT 300MG/tab TABLET (PO)	tab	14,506,800	0.20966667	3,321,885		
		3TC-AZT-EFV 150MG+300MG+600MG/tab TAB-CAP (PO)	tab	12,011,630	0.37755555	4,952,977		
		3TC-AZT-ABC 150MG+300MG+300MG/tab TAB-CAP (PO)	tab	290,136	0.46483332	147,293		
		Nevirapine 200MG/tab TABLET (PO)	tab	94,200	0.357	36,728		
		Lopinavir-Ritonavir 200MG+50MG/tab TABLET (PO)	tab	7,195,373	0.31499999	2,475,411		
		EFV-FTC-TDF 600MG+200MG+300MG/tab TAB-CAP (PO)	tab	23,210,880	0.69733334	17,677,285		
		3TC-TDF 300MG+300MG/tab TAB-CAP (PO)	tab	1,880,081	0.48500001	995,868		
		EFV 600MG/tab TABLET (PO)	tab	1,880,081	0.15133333	310,738		31,193,294
Routine tests and immunizations	medicines	vaccine, tetanus toxoid 10ML/vial VIAL (INJ)	vial	1,570,000	1.74000001	2,983,544	2,983,544	
	supplies	Test, Syphilis VDRL Carbon Antigen	TEST	7,850,000	0.30000001	2,572,021	6,176,750	
		Syringe + Needle 2ml	pcs	15,700,000	0.053	908,781		
		Test, Hepatitis BSAg	TEST	392,500	1.175	503,687		
		Pregnancy Test	TEST	3,140,000	0.1192	408,780		
		Test, Hepatitis C, HCVScan (TM)Rapid test	TEST	392,500	4.16049988	1,783,482		9,160,294
Sepsis and abortion	medicines	oxytocin 10IU/amp AMPOULE (INJ)	amp	1,962,500	0.1495	320,431	16,008,147	
		ceftriaxone 1G/vial VIAL (INJ)	vial	10,000,900	0.76319999	8,336,062		
		gentamicin sulfate 40MG/amp AMPOULE (INJ)	amp	5,171,580	0.40401	2,281,912		

		metronidazole 200MG/tab TABLET (PO)	tab	30,615,000	0.0052	173,869		
		dextrose in water 50MG/ml SOLUTION (IV)	ml	1,020,499,992	0.0009	1,003,088		
		Misoprostol 200MCG/tab TAB-CAP (PO)	tab	883,125	0.78430003	756,463		
		ampicillin-cloxacillin 250MG+250MG/caps CAP (PO)	caps	40,820,000	0.063	2,808,646		
		metronidazole 5MG/ml VIAL (INJ)	ml	61,230,000	0.0049	327,675		
	supplies	Chlorhexidine Surgical Scrub	ml	7,850,000	0.00140325	12,031	3,618,867	
		Foley's Catheter 18g	pcs	628,000	0.625	428,670		
		Cotton Wool	Roll	628,000	0.1446	99,177		
		Examination Gloves	pairs	3,768,000	0.0625	257,202		
		Face Masks	pcs	3,061,500	0.00626	20,931		
		Giving Set IV	pcs	1,648,500	0.09375	168,789		
		Canula IV 20g	pcs	1,020,500	0.3126	348,406		
		Syringes + Needle 10ml	pcs	392,500	0.1125	48,225		
		Syringe + Needle 5ml	pcs	3,768,000	0.075	308,642		
		Syringe + Needle 2ml	pcs	2,355,000	0.053	136,317		
		Urine Bag	bags	628,000	0.025	17,147		
		Chlorine based Cpd powder for soln 0.1%	ml	12,560,000	0.00833333	114,312		
		Water for injection 10ml	pcs	4,553,000	0.01875	93,236		
		Surgical Gloves size 8	pair	2,355,000	0.24379999	627,059		
		Sanitary Pads	pcs	8,262,125	0.025	225,588		
		Izal	ml	37,679,999	0.01732917	713,136		19,627,014
STDs	medicines	azithromycin 500MG/tab TABLET (PO)	tab	2,331,450	0.62190002	1,583,544	2,694,190	
		penicillin, benzathine benzyl	vial	223,725	0.242	59,131		

		2.4MU/vial POWDER (INJ)						
		Cefixime 400MG/tab TAB-CAP (PO)	tab	1,942,875	0.47409999	1,006,001		
		erythromycin 500MG/tab TABLET (PO)	tab	659,400	0.0632	45,514		
	supplies	Syringe + Needle 5ml	pcs	626,430	0.075	51,312	51,312	2,745,502
surgical interventions	medicines	Amoxicillin 250MG/cap CAP (PO)	cap	6,123,000	0.01716	114,753	7,911,380	
		oxytocin 10IU/amp AMPOULE (INJ)	amp	785,000	0.1495	128,172	7,796,627	
		gentamicin sulfate 40MG/amp AMPOULE (INJ)	amp	2,355,000	0.40401	1,039,122		
		metronidazole 200MG/tab TABLET (PO)	tab	8,242,500	0.0052	46,811		
		dextrose in water 50MG/ml SOLUTION (IV)	ml	863,500,002	0.0009	848,767		
		metronidazole 5MG/ml VIAL (INJ)	ml	47,100,000	0.0049	252,058		
		halothane 10ML/each LIQUID (INH)	each	113,825	3.10529995	386,033		
		amoxicilline 500MG/vial VIAL (INJ)	vial	2,884,875	1.48500004	4,678,827		
		ketamine 50MG/vial VIAL (INJ)	vial	1,259,925	0.0867	119,302		
		atropine sulfate 1000MCG/ml AMPOULE (INJ)	ml	261,876	0.1	28,601		
		diclofenac 25MG/amp AMPOULE (INJ)	amp	879,200	0.0708	67,984		
		pentazocine 30MG/amp AMPOULE (INJ)	amp	219,800	0.1469	35,264		
		tramadol hydrochloride 100MG/amp AMPOULE (INJ)	amp	1,538,600	0.0986	165,686		
	supplies	Chlorhexidine Surgical Scrub	ml	10,990,000	0.00140325	16,843	2,751,172	

		PVP Iodine	ml	15,072,000	0.0069	113,580		
		Adhesive Plaster	pcs	843,875	0.0125	11,521		
		Blood Bags	pcs	62,800	0.102	6,996		
		Foley's Catheter 18g	pcs	694,725	0.625	474,216		
		Face Masks	pcs	1,648,500	0.00626	11,271		
		Gauze	pcs	1,746,625	0.133	253,708		
		Giving Set IV	pcs	843,875	0.09375	86,404		
		Giving Set Blood	pcs	62,800	0.2342	16,063		
		Canula IV 20g	pcs	1,000,875	0.3126	341,706		
		Surgical Blades Size 20	pcs	549,500	0.0625	37,509		
		Suture Chromic Catgut 0	pcs	549,500	0.25	150,035		
		Suture chromic Catgut 1	pcs	549,500	0.25	150,035		
		Syringes + Needle 10ml	pcs	843,875	0.1125	103,685		
		Syringe + Needle 5ml	pcs	1,177,500	0.075	96,451		
		Urine Bag	bags	549,500	0.025	15,003		
		Water for injection 10ml	pcs	1,099,000	0.01875	22,505		
		Surgical Gloves size 8	pair	2,814,225	0.24379999	749,335		
		Methylene Blue	ml	157,000	0.5	85,734		
		Extra chromic suture 3	pcs	31,400	0.25	8,573		18,459,179
Family planning		Condom Female		812,089	1.24	1,099,179	8,749,386.88	
		Condom Male		21,979,643	0.03	672,144		
		Depo Provera		1,210,518	0.75	989,835		
		Exluton/Microlut		716,586	0.46	358,832		
		IUD		459,951	0.41	208,319		
		Microgynon*		947,550	0.38	388,180		
		Noristerat		1,815,777	1.48	2,926,867		
		Implanon		53,100	19.44	1,127,281		

		Jadelle		45,861	18.84	943,549		
		Cycle Beads		26,881	1.20	35,200		8,749,387
Malaria		IPTp (SP)		7,850,000	0.42	3,600,829		
		LLIN		1,011,500	10	11,047,129		14,647,958

Appendix E: Child Health Commodity List for the Nigeria MNCH Program

Child Health		Product	Units	Quantity Required	Unit Cost	Extended Price (\$)	Total (\$)
conjunctivitis							
	medicines	gentamicin solution 3MG/ml OPHT DROP (OPHT)	ml	8,573,402	0.042	362,655	
		chloramphenicol 5MG/ml OPHT DROP (OPHT)	ml	8,573,402	0.018	150,892	513,547
Burns	medicines						
		paracetamol 500MG/tab TABLET (PO)	tab	1,714,680	0.004	6,687	
		metronidazole 25MG/ml SYRUP (PO)	ml	7,201,657	0.004	32,407	
		sodium lactate compound 1ML SOLUTION (IV)	ml	68,587,213	0.001	68,587	
		amoxicilline 25MG/ml SUSPEN (PO)	ml	25,205,800	0.006	141,152	
		silver sulfadiazine 10MG/G CREAM (TOP)	G	10,288,082	0.023	239,712	
		ibuprofen 20MG/ml SUSPEN (PO)	ml	17,146,803	0.003	56,927	545,474
	supplies	Nasogastric tube size 8	pcs	685,872	0.219	150,206	235,957
		Canula 22g	pcs	342,936	0.156	53,601	
		Giving set IV	pcs	342,936	0.094	32,150	
Diarrhoea	medicines	dextrose-sodium chloride 40MG+1.8MG/ml SOLUTION (IV)	ml	2,864,508,953	0.002	4,296,763	83,574,911
		Oral Rehydration Salts 500ML/sachets POWDER (PO)	g	229,160,713	0.060	13,657,978	
		Zinc Sulfate 20MG/tab TAB-CAP (PO)	tab	1,604,124,990	0.038	60,315,099	
		darrow's half strength-dextrose 25MG/ml SOLUTION (INJ)	ml	2,864,508,953	0.002	5,305,071	
	supplies	Canula 22g	pcs	45,832,143	0.156	7,163,564	11,460,327

		Giving set IV	pcs	45,832,143	0.094	4,296,763	
Fever	medicines						22,264,233
		paracetamol 24MG/ml SUSPEN (PO)	ml	2,921,815,344	0.004	12,563,806	
		ibuprofen 20MG/ml SUSPEN (PO)	ml	2,921,815,344	0.003	9,700,427	
Helminthiasis	medicines	Product					1,642,595
		mebendazole 20MG/ml SUSPEN (PO)	ml	77,160,619	0.009	702,162	
		mebendazole 100MG/tab TABLET (PO)	tab	15,432,124	0.004	69,445	
		albendazole 400MG/tab TABLET (PO)	tab	26,234,609	0.027	703,088	
		Albendazole 200MG/5ml SUSPEN (PO)	ml	5,829,913	0.029	167,902	
Vaccines	medicines	vaccine, polio 20ML/vial VIAL (PO)	vial	6,858,721	0.410	2,812,076	80,097,864
		vaccine, bcg 100MCG/10ml POWDER (INJ)	vial	17,146,804	1.056	18,105,309	
		vaccine, meningococcal 10ML/vial VIAL (INJ)	vial	2,057,617	17.490	35,987,712	
		vaccine, diphtheria-pertussis-tetanus 10ML/vial VIAL (INJ)	vial	10,288,082	0.860	8,847,751	
		vaccine, hepatitis b 10ML/vial VIAL (INJ)	vial	10,288,082	0.660	6,790,134	
		vaccine, measles 10ML/vial VIAL (INJ)	vial	3,429,361	0.470	1,611,800	
		vaccine, yellow fever 10ML/vial VIAL (INJ)	vial	3,429,361	1.733	5,943,082	
Measles	medicines						1,033,381
		paracetamol 24MG/ml SUSPEN (PO)	ml	22,290,845	0.004	95,851	
		paracetamol 500MG/tab TABLET (PO)	tab	2,229,085	0.004	8,693	
		amoxicilline 25MG/ml SUSPEN (PO)	ml	23,405,387	0.006	131,070	
		amoxicilline 50MG/ml SUSPEN (PO)	ml	23,405,387	0.007	175,540	
		vitamin a 60MG/tab TABLET (PO)	tab	1,337,451	0.032	42,665	
		calamine 1ML/ml SOLUTION (TOP)	ml	89,163,380	0.007	579,562	
meningitis	medicines						4,042,798
		gentamicin sulfate 40MG/amp AMPOULE (INJ)	amp	24,084,389	0.040	965,784	
		penicillin, procaine-benzyl penicillin	vial	836,762	0.244	204,170	

		3MU+1MU/vial POWDER					
		ceftriaxone 250MG/vial VIAL (INJ)	vial	6,384,098	0.450	2,872,844	
Nutritional anaemia	medicines	ferrous salt 20MG/ml SUSPEN (PO)	ml	9,272,991,458	0.006	58,419,846	70,210,455
		ferrous salt 200MG/tab TABLET (PO)	tab	1,390,948,753	0.002	3,199,182	
		folic acid 5MG/tab TABLET (PO)	tab	2,202,335,411	0.002	5,065,372	
		vitamin, multi 1MG/tab TABLET (PO)	tab	104,321,154	0.004	396,420	
		vitamin, multi 1ML/ml SYRUP (PO)	ml	521,605,770	0.006	3,129,635	
	supplies						
		Canula 22g	pcs	4,636,496	0.156	724,684	1,267,618
		Giving set Blood	pcs	4,636,496	0.117	542,934	
palliative care	medicines						7,936,570
		paracetamol 24MG/ml SUSPEN (PO)	ml	514,404,113	0.004	2,211,938	
		ibuprofen 20MG/ml SUSPEN (PO)	ml	180,041,436	0.003	597,738	
		diclofenac 25MG/amp AMPOULE (INJ)	amp	34,293,608	0.149	5,126,894	
ARTI	medicines						
		paracetamol 24MG/ml SUSPEN (PO)	ml	488,683,908	0.004	2,101,341	11,109,935
		gentamicin sulfate 40MG/amp AMPOULE (INJ)	amp	23,456,827	0.040	940,619	
		amoxicilline 25MG/ml SUSPEN (PO)	ml	136,831,496	0.006	766,256	
		amoxicilline 50MG/ml SUSPEN (PO)	ml	169,410,422	0.007	1,270,578	
		ceftriaxone 250MG/vial VIAL (INJ)	vial	5,212,628	0.450	2,345,683	
		amoxicilline-clavulanic acid 25MG+6.2MG/ml SUSPEN (PO)	ml	9,505,677	0.233	2,218,625	
		amoxicillin 50MG/ml VIAL (INJ)	vial	13,058,254	0.112	1,466,834	
	supplies						
		Nasogastric tube size 8	pcs	5,212,628	0.219	1,141,566	4,765,645
		Syringe + Needle 2ml	pcs	11,728,414	0.059	691,976	
		Syringe + Needle 5ml	pcs	39,094,712	0.075	2,932,103	

Appendix F: Neonatal Health Commodity List for the Nigeria MNCH Program

Neonates	Medicines	Product	Units	Quantity Required	Unit Cost	Extended Price (\$)	Total Cost (\$)
Birth asphyxia	medicines	dexamethasone 5MG/amp AMPOULE (INJ)	amp	1,311,731	0.082	107,300	
	supplies	Syringe + Needle 2ml	pcs	4,372,435	0.053	231,739	
candidiasis		nystatin 100000IU/ml SUSPEN (PO)	ml	473,680	0.028	13,453	
diarrhoea	medicines	darrow's half strength-dextrose 25MG/ml SOLUTION (INJ)	ml	1,311,730,664	0.002	2,429,325	2,645,411
		Oral Rehydration Salts 500ML/sachets POWDER (PO)	sachets	874,487	0.060	52,119	
		sodium lactate compound solution 500ML SOLUTION (IV)	ml	2,623,461	0.063	163,966	
	supplies	Canula 24g	pcs	4,372,435	0.313	1,366,823	2,186,655
		Giving set IV	pcs	4,372,435	0.188	819,832	
conjunctivitis	medicines	chloramphenicol 5MG/ml OPHT DROP (OPHT)	ml	1,795,613	0.193	346,553	508,159
		gentamicin solution 3MG/ml OPHT DROP (OPHT)	ml	5,386,840	0.030	161,605	
Jaundice	medicines	amoxicilline-clavulanic acid 100MG+5MG/ml VIAL (INJ)	ml	102,023,490	0.460	46,930,804	48,023,913
		dextrose-sodium chloride 25MG+4.5MG/ml SOLUTION (IV)	ml	728,739,211	0.002	1,093,109	
	supplies	Blood bag	pcs	2,186,218	1.020	2,229,942	4,928,609
		Canula 24g	pcs	4,372,435	0.313	1,366,823	
		Giving set Blood	pcs	2,186,218	0.234	512,012	
		Giving set IV	pcs	1,457,478	0.188	273,277	
		Syringe + Needle 5ml	pcs	7,287,392	0.075	546,554	

meningitis	medicines	ceftriaxone 250MG/vial VIAL (INJ)	vial	464,207	0.450	208,893	316,300
		dextrose-sodium chloride 25MG+4.5MG/ml SOLUTION (IV)	ml	67,499,470	0.002	101,249	
		penicillin, g sodium 5MU POWDER (INJ)	vial	14,921	0.272	4,053	
		gentamicin sulfate 10MG/amp AMPOULE (INJ)	amp	53,289	0.040	2,105	
	supplies	Canula 24g	pcs	120,789	0.313	37,758	161,897
		Giving set IV	pcs	120,789	0.188	22,648	
		Nasogastric tube	pcs	7,105	2.180	15,489	
		Syringe + Needle 2ml	pcs	483,154	0.053	25,607	
		Syringe + Needle 5ml	pcs	805,257	0.075	60,394	
Pneumonia	medicines	amoxicilline-clavulanic acid 25MG+31MG/ml SUSPEN (PO)	ml	32,902,576	0.023	746,888	1,099,416
		ceftriaxone 250MG/vial VIAL (INJ)	vial	783,395	0.450	352,528	
	supplies	Syringe + Needle 5ml	pcs	783,395	0.075	58,755	58,755
Tetanus	medicines	dextrose-sodium chloride 25MG+4.5MG/ml SOLUTION (IV)	ml	76,517,618	0.002	114,776	286,666
		diazepam 5MG/amp AMPOULE (INJ)	amp	459,106	0.072	32,872	
		penicillin, g sodium 5MU POWDER (INJ)	vial	107,125	0.272	29,095	
		phenobarbital 100MG/amp AMPOULE (INJ)	amp	38,259	0.275	10,521	
		tetanus antitoxin 1500IU/amp AMPOULE (INJ)	amp	102,023	0.974	99,401	
	supplies	Canula 24g	pcs	153,035	0.313	47,839	87,347
		Giving set IV	pcs	153,035	0.188	28,694	
		Syringe + Needle 2ml	pcs	204,047	0.053	10,814	
respiratory distress	medicines	dexamethasone 5MG/amp AMPOULE (INJ)	amp	16,323,758	0.082	1,335,283	1,335,283
	supplies	Syringe + Needle 5ml	pcs	8,161,879	0.075	612,141	612,141
neonatal sepsis	medicines	ceftriaxone 250MG/vial VIAL (INJ)	vial	495,543	0.450	222,994	9,541,179

		darrow's half strength-dextrose 25MG/ml SOLUTION (INJ)	ml	371,657,018	0.002	688,309	
		dextrose-sodium chloride 25MG+4.5MG/ml SOLUTION (IV)	ml	743,314,035	0.002	1,114,971	
		gentamicin sulfate 10MG/amp AMPOULE (INJ)	amp	2,973,256	0.040	117,444	
		ampicillin-cloxacillin 125MG+125MG/5ml SOLUTION (PO)	ml	9,910,854	0.746	7,397,462	

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