



The Ethiopian Public Health Institute



COUNTDOWN TO 2015: ETHIOPIA'S PROGRESS TOWARDS REDUCTION IN UNDER-FIVE MORTALITY

2014 COUNTRY CASE STUDY



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List of Abbreviations

ADLI	Agricultural Development-Led Industrialization
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ARM	Annual Review Meeting
BEmONC	Basic Emergency Obstetric & Newborn Care
CBN	Community based Nutrition
CBNC	Community based Newborn Care
CEmONC	Comprehensive Emergency Obstetric & Newborn Care
CH	Child Health
CHERG	Child Health Epidemiology Reference Group
CI	Confidence Interval
CMH	Commission on Macroeconomics and Health
CJSC	Central Joint Steering Committee
CMAM	Community-based Management of Acute Malnutrition
CPNM	Care seeking for Pneumonia treatment
CPR	Contraceptive Prevalence Rate
CSA	Central Statistics Agency
DACA	Drug Administration and Control Agency
DPPA (C)	Disaster Prevention and Preparedness Agency (Commission)
DPT	Vaccine for Diphtheria, Pertussis & Tetanus
EDHS	Ethiopian Demographic & Health Survey
EFY	Ethiopian Fiscal Year
EMOC	Emergency Obstetric Care
EmONC	Emergency Obstetric & Newborn Care
ENA	Essential Nutrition Action
EOS	Enhanced Outreach Strategy
EPI	Expanded Program of Immunization
FGoE	Federal Government of Ethiopia
FMoH	Federal Ministry of Health
FP	Family Planning
GAVI	Global Alliance for Vaccines & Immunization
GDP	Growth Domestic Product
GFATM	The Global Fund to fight AIDS, Tuberculosis and Malaria
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
HCF	Health Care Financing
HDA	Health Development Army
HEP	Health Extension Program
HEWs	Health Extension Workers

HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HPN	Health Population & Nutrition (donors group)
HSDP	Health Sector Development Program
ICCM	Integrated Community Case Management
IEC/BCC	Information, Education and Communication/ Behavioral Change Communication
IFA	Iron Folic Acid
IGME	Inter-agency Group for Child Mortality Estimation
IMCI	Integrated Management of Childhood Illnesses
IMNCI	Integrated Management of Neonatal & Childhood Illnesses
IRS	Indoor Residual Spraying
ITN	Insecticide Treated Nets
IYCF	Infant and Young Child Feeding
JRM	Joint Review Meeting
LiST	Lives Saved Tool
M&E	Monitoring & Evaluation
MDGs	Millennium Development Goals
MOE	Ministry of Education
MoFED	Ministry of Finance & Economic Development
MOH	Ministry of Health
MOWRD	Ministry of Water Resource Development
NGO(s)	Non-governmental Organization(s)
NHAs	National Health Accounts
NICS	National Immunization Coverage Survey
NNP	National Nutrition Program
ODF	Open Defecation Free
OOP	Out of Pocket
ORS	Oral rehydration salts/solution
ORT	Oral Rehydration Treatment
OTP	Out-patient Therapeutic Program
PASDEP	Plan for Accelerated & Sustained Development to End Poverty
PEPFAR	President's Emergency Plan for AIDS Relief
PFSA	Pharmaceutical Fund & Supply Agency
PHARMID	Pharmaceutical and Medical Supplies Import and Distribution
PHC	Primary Health Care
PHCU	Primary Health Care Unit
PMTCT	Prevention of Mother to Child Transmission
PNC	Postnatal Care
PSNP	Productive Safety Net Program
RDF	Revolving Drug Fund

RHB	Regional Health Bureau
RJSC	Regional Joint Steering Committee
RMNCH	Reproductive, Maternal, Neonatal & Child Health
ROW/DPs	Rest of world/ Development Partners
SBA	Skilled Birth Attendance
SDPRP	Sustainable Development and Poverty Reduction Program
SHI	Social Health Insurance
SNNPR	Southern Nations, Nationalities and Peoples Region
TB	Tuberculosis
TFP	Therapeutic Feeding Program
THE	Total Health Expenditure
TSF	Targeted Supplementary Food
TT	Tetanus Toxoid
U5s	Children Under Five years of age
U5MR	Under Five Mortality Rate
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children's Fund
VITA	Vitamin A
VAC	Vitamin A Capsule
VCT	Voluntary Counseling and Testing
WASH	Water, Sanitation and Hygiene
WFP	World Food Program
WHO	World Health Organization

Executive Summary

BACKGROUND

On September 13, 2013 the Federal Ministry of Health (FMoH) of Ethiopia and UNICEF announced that Ethiopia has successfully reduced the under-five mortality rate by two thirds between 1990 and 2012, which is the target for achieving Millennium Development Goal-4. In 1990, the under-five mortality rate in Ethiopia was one of the highest in the world at 205/1,000 live births. However, by 2012, this rate had declined to 68/1,000 live births with an average annual rate of decline of 5.0%. This exceeded the 4.3% annual rate of decline needed to reach MDG4 and was significantly higher than the decline rates observed in many sub-Saharan African countries and even other low and middle-income countries. In an effort to understand the story behind Ethiopia's remarkable achievement of MDG-4, EPHI has conducted this in-depth Case Study which is supported by Countdown to 2015. The findings are believed to generate valuable lessons and guidance for other low-income countries in their quest for accelerating health improvements and reducing child deaths.

METHODS

The in-depth Countdown Case Study of Ethiopia's progress towards the achievement in under-five mortality reduction utilized a mixed methods approach to explore how policy development and strategic planning, health system strength, and health care financing intersect with the scale-up of key life-saving interventions to improve child survival. The mixed methods included:

- Extensive review of existing reports, articles, national policy and program documents, and health care financing reports that are released since 1990. Utilizing Countdown to 2015 Health Systems and Policy Tools to organize and synthesize policy and program developments and a dashboard of key policy and health system tracer indicators that may have contributed to a reduction in under-five mortality.
- Identification, retrieval and criteria based assessment of nationally representative surveys in order to recalculate coverage and equity indicators relevant to child survival.
- Estimation of the relative contribution of key interventions for reduction of under-five mortality using Spectrum software (LiST Module).

- Qualitative data collected using key informant interviews from the National and Regional Health Bureau (RHB) staff, and key partners from UN agencies, multi-lateral and bilateral organizations, and international NGOs.
- Compilation of strategic input of experts from key partners and Ministry of Health (FMOH) through a series of consultative workshops and meetings to develop case study question, validate approaches and triangulate sources of information.

FINDINGS

Policy, Health Systems and Programs

Ethiopia's political commitment to public service, capacity building, decentralization and integration of health into macro level policies has resulted in substantial progress in a number of socio-economic and health development indicators. Since 2003, economic strength and stability resulted in the total GDP growing at an annual rate of over 10%, the highest in Sub-Saharan Africa and setting the stage for the successful implementation of effective policies and programs.

In particular, four cross cutting policies and strategies appear to have played important roles in bringing down the under-five mortality rate. The Rural Development Policies and Strategies helped enhance socioeconomic development through education and provision of basic infrastructure such as roads, electricity, and water and sanitation. The agricultural sector addressed efficiencies in food production and food security that emerged as a national priority to contain the effects of the recurrent droughts. Furthermore, the Disaster Management Policy addressed the root causes of drought and emphasized the need to streamline the disaster management efforts to improve food security. More specifically, the role of the Productive Safety Net Program (PSNP) cannot be underestimated as millions of people in drought prone areas received support thus averting large-scale famine and malnutrition.

The National Health Policy, which was ratified in the early 1990s, ushered in decentralization, democratization and equitable distribution of health services to the rural poor and disadvantaged population, particularly for women and children. The policy underlined that health care services must primarily focus on health promotion and preventive care. Strategies outlined in the policy documents include: improving the quality of health care services through provision of adequate resources, strengthening capacity building efforts, focusing on community participation and ownership, and improving the health information system. The subsequent four comprehensive Health Sector Development Plans (HSDP) provided opportunities for better coordination and integration of health sector efforts and enabled development of relevant strategies, programs and interventions that addressed and prioritized emerging health issues. Accordingly, many

high impact programs and interventions for child survival were formulated and implemented under the umbrella of the HSDPs including: the Health Extension Program (HEP), the Child Survival Strategy, Integrated Community Case Management (iCCM), National Nutrition Strategy, National Nutrition program (NNP), Community Based Nutrition (CBN) and Community Management of Acute Malnutrition (CMAM).

Ethiopia was also an early adopter of MDGs starting in 2000 and immediately integrated them into the broad developmental goals for the country. MDGs have helped the policy makers to fine-tune their efforts and make better use of the resources directed towards interventions relevant to child survival. Endorsement of MDGs also helped the Ethiopian government to receive substantial support from development partners through a number of global initiatives: global Fund to Fight HIV/AIDS, TB and Malaria (GFATM), the President's Emergency Plan for AIDS Relief (PEPFAR), the Global Alliance for Vaccine Initiatives (GAVI), WHO Roll Back Malaria Initiative and extensive support from UNICEF, World Food Program, World Bank and others that contributed to strengthening the health system.

The Health Extension Program (HEP) was introduced in 2004 and is considered Ethiopia's flagship program and main vehicle for extending key maternal, neonatal and child health interventions to the community. This resulted in an accelerated construction of health posts and recruitment and training of health extension workers (HEWs). Analysis of trends and levels of key RMNCH services from nationally representative surveys in the country confirms that HEP has played a key role in expanding health services. Coverage of many of the high impact RMNCH interventions increased after the introduction of HEP.

Health Care Financing

Health care financing was a main driving force in the realization of health sector goals and a key enabler of the delivery of health services. Estimates of total health expenditures from National Health Accounts (NHA) revealed a seven-fold increase from 1995/96 to 2010/11. A pivotal change in the total health expenditure was observed from 2004/2005 onwards, which marked a turning point in the increase in resources for health. Between 1995/96 and 2004/05, Ethiopia's total health expenditure increased by more than two fold, while the increase in total health expenditure was twice as much between 2004/05 and 2010/11. During the latter time period for which data was available, total child health expenditures almost doubled from 2004/05 (101 million USD) to 2010/11 (184.5 million USD), with a more rapid increase occurring between 2007/08 and 2010/11.

The increase in total health expenditure over time was mainly attributable to the introduction of new health care delivery strategies and a more harmonized system of resource mobilization. Since 2005, the rapid increase in total health expenditure facilitated the introduction of FMOH's flagship HEP, IMNCI, and other health service expansion activities. Furthermore, Ethiopia was able to mobilize more external resources for health

by various advocacy mechanisms and demonstrating efficiency in resource allocation and utilization through its harmonization initiative. The strategic shift in financial flow, utilization and accountability, as a result of adoption of the “one plan, one budget, and one M&E” appear to have contributed to the sustainable flow of funds into the health sector.

Economic growth and expansion of the health sector resource base resulted in an increasing trend in per capita health expenditure over the years: from 4.09 USD in 1995/96 to 20.77 USD in 2010/11, but it is still below WHO’s Commission on Macroeconomics and Health recommended amount of 34 USD. The per capita health expenditure for reproductive and child health followed a similar increasing trend. The per capita health expenditure for women of reproductive age increased more than three-fold, from 3.69 USD in 2004/2005 to 12 USD in 2010/11, while it increased more than two-fold, from 7.86 USD in 2004/05 to 16 USD in 2010/11 for child health over the same period.

LiST Analyses

Almost half a million child lives under age of five (469,000) were saved between 2000 and 2011 as a result of scaling-up of high impact interventions based on the LiST analysis. The reduction in under-nutrition followed by scale-up of immunization and oral rehydration salts for diarrhea and access to water had played a great role in averting child deaths in this period. Reductions in stunting from 58% in 2000 to 44% in 2011 and wasting from 12% in 2000 to 9.7% in 2011 together has helped to avert about 50% (234,500) of the total under-five children deaths averted between 2000 and 2011. The combination of the other interventions listed contributed another 15% to averting deaths and saving lives.

The LiST estimate demonstrates a rapid decline in U5MR for the period 2005-2011; nearly four-times higher than in 2000-2005, and has more power to explain the reasons for the deaths averted in the 2005-2011 period, 60% versus 25% in the first half of the decade. This suggests that the implementation of new and effective programs like HEP, NNP and other food security programs coupled with the scale-up of other effective child interventions post 2005 made a difference in reducing under-five mortality.

Coverage and Equity

The coverage of major RMNCH indicators across the continuum of care has been improving consistently for the time periods starting 2000. This included coverage indicators for family planning, antenatal care (ANC), tetanus toxoid, immunizations, case management of childhood illnesses, as well as water and sanitation. Even skilled birth attendance (SBA), starting at 5.7% in 2005 almost doubled by 2011 and then again doubled in 2014, although the absolute level still remains low at 15%.

Analysis of the trends in the coverage of malnutrition indicators shows a big decline in the proportion of children under-five years of age that are stunted, underweight or wasted. In 2000, close to 60% of children were stunted; by 2005 the stunting rate dropped to 51% and further decreased to 44.4% in 2011. Over the same time period, 41% of the children were categorized as underweight in 2000, but it declined to 28.7% by 2011. However, this decline occurred without a major change in nutritional interventions such as early initiation of breastfeeding, exclusive breastfeeding and complementary feeding.

The issue of equity still remains a major health sector challenge. The analysis of trends in disparity of coverage of interventions as well as under five mortality across the main stratifying variables (region, wealth quintiles and residence) confirmed that inequalities persistent prevails for almost all the major life saving interventions. The wealthiest (Q5) quintile had a three-fold higher chance of receiving essential child health care services as compared to the poorest (Q1). In addition, the Contraceptive Prevalence Rate (CPR), ANC and SBA of the wealthiest (Q5) was four times greater than the poorest (Q1). The regional contrast in intervention co-coverage intersects with the rural urban divide. In Addis Ababa, at least 40% and 78% of the eligible population groups received either all eight or seven of eight key RMNCH care services. At the same time, not more than 5% of the same population groups received the services in the five major regions (Amhara, SNNPR, Oromia and Benishangul Gumuz). Also two emerging (mainly pastoralist) regions, Somali and Afar, had a significant proportion of their target population completely left out of any of the eight essential RMNCH services (25% - 30%).

The trend in disparity continues for the under-five mortality across the various wealth quintiles. While the overall level of under-five mortality has dropped for the middle quintiles (Q2-Q4), the poorest and the wealthiest have remained the same. The greatest reductions in under-five mortality between 2005 and 2011 have been for quintiles 3 and 4. Also, contrary to other trends, the rate of decrease in under-five mortality has been higher for rural versus urban areas but it does not compensate for the initial high differential in the level of under-five mortality between urban and rural areas. Under-five mortality remains high in rural as compared to the urban areas (114 vs. 83). Children born and raised in rural areas have at least a 38% higher risk of dying as compared to their urban counterparts.

Ethiopia's further progress in child survival hinges on the success of not only addressing disparities but also the stagnant neonatal mortality rate. Ethiopia still has one of the highest rates of neonatal deaths compared to other developing countries (24/1,000 live births) and the world (21/1,000 live births). IGME estimates that as high as 43% of the under-five mortality rate is attributed to the deaths that occur during the first months of life. Several reasons and contributing factors were mentioned for the slow progress in the reduction of neonatal mortality rate by the case study respondents: lack of focus, attention

and commitment by concerned bodies, weak and uncoordinated referral systems, widely prevailing and deep rooted cultural practices, poor health system governance, and inadequate skills and low confidence among the HEWs in providing essential neonatal care services.

CONCLUSIONS

A myriad of complementary policies and programs integrating health priorities within the development agenda produced a powerful platform for accelerating child health leading to the achievement of the MDG 4. The commitment of the government and implementation of appropriate policies and interventions targeting social development and determinants of child mortality such as immunization, treatment of childhood illnesses (especially diarrhea), nutrition, food security, water and sanitation, education, economic progress and empowerment of women has helped to reduce the burden of childhood illness and under-nutrition. In particular, the confluence of factors post 2005 helped to accelerate the progress in child survival. From the implementation of HEP and deployment of HEWs to bring health care to thousands of communities to parallel jumps in the level of health care financing helped to support the expansion of the health care delivery system. This story of Ethiopia's progress in reducing child mortality directs our attention to the importance of multi-sectoral integration and coordination in addition to expansion of primary health care to deliver high impact interventions thereby creating the conditions for remarkable results in a low-income country.

1. Introduction

In September 2000, at the Millennium Summit of world leaders at the United Nations, the General Assembly adopted the Millennium Declaration. The UN working group later consolidated the declaration by setting eight goals. The Millennium Development Goals (MDGs) are the world's biggest promises and global agreement to reduce poverty and human deprivation at historically unprecedented rates through collaborative action. The MDG framework adopted a broad human development approach encompassing reduction and elimination of hunger and promoting health, education, gender equity, and environmental sustainability. It accords a greater role to the public sector including increased public investment to achieve the scale and coverage of life saving interventions that can produce the greatest health impact (1).

Millennium Development Goal-4 calls for reducing the under-five mortality rate by two thirds between 1990 and 2015. Due to coordinated effort in response to this call, Sub-Saharan Africa has witnessed an accelerated improvement in under-five mortality rate, with the annual rate of decline doubling from 2000–2011. In 1990, Ethiopia had one of the highest under-five mortality rates in the world at 204/1,000 live births; however, by 2012 the country had managed to significantly reduce this number to 68/1,000 live births. The 2013 estimates of child mortality rate by the UN Inter-agency group confirmed that Ethiopia had already reduced the under-five mortality rate by 67%, the target set for the achievement of MDG-4. The country's average annual rate of decline since 1990 has been around 5%, exceeding the 4.3% decline rate needed to achieve MDG-4 at 2015. Understanding this remarkable achievement establishes the rationale for this Countdown Case Study. Ethiopia's progress in getting close to the achievement of most of MDGs further confirms the importance of utilizing a comprehensive framework to assess the role of integrated development to achieve health.

This report will offer a unique insight into how this resource poor, less urbanized, developing and diverse country managed to achieve the MDG 4. The lessons learned will be valuable to further consolidate and accelerate efforts to sustainably improve maternal, newborn and child survival for post MDG era in Ethiopia and other countries.

OBJECTIVES

- To identify broad contextual factors (including macro level policies and programs) presumed to have impacted child survival in Ethiopia over time.
- To explore major health policies, programs and strategies that played key roles in attaining the MGD target.
- To examine financial strategies and trends that contributed to the attainment of the goal.
- To determine the levels and trends of RMNCH indicators over the last decade.
- To produce disaggregated analyses of coverage and risk indicators for different sub-populations, and determine level of inequalities using various equity measures.
- To perform estimates of the number of lives saved attributable to high impact interventions.
- To identify challenges or areas of major gaps that hindered better success and implementation.

The overall execution of the Case Study was coordinated by the Ethiopian Public Health Institute with close involvement of the Ministry of Health and the Global Countdown to 2015. The study was financially supported by Countdown to 2015 which was established in 2005, with the aim of supporting developing countries to generate and utilize empirical evidence to track progress towards MDGs related to reproductive, maternal, neonatal and child health (RMNCH). Countdown is also supporting multiple other country level in-depth case studies, with the aim of sharing experiences, identifying gaps and proposing solutions for further health improvement. The Case Study also benefitted from the on-going technical and logistical support provided by UNICEF. Multiple other development partners were active participants in the planning and review of the Ethiopia Case Study.

2. Background

COUNTRY PROFILE

Geography, Population and Administrative Structures

Ethiopia is located in the horn of Africa, bordering Eritrea on the north and northeast, Djibouti and Somalia on the east, Kenya on the south and Sudan on the west and southwest. The country has an estimated land area of 1.1 million square kilometers with great geographical and climatic diversity. Its topography ranges from high peaks of 4,550 meters above sea level to a low depression of 110 meters below sea level(2). The climate ranges from arid and semi-arid hot lowlands (below 1,500 meters with temperatures reaching up to 40°C) to cool and temperate highlands (above 2,400 meters with temperatures below 0°C).

The population projections based on the 2007 census show that in 2012 the total population of Ethiopia was 84.3 million, placing the country as the second-most populous nation in Africa. With more than 80 ethnic groups, Ethiopia exhibits both cultural and linguistic diversity. It is also one of the least urbanized countries in the world with only 16 percent of the population living in urban areas(2)(3).

The Federal Democratic Republic of Ethiopia constitutes nine self-governing Regional National States and two City administrations. Each Regional National State and City administration is subdivided into zones and zones into woredas or districts (the smallest decentralized administrative levels). Woredas are constituted by kebeles, which are the lowest administrative units. The decentralization of power to regional governments and local communities (woredas) is the principal deviation in governance between the current government and the previous ones. It began with the ratification of the constitution and has been continuously strengthened since then. The decentralization allowed regions and woredas to plan, implement and monitor all socio economic activities in their respective administrative levels. This approach is believed to have improved access to services and strengthened community participation and ownership at a grass-root level(4).

Socio-Economic Conditions

For centuries, Ethiopia's economy has been dependent on rainfall for agriculture, which accounts for almost half of the GDP and 85% of total employment. As a result of long standing inappropriate use of land and mismanagement of the environment, as well as continuous engagement in traditional agricultural practices, the majority of the population

has been living in destitution. The marginal livelihoods have been frequently devastated by recurrent drought and famines induced by inadequate and erratic rainfall.

Since the 1990s, the government of Ethiopia has been striving to improve the welfare of its population. In relation to that, multitudes of macro-level, comprehensive policies and programs as well as sector specific policies and strategies have been formulated, endorsed and implemented. To enhance effective implementation of policies and programs, strengthened efforts in capacity building, infrastructure development and adequate provision of resources have been generated through multiple funding channels. A number of follow up reports indicate that these efforts are bearing fruit. According to recent International Monetary Fund (IMF) reports, Ethiopia has been one of the fastest growing economies in Africa and even in the world. Ethiopia's economy grew on average by 11% from 2004 through 2012(5)(6). The proportion of the population living in poverty has steadily declined over the last decades. Recent data show that the proportion of people living below the poverty line in Ethiopia has declined from 45.5% in 1995/96 to 27.8% in 2011/12(7). This represents a significant reduction of 38.9% over the last sixteen years.

Health Conditions

Health conditions were also dire prior to the 1990s as evidenced by high maternal, infant and child mortality rates. In 1990 the maternal mortality ratio was 1440 per 100,000 live births and the under-five mortality rate was 204 per 1000 live births, which were among the highest in the world (8)(9). Ethiopia also exhibited a high burden of communicable infectious diseases such as pneumonia, diarrhea, malaria and malnutrition. Although these conditions could have been prevented with simple and affordable measures, the health care system was ineffective to deliver appropriate services (8)(10)(11).

The government has undertaken a wide range of measures to improve the health status of the population. A number of health sector policies and programs have been developed and aggressively implemented. The National Health Policy was adopted in the early 1990s and key strategies in nutrition, child survival and infant and young child feeding practices were subsequently endorsed(12). A number of innovative programs and interventions have been developed and implemented to translate the policies and strategies into action. The health sector development programs and the health extension program can be considered the center pieces of this integrated approach(13)(14)(15)(16). To effectively implement these programs, changes in health care governance through decentralization and health system management have been introduced. The government further embarked on a relentless effort to build and expand health facilities, generate a doable system for human resource development and paying for it through innovative health care financing mechanisms.

As a result of these intensive efforts, Ethiopia has made remarkable progress in expanding and accelerating health service delivery to all corners of the country. The health service coverage has increased from 76.9% in 2005 to 90% in 2010. With the expansion of health service coverage improvements in a number of health indicators have been achieved.

3. Methods and Data Sources

3.1 OVERALL METHODOLOGICAL APPROACH

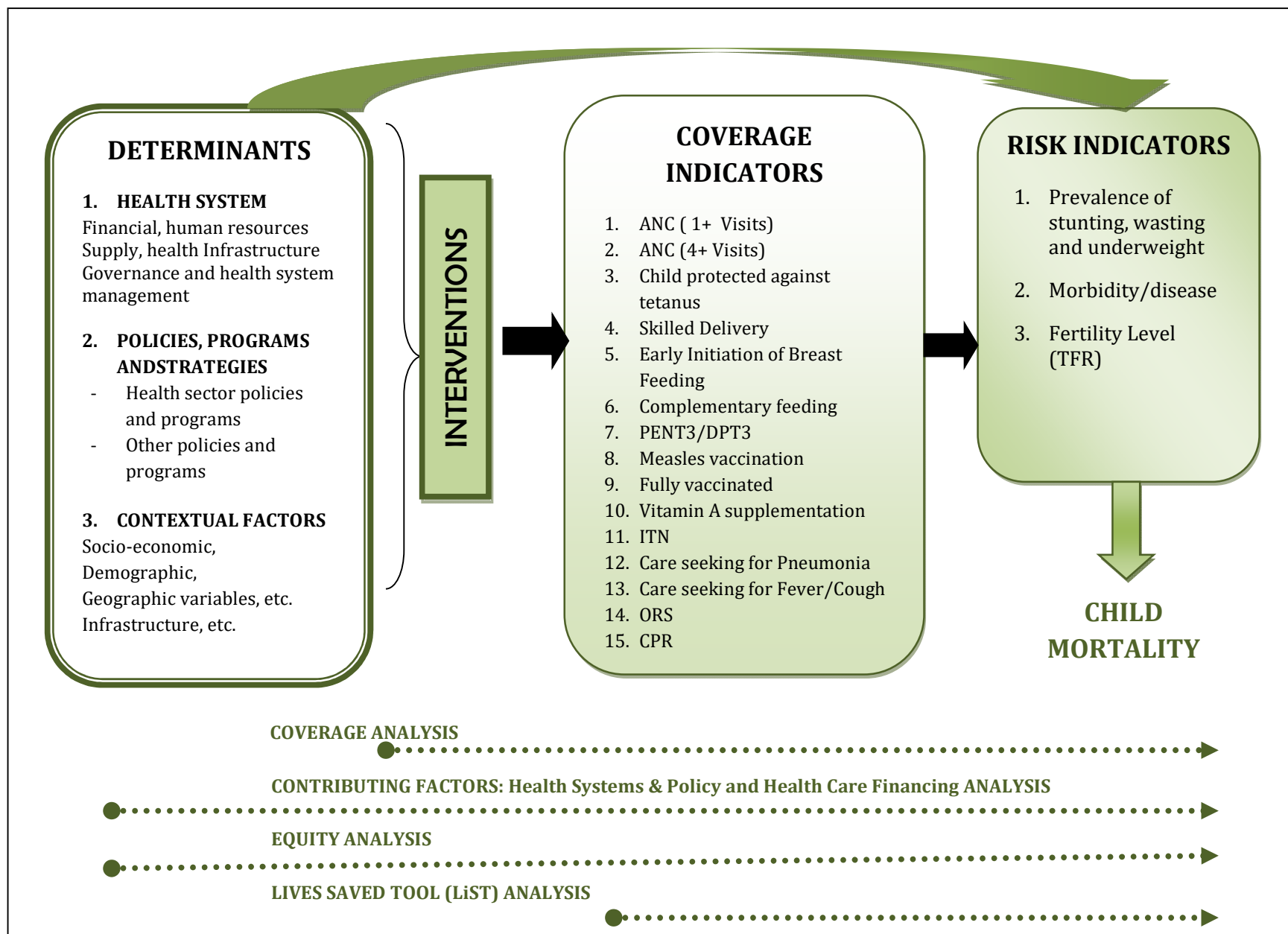
The in-depth Countdown case study of Ethiopia's progress towards the achievement in under-five mortality reduction utilized a mixed methods approach to explore how policy development and strategic planning, health system and health programming, and financing intersect with the scaling-up of key life-saving interventions to improve child survival. The mixed methods included:

- Extensive review of existing reports, articles, national policy, program, and health care financing documents since 1990.
- Identification, retrieval and criteria based assessment of nationally representative surveys in order to recalculate coverage indicators relevant to child survival and to estimate the relative contribution of key interventions for reduction of under-five mortality using Spectrum software (LiST Module).
- Primary qualitative data collected using key informant interviews from the staffs of Federal Ministry of Health (FMOH), Regional Health Bureau (RHB) and partners.
- Compilation of strategic input of experts from key partners and Ministry of Health (FMOH) through a series of consultative workshops and meetings to optimize and triangulate sources of information.

To guide the overall conduct of the case study, a conceptual framework depicting the linkages and the pathways through which various factors exert an influence on child survival was adopted based on evidence from existing literature (Figure1). As shown in the framework, the most proximate causes of child deaths are morbidity/disease and malnutrition. Morbidity and malnutrition are determined by the access and utilization of quality health services, which in turn are determined by a number of factors within health systems and outside the health system. Factors within the health sector that determine access, utilization and quality of health interventions include enabling policy environments,

programs and strategies and overall health system strength in terms of infrastructure, medical supplies, and financial and human resources. Some of the factors outside the health system include existing contextual factors, macro-level policies and programs, socioeconomic development levels, education levels and basic infrastructure.

Figure 1: Conceptual and Analytical Framework for Countdown Ethiopian Case Study



3.2 METHODOLOGIES EMPLOYED FOR THE SPECIFIC STUDY COMPONENTS

The following sub-sections present the detailed methodological approaches and analytic procedures employed for each of the case study components. In addition, the overview of qualitative methods developed to triangulate and validate existing information will be described.

3.2.1 Policy, Strategy, Program and Health Systems Component

A number of program and policy documents, reports and published articles collected from various institutions and websites were reviewed. The Countdown (CD) Policy and Program Timeline Tool and the Health Systems and Policies (HSP) Dashboard for Tracer Indicators Tool, were used to compile and analyze relevant policy, program and health systems information.

Data from CD HSP Tool 1 provided an overall view of health policies and programs of Ethiopia by examining changes in Reproductive, Maternal, Newborn and Child Health (RMNCH) policy, programs, and implementation over the following four time periods: (I) Pre-2000; (II) 2000-2005; (III) 2006-2010; and (IV) Post-2010. The initial program timeline was reviewed and validated based on inputs from stakeholders during the analysis workshop. The final timeline illustrating the major changes in the policy and program landscape was completed based on feedback from partners and key stakeholders. CD HSP Tool 2 was used to assess selected tracer policy and systems indicators relevant to child and newborn survival, by examining changes in these tracer indicators from 2000 to 2012. Appropriate visuals were developed that display the trends and changes in the selected policy and systems tracer indicators.

3.2.2 Health Care Financing

The financial component of this case study was mainly based on the synthesis of the information contained in the five rounds of the National Health Accounts Survey (NHAs) published reports. In addition, review and synthesis of a number of health care financing and related documents was completed.

3.2.3 Interventions Coverage and Equity

A process for selecting relevant coverage and equity indicators consisted of developing lists of the Global Countdown indicators as well as commonly used indicators that are

associated with morbidity and mortality in the Ethiopian context. The inclusion of each coverage and equity indicator took into account the following points:

- a) Consistency in construction of each indicator and the communalities between the lists
- b) Availability of time trend information
- c) Data reliability
- d) Ensuring that indicators covered the entire continuum of care
- e) Relevance and relative importance for child survival

Box 1: New Indicators

1. BCG vaccination
2. Unmet need for family planning
3. CPR for modern methods
4. Access to improved sanitary facilities
5. Access to non-improved traditional latrine
6. No access to sanitation facility
7. Wasting

Based on these criteria, we selected twenty-one Global Countdown and seven new indicators for coverage analysis (see Box 1). Under-five mortality rate and its components and neonatal and infant mortality rates were recalculated from the three Ethiopian Demographic and Health Survey (DHS) data.

For the final analysis, we excluded five Global Countdown indicators:(intermittent preventive therapy for malaria, PMTCT, ART for pregnant women, cesarean section delivery rate, and care seeking for malaria) because they were not available, not relevant or not reported at all. For example, the value for coverage indicators like caesarian delivery rate in Ethiopia is so low that relevant equity analysis was not a valid indicator. In addition, some coverage indicators like immunization for influenza type-B (Hib) were introduced so recently to national EPI programs in Ethiopia that only single data point available about the coverage of these antigens, and hence were not considered for trend analysis.

3.2.4 Attribution of Interventions and Lives Laved

Lives Saved Tool (LiST) is a modular computer program in a Spectrum software that has been extensively used to estimate the impact of scaling up effective interventions on mortality (17). In this case study, LiST is being employed to estimate additional deaths prevented due to the scale up of health interventions across the continuum of care, measured by under-five mortality rates within specific reference periods (2000-2011). LiST uses country-specific baseline information on mortality rates and causes of death as

well as background variables across the continuum of care and current coverage of key evidence-based interventions to construct a model to predict the number of lives saved.

For measures of intervention coverage across the continuum of care, existing data sets of nationally representative household surveys conducted in Ethiopia between 2000 and 2011 were used. These include: the three rounds of Ethiopia Demographic and Health Surveys (EDHS 2000, 2005 & 2011), National Malaria Indicator Surveys (MIS - 2007 & 2011) and the National Nutrition Program baseline Survey (NNPS - 2009). In addition to these data sources, the reported number of beneficiaries of the Productive Safety Net Program (PSNP) assessment was used to recalculate the balanced energy supplementation of pregnant women. The 2008 National Baseline Assessment for Emergency Obstetric Care (EMOC) report was also used as an input to estimate Basic Emergency Obstetric & Newborn Care (BEMONC) and Comprehensive Emergency Obstetric & Newborn Care (CEMONC) services coverage at hospitals and health centers.

All necessary input values used in the LiST application were entered into Excel and then inputted into LiST module in the Spectrum software (Version 5.06). All coverage indicators were recalculated using standard Countdown definitions or LiST definitions for which data were available. The UN 2012 population data default was adjusted in 2000 for the under-five population estimate based on Ethiopian Central Statistics Agency demographic projection of 1994.

Finally, to estimate the additional deaths averted and relative contribution of high impact interventions, three scenarios were modeled. In modelling these scenarios, the year 2000 was taken as the baseline year because it is the initial year of the MDG4 activities, and complete reference period is 2000-2011. Moreover, the year 2005 and thereafter is considered a major turning point for health improvement as high impact programs and interventions such as Health Extension Program, National Nutrition Program, Productive Safety Nets Program, Enhanced Outreach Strategy, Integrated Community Case Management (ICCM), and Community-based Management of Acute Malnutrition (CMAM) were initiated. The modeling assumptions for the three scenarios are given below.

Scenario 1: Model for estimating the number of child deaths averted if no change happened between 2000 and 2011 in the coverage of health related interventions. It is used as a baseline scenario.

Scenario 2: Model for estimating the number of child deaths averted if there were changes between 2000 and 2005, but no change happened from 2005-2011 in the coverage of health related interventions. The primary use of this scenario is to

estimate the number of deaths averted between 2000 and 2005 among children under-five.

Scenario 3: Model for estimating the number of child deaths averted where there were changes between 2000 and 2011 in all available coverage of health related interventions. This scenario is used to estimate the number of deaths averted among children under-five years of age from 2000-2011 in general, and 2005-2011 in particular.

Based on these scenarios, LiST is employed to estimate contributions of high impact interventions before and after 2005 as well as between 2000 and 2011. Furthermore, comparing these scenarios will allow us to assess the contributions of high impact interventions on under-five mortality reduction in Ethiopia in the reference period.

3.2.5 Qualitative study key informants interview

With the aim of triangulating and consolidating the information solicited through various procedures, key informants' interviews were conducted with experts in areas of RMNCH as well as policy makers, program managers and implementers at various levels. A total of 68 key informants from Federal Ministry of Health (FMOH), nine regions, two federal administrative cities (Addis Ababa and Dire Dawa), UN agencies and other NGO's participated in the key informant interviews. Of those, 47 were from regional health offices and the remaining 21 were representatives of federal level offices including FMOH, UN agencies and NGOs.

A semi-structured, open-ended interview guide was developed to collect the qualitative information (*Annex 1 & 2*). The interview guide consisted of main questions and specific under the main thematic areas. Main questions in the guide included: perceptions of experts and program managers about the factors that enabled Ethiopia to achieve MDG 4; the reasons why progress is lacking to achieve equivalent reductions in maternal and neonatal mortality; major challenges and missed opportunities; and best practices or lessons learned.

Notes were taken during the interviews, as the participants were uncomfortable with tape-recording of the interviews. Program and policy documents, reports and other relevant materials were also collected from the key informants during the interviews. Main opinions and ideas of each participant were coded and recorded under each theme, followed by the identification codes given to each participant. The coded summary of the responses of key informant interview participants was examined for patterns (commonalities, similarities, and differences) and appropriate themes and sub-themes were developed and analyzed.

3. Findings

3.1 Policies, Programs and Strategies

Contextual factors

The history of Ethiopia has been laden with frequent droughts, widespread and protracted conflicts and deep-rooted poverty under which the majority of the population lived prior to the 1990s(18). Outstanding in the world's memory is the untold suffering that followed the great famine of 1973/74. Hundreds of thousands lost their lives and millions more were relegated to abject destitution, poverty and migration (18). The severe drought and famine entailed unprecedented changes in political and social landscapes. Conflicts among the leaders on how the disaster should be managed provoked social turmoil and upheavals that culminated in a regime change in 1974.

The military regime that seized power in 1974 was unsuccessful in improving the lives of the people and was toppled by the Ethiopian People's Revolutionary Democratic Front (EPRDF) in 1991. The constitution ratified in 1994 ushered in democracy, decentralization, equity and commitment to public service delivery. The paradigm shift in governance can be considered a milestone on the pathway towards economic development and subsequent health sector development(19).

Ethiopia has achieved substantial progress in a number of socio-economic development indicators in the last two decades. Evaluations of the major poverty reduction and integrated development programs indicate that since 2003 the total GDP has been growing at an annual rate of over 10%, the highest in Sub-Saharan Africa (7)(20). The achievements in new road construction as well as in the upgrading and rehabilitating of ageing roads were enormous. The expansion of telecommunication services and of telephone users is especially notable. Agricultural production and productivity has improved substantially. There has been a steady increase in the proportion of people accessing clean water. The education sector has shown accelerated growth in coverage, as reflected in the increasing student population and the number of teaching institutions. These achievements are the outcomes of the relative peace the country experienced over the past two decades. The creation of comprehensive and coherent socio-economic development programs, strengthened and sustained implementation of the policies and programs and increased political commitment from the policy makers and government.

The HIV/AIDS pandemic that ravaged the country beginning in 1984 has been one of the challenges to the health sector in particular and to the overall economic development in

general over the decades. The huge loss of a productive labor force as well as the enormous volume of resources required to contain HIV/AIDS vividly demonstrate the extent of the impact (21). With intensive, concerted and coordinated efforts, Ethiopia managed to mitigate the impact and contain the spread of the pandemic in a relatively short period of time.

Ethiopia was an early adopter of MDGs starting in 2000 and immediately integrated them into the broad developmental goals for the country. MDGs have helped the policy makers to fine-tune their efforts and make better use of the resources directed towards interventions relevant to child survival. Endorsement of MDGs also helped the Ethiopian government to receive support from a number of global initiatives, UN agencies and international NGOs. Global Fund to Fight HIV/AIDS, TB and Malaria (GFATM), the President's Emergency Plan for AIDS Relief (PEPFAR), the Global Alliance for Vaccine Initiatives (GAVI), World Health Organization's (WHO) Roll Back Malaria Initiative and extensive support from UNICEF, World Food Program, World Bank and others can be considered as major contributors to strengthening the health system.

Macro Level Policies

The government launched its flagship Sustainable Development and Poverty Reduction Program (SDPRP) in 2000 which was implemented through 2005. The plan set an ambitious inter-sectoral goal to reduce poverty in Ethiopia. The second comprehensive socio economic development plan, 'Plan for Accelerated and Sustained Development to End Poverty' (PASDEP), was implemented between 2006 and 2010. PASDEP reinforced the poverty reduction goal by readjusting strategies to sustain what worked best and introducing new methods for improving performance and enhancing socio-economic development. The Growth and Transformation Plan (GTP) is the third comprehensive socio economic plan implemented since 2011.

The importance of the health sector in the realization of economic development and poverty reduction was highlighted in the comprehensive national development plans (SDPRP, PASDEP and GTP). In terms of health specific directions, the three comprehensive economic development plans emphasized the importance of rapidly expanding primary health care services through accelerating the expansion of the Health Extension Program (HEP). This called for the speedy construction of health posts and training of health extension workers. Strategies outlined in the policy documents include improving the quality of health care services through provision of adequate resources, strengthening capacity building, focusing on community participation and ownership, promoting harmonization towards one plan, one budget, and one report, and improving the health information system.

Multi-sectoral and Cross-Cutting Policies

In response to recurrent droughts, the Relief and Rehabilitation Commission (RRC) were established in 1974. The Commission's mandate was to organize and coordinate the government's relief and rehabilitation activities and to consolidate the disaster management system, which ultimately became one of the strongest institutions in Sub-Saharan Africa(22).

In an attempt to save lives and rehabilitate the victims of the drought, a huge number of humanitarian institutions and NGOs came to Ethiopia during the drought in 1974. Many of the NGOs were later engaged in disaster prevention and development activities undertaken by different social sectors including agriculture, health and education. Most of these NGOs were engaged in RMNCH related activities whose contributions to under-five mortality reduction cannot be underestimated.

Relentless efforts have been made to address food insecurity since 1991. The National Disaster Prevention and Preparedness Strategy was formulated in 1990 and the National Disaster Policy was endorsed in 1993(23). The strategy and the policy brought a paradigm shift in disaster management. In addition to early warning, preparedness and timely response, the strategy underscored the importance of addressing the root causes of drought by integrating disaster management activities with development endeavors. The policy particularly emphasized the need to streamline the disaster management efforts with the aim to improve food security.

After the establishment of the then Transitional Government, (current Government of Federal Democratic Republic of Ethiopia), it was realized that addressing food security problem must constitute a national priority in order to contain the effects of the recurrent drought and to enhance economic development. A number of policies and strategies were formulated in this accord, which focused on strengthening the agricultural sector. Rural Development Policies and Strategies (RDPS) issued in 2001 (24), are of strategic importance for the health sector development. RDPS highlighted various policy directions related to health, underpinning health both as a human right and as a key input to overall development through building the capacity of the population. These policies stressed expansion of primary health care services to rural communities, including pastoralist population.

The Productive Safety Net Program (PSNP) was implemented in 2005 in all drought-prone woredas/districts whereby households identified as chronically food insecure are provided cash or food in exchange for community services rendered (25). Evaluation documents indicated that in 2005, PSNP provided support to 5 million people, and the number of beneficiaries rose to about 8 million in subsequent years before declining to 7 million in

2013. That is, on average about 6-8% of the total population have been receiving support through PSNP in the last decade (25).

The National Population Policy, which was issued in 1993 aimed at harmonizing the rate of population growth with economic development and thereby improving the welfare of the people. The main targets of the policy relevant to reproductive health are to reduce total fertility rate and increase the contraceptive prevalence rate. Following the issuance of the policy, the FMOH released Guidelines for Family Planning (FP) Services in Ethiopia to direct and coordinate various stakeholders' efforts, as well as to expand and ensure the quality of FP services.

3.1.1 Health Policies, Programs and Strategies

Health Policy

The Ethiopian National Health Policy document indicates that Ethiopia had a health policy mainly focusing on curative health services during the rule of the Monarchy (before 1974). It is also mentioned that the Derg regime (1974-1991) had formulated a health policy emphasizing the need to focus on preventive health care services. However, the policy was not implemented for various reasons (12). The current national health policy was initially formulated in 1993. The policy put in place the key principles on which the health sector is founded (democracy, decentralization of governance, and equitable health services). The policy underlined that health care services must primarily focus on health promotion and preventive care. It also highlighted the priority health issues to be addressed and strategies to be implemented (Table 1).

Table 1: Ethiopian health policy priority areas and strategies, 1993

Priority health issues highlighted in the policy
<ul style="list-style-type: none">○ Behavior change activities (IEC/BCC)○ Control of communicable diseases, epidemics and diseases related to malnutrition and poor living conditions○ Promotion of occupational health and safety○ Development of environmental health○ Family – particularly women and children○ Neglected regions, urban and rural less privileged segments of population○ Victims of man-made and natural disasters○ Provision of essential medicines, medical supplies and equipment
General strategies followed to implement the policy
<ul style="list-style-type: none">○ Democratization and decentralization○ Rehabilitation of the health infrastructure○ Development of human resources and promotion of relevant capacity building○ Formulating relevant policies, programs and strategies○ Inter-sectoral collaboration○ Promotion of involvement of private sector and NGOs○ Strengthening traditional medicine applied health research○ Health legislation

Comprehensive Health Sector Development Programs

Although the health policy was formulated and ratified in 1993, its contribution to the integration of health care services was minimal until the launch of comprehensive health sector development programs. In the late 1990s, a comprehensive 20-year health sector strategic plan was formulated and implemented in a series of 5-year programs. The aim of the 20 year comprehensive health sector development plan (the four HSDP's) was to provide accessible, equitable and quality health services to all citizens through the continuous and consistent consolidation of the health service delivery system, including, health facility expansion and rehabilitation; human resource development; pharmaceutical supply and management; IEC/BCC activities; health sector governance and management (HMIS, M&E and operations research) and health care financing. The HSDP components that make up the health system are disaggregated into three thematic areas to facilitate planning, budgeting, monitoring and evaluation (Table 2). In order to assess the progress made in RMNCH across the four HSDPs over the past 15 years (beginning from the HSDP-I in 1997/1998), the three thematic areas will be examined in subsequent sections.

Table 2. Health care delivery system thematic areas

THEMATIC AREAS	COMPONENTS /ACTIVITIES
Health service delivery	Provision and management of curative, preventive, rehabilitative, emergency health services, promotion of good health practices at individual, family and societal level.
Leadership, governance and health system management	Evidence-based planning, monitoring & evaluation, policy formulation, regulatory framework and implementation.
Health infrastructure and resources	Development of human resource, rehabilitation and maintenance of health facilities, provision of medicines/medical supply, and sustainable health financing

Health Service Delivery

The four health sector development programs placed the expansion of quality health care service delivery at the center of their plans and actions. The priority areas of health service delivery remained more or less consistent in all HSDP's (Box 2). However, there were some changes in focus of attention as well as scope of

Box 2: HSDP priority areas of health service delivery

- Curative health services
- Maternal and reproductive health
- Children health and immunization
- Environmental health
- HIV/AIDS
- TB and leprosy
- Malaria prevention and control

programs and interventions. As HSDP's are progressive and dynamic programs, new programs and interventions were being incorporated, driven either by intentions to accelerate progress towards achievements of MDGs or by the necessity to address new and emerging health concerns.

HSDP-I (1997/98-2002/03): During this period the main focus was increasing access and coverage of health care services and improving service quality through intensive training and assuring adequate supplies. Strengthening health care services at facilities, outreach sites and mass campaigns were some of strategies employed during HSDP-I. Accordingly, routine RMNCH services relevant to child survival such as family planning (FP), tetanus toxoid (TT), antenatal care (ANC), postnatal care (PNC), expanded program of immunization (EPI), vitamin A supplementation and growth monitoring and promotion were provided at facilities and outreach sites. Strengthening and expanding the Integrated

Management of Childhood Illness (IMCI) program, initiated in 1997, was planned and implemented during HSDP-I. Malaria control through insecticide spraying was also implemented during this phase (26).

HSDP-II (2002/03-2005/06): Although the implementation period of HSDP-II was two years shorter than that of other HSDP's, efforts had been made to accelerate the expansion of health care service delivery. The most remarkable achievement of HSDP-II was the introduction of the Health Extension Program (HEP) in 2004, designed to ensure equitable access of primary health care services (detailed in separate section below). HSDP-II remains the key turning point in improving access to health services by delivering key services to the people in their local communities.

The strengthening of the implementation of Integrated Management of Neonatal and Childhood Illnesses (IMNCI) took place during this period. At the end of HSDP-II, 36% of health facilities were implementing IMNCI and 4,303 health workers were trained (43% of the targeted 10,108). The district coverage also reached 23% (131 of the targeted 580 districts). Expansion of emergency obstetric surgical interventions, post-abortion care and PMTCT services were also some of the health care services provided at health institutions during HSDP-II (14).

The prevention, control and treatment of malaria, supported by the WHO Global Roll Back Malaria (RBM) strategy was one of the intervention programs introduced during this period. The strategy relies mainly on early diagnosis and treatment of malaria at the community level by health extension workers. The provision of insecticide treated nets (ITNs) as well as vector control using insecticides has also been part of the strategy. Furthermore, it has created a conducive environment for community participation in the prevention and control of malaria (27)(28).

During HSDP-II, implementation guidelines and strategies related to nutritional interventions were formulated. The national Guideline on Control and Prevention of Micronutrient Deficiencies was issued in 2004 to enable consistent and coherent actions to prevent vitamin A deficiency(29). The guideline also emphasized a strengthened effort to provide only iodized salt to consumers. The prevention and treatment of parasitic infestations, and supplementation of iron and folic acid were considered primary strategies to prevent iron deficiency anemia among children, and lactating and pregnant women.

The national strategy for Infant and Young Child Feeding (IYCF) was developed in 2004 by FMOH (30). The strategy adopted the essential nutrition actions, which includes seven low cost, high impact and feasible actions to improve maternal and child health outcomes. These include promotion of: 1) optimal breast feeding (initiation of breastfeeding within

one hour after delivery, exclusive breastfeeding in the first six months, breastfeeding day and night on demand, etc.), 2) initiation of complementary feeding at six months, 3) nutritional care for sick children during and after illness; 4) improving women's nutrition, 5) prevention and control of anemia, 6) prevention of vitamin A deficiency, and 7) reducing iodine deficiencies.

In order to accelerate efforts to improve hygiene and sanitation conditions, another national strategy was issued by FMOH in 2005 (31). The main focus of the strategy was to encourage each and every household to exercise appropriate hygiene and sanitation practices. Moreover, in an attempt to accelerate and harmonize the provision of appropriate and adequate water, sanitation and hygiene (WASH) services, the Ministry of Health (MOH), Ministry of Education (MOE) and Ministry of Water Resource Development (MOWRD) signed a memorandum of understanding in 2005 (32). The memorandum detailed responsibilities, activities and institutional arrangements to guide and oversee the implementation of the integrated services.

HSDP-III (2005/06-2010/11): The momentum created during HSDP-II continued through HSDP-III. The Health Extension Program was significantly scaled up and aggressively implemented. At the end of HSDP-III in 2010, HEP enabled Ethiopia to increase primary health care coverage to 90 percent.

The main focus of HSDP-III was to speed up progress towards achievement of MDGs and thus the emphasis has been on increasing interventions that were lagging behind the targets. Maternal and newborn health began to receive attention during HSDP-III. More emphasis was placed on improving institutional delivery services at health posts and all health facilities by expanding safe and clean delivery services, basic emergency obstetric care and comprehensive emergency obstetric care. Moreover, strengthening family planning services, including long-term contraceptives, was pursued in HSDP-III. A national reproductive health strategy outlining key strategies and implementation modalities was issued in 2006.

Malaria prevention received more attention as reflected in plans aimed at increasing the number of households with 2-ITN per household from the 2% level to 100%. Strengthening PMTCT and IMNCI also received due attention during this period. Integrated disease surveillance and public health emergency response both at health facility and community levels were planned and implemented.

Moreover a number of strategies and programs were implemented to reinforce and augment the services provided through the health extension program. The national Child Survival Strategy issued in 2005/06 mainly focused on preventive, promotive and curative

interventions at both health facility and community levels(33). The aim of the strategy was to prevent causes of neonatal death (low birth weight, sepsis and asphyxia), pneumonia, malaria, diarrhea, and measles as well as malnutrition and HIV/AIDS that together account for 90% of neonatal and child mortality.

The Enhanced Outreach Strategy (EOS) was developed and implemented in drought prone areas beginning in 2006 (34). Interventions include: bi-annual provision of vitamin A supplements, de-worming and screening of children for malnutrition, provision of supplementary foods for uncomplicated malnourished children, and referrals for complicated cases.

The National Nutrition Strategy (2008) and the subsequent National Nutrition Program (NNP) were formulated and implemented during HSDP-III (35)(36). The community based nutrition program (CBN) is the major component of the NNP and it included: vitamin A supplementation, de-worming, monthly anthropometric measurements, counseling for mothers on nutrition, food preparation demonstrations, and intensive behavior change activities using the Essential Nutrition Action (ENA) framework. The CBN component of NNP was designed to be implemented mainly through HEP, where nutrition is already one of the components of health services delivered through HEP. Apart from vulnerability to drought, the presence of ongoing EOS program, supplementary feeding programs and PSNP were the main criteria considered in selecting woredas for CBN. CBN was implemented in 131 drought prone woredas in Amhara, Oromiya, SNNPR and Tigray regions in two phases. The first phase was initiated in 2008 in 54 woredas and the second phase was launched in 77 woredas in 2009.

HSDP-IV (2010/11-2014/15): Despite substantial achievements, gaps were identified during the implementation of HSDP-III that may have affected maternal and newborn health outcomes. Therefore, more emphasis is given to strengthening maternal and newborn health services during HSDP-IV. In line with this, the road map for accelerating the reduction of maternal and newborn mortality and morbidity in Ethiopia was prepared and issued in 2012.

Strengthening the services related to the treatment and prevention of common childhood illnesses also received emphasis in HSDP-IV. Community case management for common childhood illnesses (ICCM) was rolled out in all health posts beginning in 2010 (37). It was an extension of IMNCI to the community level, which included the treatment of pneumonia, diarrhea and malaria to be managed by HEWs. According to the HSDP-IV mid-term evaluation, 86% of health posts were providing ICCM services in 2013. There were plans to expand the proportion of health centers and hospitals that implement IMNCI to 100% and

based on the HSDP-IV mid-term evaluation, the targets were achieved. Hospitals and health centers providing IMNCI services have reached 100% and 95%, respectively (37).

Strengthening nutritional interventions had also been the main focus of HSDP-IV. This includes the scale up of CBN to 40 additional woredas and rolling out of community based management of acute malnutrition (CMAM) to many woredas(35). The program screens children for acute malnutrition, and provides therapeutic foods for medically uncomplicated cases, and refers complicated cases to health facilities for admission to in-patient therapeutic feeding services. As of August 2011, 7,137 health posts were providing an outpatient therapeutic program (OTP) of services and the total number of woredas with OTP services increased to 691. A total of 731,238 severely malnourished children were admitted to the therapeutic feeding program (TFP) between January 2008 and September 2011 (38).

Another important initiative of HSDP-IV was to accelerate the use of appropriate sanitary practices. Kebeles are expected to encourage all households to construct their own latrines and promote their use. In addition, communities are expected to construct public latrines for guests and transients, and to make sure that the practice of open defecation is abandoned. A certificate is issued when HEWs verify that open defecation is no longer practiced in a kebele.

Lastly, strengthening integrated disease surveillance and public health emergency response has been a priority in HSDP-IV to ensure early identification, verification and rapid response to public health emergencies. Efforts have been made in building the capacity of the health system to better address existing, emerging and re-emerging diseases, acute malnutrition, and natural disasters of public health concern.

Health Extension Program

Although, the overall performance of the health sector improved under HSDP's, particularly in urban areas, the ability to deliver essential services to the people at the grass roots level through HSDP had been lagging behind. These findings as emphasized in the HSDP-II midterm evaluation drove the decision to create the Health Extension Program (HEP). HEP set up an institutional framework for the expansion of national health interventions to the community level through the provision of primary care services provided by health extension workers (HEWs). Ultimately, the overall goal of HEP was to improve the health status of the population and reduce maternal and child mortality rates. The establishment of HEP has resulted in the rapid expansion of human resources for health as well as health infrastructure. This community oriented approach provided an avenue for local community participation to learn about best practices and develop better linkages with the health

system. The program gave priority to the promotion of optimum health, and prevention and control of diseases and was designed to provide health services in four domains of public health (Table 3).

Table 3. Components of health extension program package

Main component	Sub-components
Disease Prevention and Control	<ul style="list-style-type: none"> • HIV/AIDS and other STIs prevention and control • TB prevention and control • Malaria prevention and control • First aid emergency measures
Family Health Service	<ul style="list-style-type: none"> • Maternal and child health • Family planning • Immunization • Adolescent reproductive health • Nutrition
Hygiene and Environmental Sanitation	<ul style="list-style-type: none"> • Excreta disposal • Solid and liquid waste disposal • Water supply safety measures • Food hygiene and safety measures • Healthy home environment • Control of insects and rodents • Personal hygiene
Health Education and Communication	

HEP has been implemented in an incremental fashion over the years by expanding the number and types of primary health care services. Although HEP focused on promotive and preventive services, it also included the provision of limited curative care. As an integral component of the health system, the program covers all areas of health with a primary focus on enhancing the health of mothers and children, the area of least progress. The provision of routine RMNCH related programs and interventions such as FP, EPI, ANC, PNC and various nutrition interventions were strengthened through HEP.

In a matter of less than five years, over 34,000 HEW's have been trained and deployed. The acceleration of HEP has reinforced the rapid expansion of health facilities and health professionals throughout the country. It is also important to note that before 2010 various community members (such as voluntary community workers and model families) supported the HEWs. Beginning in 2011 a new voluntary system was introduced to support

the work of HEWs, known as the Health Development Army (HDA). The HDA is an innovative way of organizing people to facilitate the dissemination of health promotion and disease prevention messages, and to stimulate behavioral change across a community. The objective of the HDA is: (i) to consolidate the gains that were attained as a result of the HEP and (ii) to promote community ownership of the programs through an organized movement using participatory learning and action-oriented meetings.

3.1.2 Leadership, Governance and Health System Management

Strengthening the health system management, leadership and governance has been given attention in all HSDPs. At the initial stages of HSDP-I, the Central Joint Steering Committee (CJSC) was established at the Federal level to oversee the implementation of both the health and the education sectors. Similarly each of the regions was expected to establish a Regional Joint Steering Committee (RJSC) to oversee and govern the HSDP and ESDP and their implementation. Later, a separate CJSC for the health sector was established with representatives from the relevant government ministries, NGOs and bilateral and multilateral donors. Moreover, various technical working groups were established to provide technical assistance on various thematic areas (HSDP secretariat, HPN donors working group, Joint Core Coordinating Committee (JCCC) etc.). This governance system prevailed throughout the subsequent health system development programs with continuous consolidation, in terms of frequency of meetings and expansion of these organizing structures to woreda levels. Community co-management of facilities and health services was initiated in HSDP-I and intensively pursued in the subsequent health system development programs. Health councils, boards and committees were established involving key stakeholders, including communities at the kebele and woreda levels.

Capacity Building and Civil Service Reform: Strengthening the capacities of the staff of FMOH and regions in the areas of policy formulation, planning and budgeting, financial management, program implementation, monitoring and evaluation (M&E) was given a lot of attention throughout the implementation of all the HSDP's. In HSDP-II, enhancing community involvement in the management of health facilities and community based health interventions was included as a key objective. Attempts to appoint health managers with appropriate skills were made and due attention has also been given to the staffing of woreda health offices for the effective implementation of a decentralized health system.

In HSDP-II the Civil Service Reform Program began to be implemented across all health system levels. In HSDP-III, the civil service reform program continued. The health reforms have been intensified through the application of a new concept known as Business Process Reengineering (BPR). Based on the systematic analysis the health system was reorganized

into eight core processes and five support processes. The new core processes are: health & health-related services and product regulation; health care delivery; health infrastructure expansion and rehabilitation; pharmaceutical supply; policy, planning, monitoring and evaluation; public health emergency management; research and technology transfer, resource mobilization and health insurance. The support processes include: human resources development and management; legal services; procurement, finance and general service and program-based audit and public relations.

Decentralization and Local Planning: During HSDP-I, decentralization of health system management began and was consistently strengthened through subsequent HSDP's. Following decentralization, responsibilities and mandates of each level have been continuously updated. The responsibility of the Federal Ministry of Health is limited to policy formulation, standard setting and technical support, while the Regional Health Bureau's (RHBs) assumed responsibility for the overall implementation of health programs guided by the HSDPs. The RHBs have the overall responsibility of planning, supervising and monitoring and evaluating the HSDP implementation jointly with the zonal and woreda health offices.

There were woreda planning efforts during HSDP-I, although they were not strong enough and the national plan was not woreda based. However, since the inception of HSDP, the regional level plans are developed in consultation/involvement of woredas and zones with major decisions made bottom up and top down. In HSDP-II, planning was increasingly being undertaken in bottom-up fashion, because most of the regions had already established woreda health offices with varying coverage. Bottom-up planning has been pursued and continuous efforts have been made to build the capacities of woreda health officials. Currently the process of planning is top-down and bottom up, with strong alignment at federal and regional levels.

Health Management Information System: Throughout the implementation of all HSDP's, strengthening and reforming the health management information system (HMIS), as well as monitoring and evaluation has been a priority of the MOH. Thus, intensive efforts have been made to develop the systems, processes and required skills to improve the collection and use of health information for decision-making. The general objectives of HMIS are therefore, to generate timely, accurate and complete health information that enables evidence-based decision-making. The continuous publication of the Health and Health Related Indicators booklet, Annual Health Sector Performance reports and Policy and Practice Bulletins are some of the publications used to reinforce the importance of relying on HMIS to understand key health trends in the country.

Furthermore, all health facilities are expected to submit quarterly and annual reports, using agreed-upon indicators, but adherence to this schedule has been weak for various reasons. In HSDP-II, one of the major targets was to establish the HMIS throughout the health delivery system, with functioning units at all levels. The multi-stakeholder HMIS National Advisory Committee (NAC) was established during HSDP-II and facilitated the design and piloting of the new HMIS during HSDP-III and scaling up to all regions based on the readiness assessment, after which the RHB's developed detailed implementation plans. The frequency and the system of supervision, monitoring and evaluation have been continuously improved.

Harmonization: During HSDP-III the harmonization and alignment strategy was formulated in 2007. The strategy calls for one plan, one budget and one report with the aim of having one health sector plan and aligning the health sector plan with the comprehensive development plans of the country (PASDEP and GTP). During HSDP-IV efforts were made to further strengthen the HMIS /M&E system and improve data quality and information use at all levels of the health system. Data quality assurance mechanisms are being institutionalized at FMOH, RHB, and woreda health offices and facilities. Progress has also been made to improve health sector data coverage by integrating a private sector reporting system.

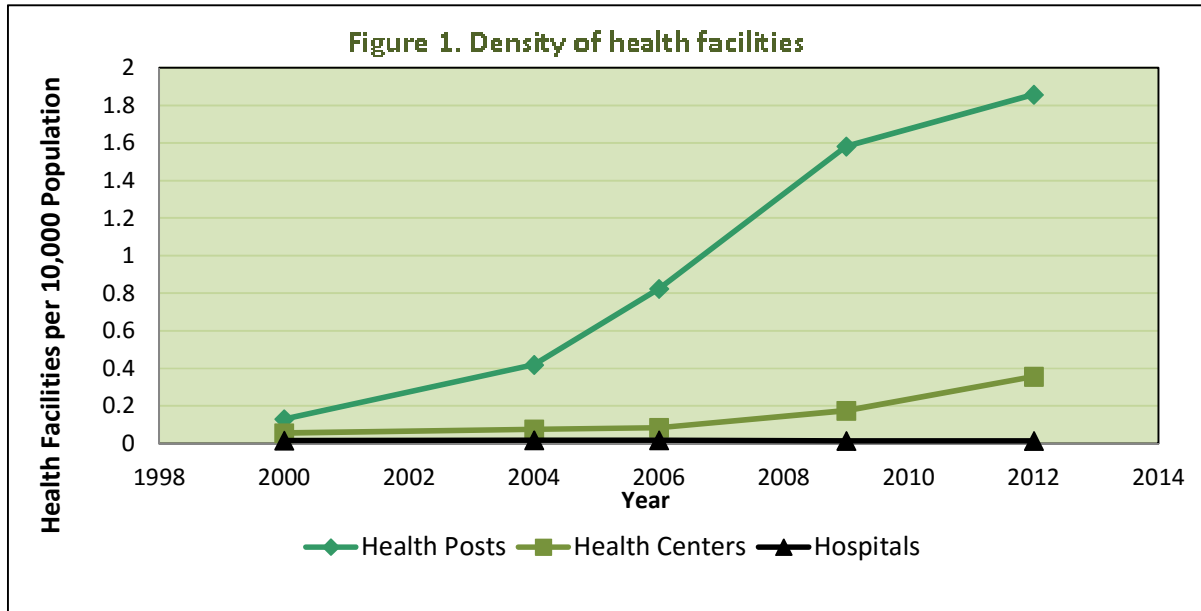
Performance Review: Beginning with HSDP-I, the performance of the health system has been evaluated in annual review meetings, joint review meetings, mid-term reviews and end-of-program evaluations. Particularly, annual review meetings have become one of the important venues for monitoring and evaluation of the health sector programs.

3.1.3 Health Infrastructure and Resources

The mobilization and coordination of funding platforms and overall strengthening of health care financing has led to: the rapid expansion and rehabilitation of health facilities; human resource development; as well as an increase and improvement of pharmaceutical and medical supplies. The rehabilitation and upgrading of existing health facilities as well as the construction of new ones have been intensively implemented over the past decade. The priority has been construction of health posts, and the strategies pursued in health facility construction include the participation of communities and promotion of ownership, as well as the engagement of as many stakeholders and partners as possible.

Standards for the construction of facilities have been set and continuously updated and efforts have also been made to enhance the capacity of engineering units at the regional health bureau levels. In order to meet the huge demand for health infrastructure, an accelerated program for the expansion of health facilities was formulated and implemented

during HSDP-III. The findings of health-related indicators showed that the number of hospitals increased from 87 in the year 1989 to 125 in 2012; the number of health centers increased from 257 in 1989 to 2999 in 2012; and the number of health posts increased from 76 to 15668 between the years 1989 and 2012.

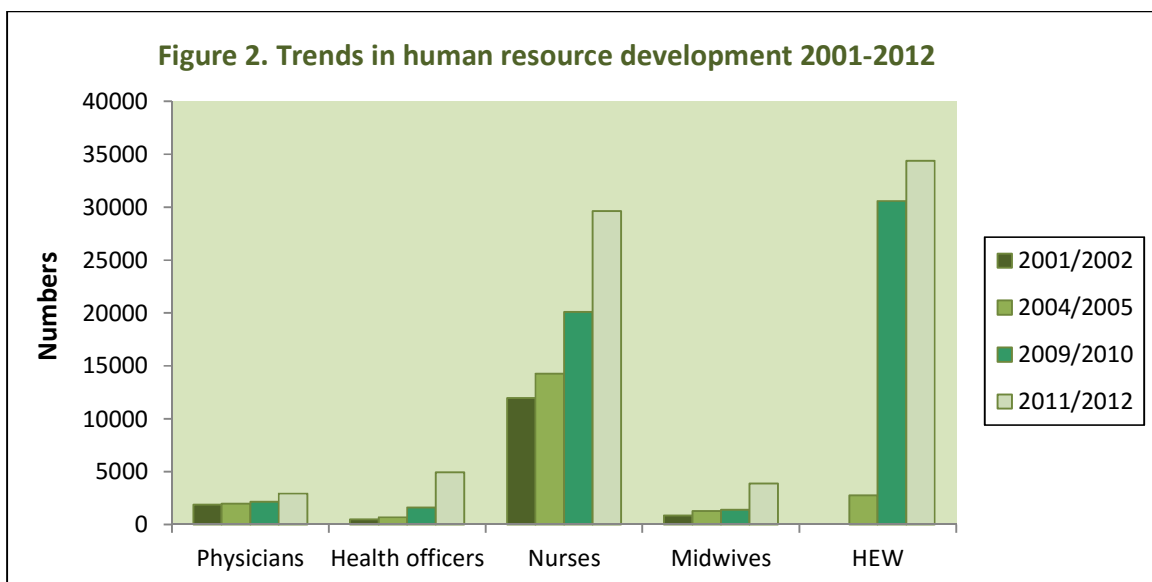


As shown in Figure 2, the increase in the density of health posts was gradual up to 2004, and then the increase accelerated from 2004 onwards and reached a level of 2 per 10,000 population in 2012. There was no discernible change in the increase of health centers up to 2006. However, by 2012 there were about 0.4 health centers per 10,000 population. The hospital population density has been almost constant. Although the actual number of hospitals constructed in the last decade is large, it appears that the parallel population growth kept the density nearly constant.

The main objective of human resource development has been to produce an adequate, competent and accountable health work force. In order to meet the objective, a human resource development plan was developed and rigorously implemented during HSDP-II and HSDP-III. Strategies included upgrading the capacity of existing manpower by initiating and strengthening continuing education and in-service training, as well as developing and implementing effective mechanisms to motivate and retain health workers. Moreover, existing training institutions were improved by providing sufficient resources (manpower, finance and material) and new ones were established to increase the overall student intake. Special attention was given to the training of health officers, public health nurses and in particular senior midwives to strengthen emergency obstetrics in rural areas beginning

with HSDP-II. The results from Ethiopian Health and Health Related Indicators reports show that the number of doctors (general practitioners and specialists) almost doubled from 1989 to 2012 (from 1,440 to 2,923); the number of Health Officers increased from 30 in 1989 to 4,923 in 2012; the number of all category of nurses increased from 2,864 in 1989 to 36,672 in 2012; and the number of midwives increased from 250 in 1989 to 3,866 in 2012. While the targets for most categories have been attained, the achievements for midwives and public health nurses have always lagged behind the targets. Thus, one of the focus areas in HSDP-IV was scaling up of midwifery training.

Figure 3 depicts the trends in human resources development. An extraordinary and substantial increase in the number of health extension workers, as well as a rapid increase in the number of nurses was observed over a short period of time. A steady and gradual increase was observed in the number of physicians, health officers and midwives, compared to the rise in the number of health extension workers and nurses.



3.1.4 Pharmaceutical and Medical Supplies

The improvements in pharmaceutical and medical supplies have been one of the priority areas in the health sector development programs. The goal of the pharmaceutical sector of Ethiopia is to ensure the regular availability and the rational use of safe, effective, quality drugs at an affordable price. The strategies and specific objectives are based on the National Drugs Policy endorsed in 1993 (39). The list of drugs to be marketed and used in Ethiopia was adopted in 1996. In HSDP-I, the list was elaborated and later revised, printed and distributed in 2002.

In HSDP-II, targets were developed to provide at least 80% of essential drugs and medical supplies in each health facility; to increase the percentage of generic drugs prescribed from 90% to 92% (1992 EFY); and to provide training to at least one health worker per health facility in drug management. The general availability of drugs improved significantly during the period of HSDP-II. On the other hand, the average presence of expired drugs by the year 2003 was 8% in health facilities, 2% in regional drug stores and 3% in private retail drug outlets.

During HSDP-III a number of targets were set including: increase the availability of essential drugs from 75% to 100% in each public health facility; ensure 80% availability of standard medical supplies and equipment in all public health facilities; and reduce the percentage of expired drugs from 8% to 1% in public health facilities. In order to improve efficiency in the supply chain of pharmaceuticals and medical supplies, Pharmaceutical and Medical Supplies Import and Distribution (PHARMID) was transformed into the Pharmaceutical Fund and Supply Agency (PFSA), and several measures were taken to strengthen it. PFSA updated the essential drug list during this period.

In HSDP-IV, efforts were made to further strengthen pharmaceutical and medical supplies. The FMOH provided capacity building at all levels to enhance management quality and effectiveness of the Revolving Drug Fund (RDF). More resources were mobilized to improve the per capita expenditure on drugs. Pharmaceuticals procured medicines in bulk and they were delivered directly to service delivery points by PFSA. Pharmaceutical hubs and warehouses were also constructed.

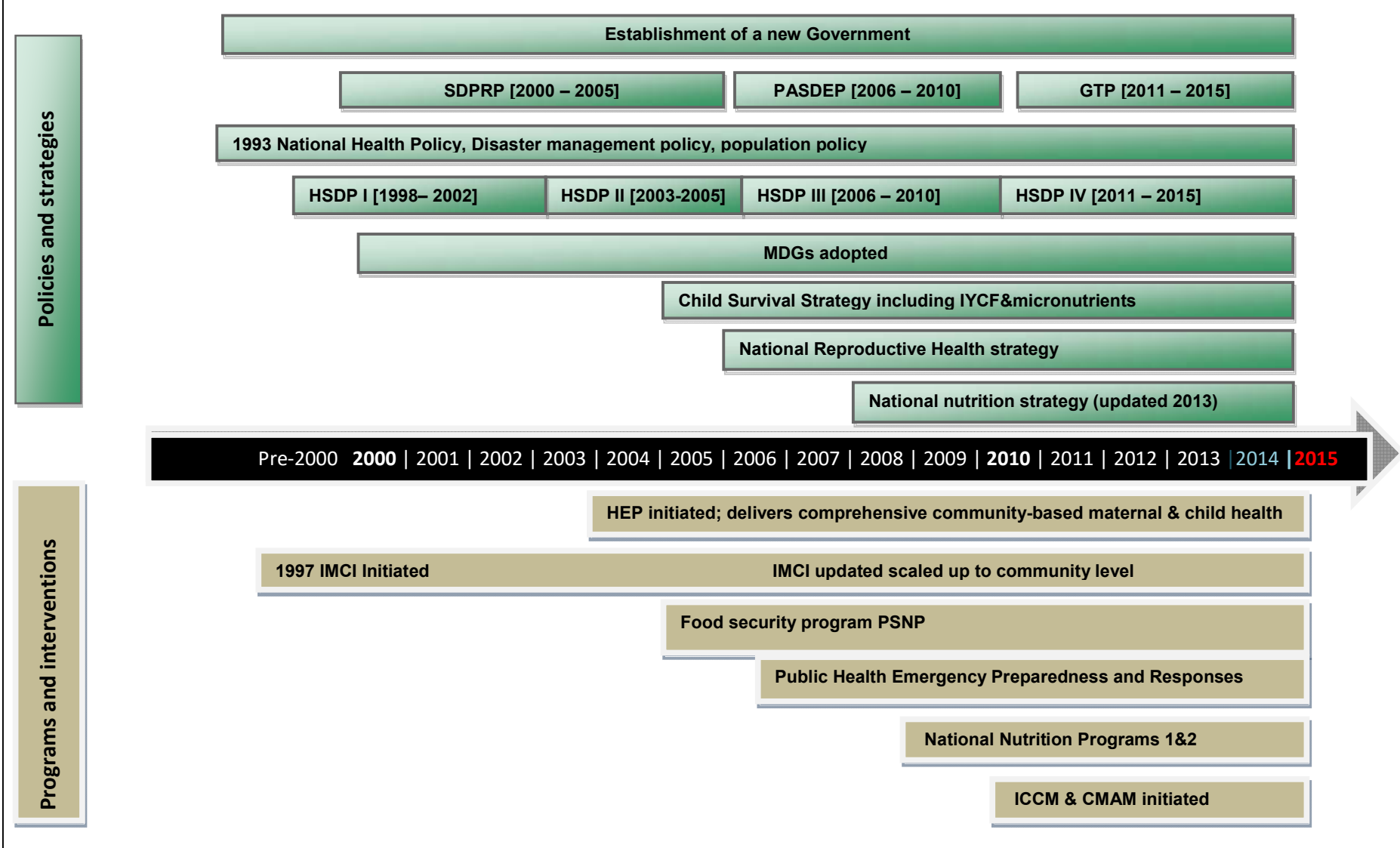
3.1.5 Timeline for Key Events, Policies and Programs Related to RMNCH

As detailed in the previous sections, a number of RMNCH-related policies and strategies have been formulated and numerous programs and interventions were implemented between 2000 and 2012. In order to visualize the changes in chronological order, a timeline of the policy formulations and initiation of the programs has been created. As depicted in Figure-4, the key event that changed the whole governance system in general and the health system in particular was the establishment of a new government. The other important benchmark appears to be the formulation of health policy and the subsequent development and implementation of comprehensive health programs. The first HSDP was initiated in 1998 and continued as a series of five year programs; the fourth HSDP is in its final year of implementation.

As it is clearly seen from the timeline, except for the IMNCI policy, which was formulated in 1997, most of the policies and programs that targeted reproductive, maternal, newborn and child health were formulated and implemented between 2003 and 2007. One of the

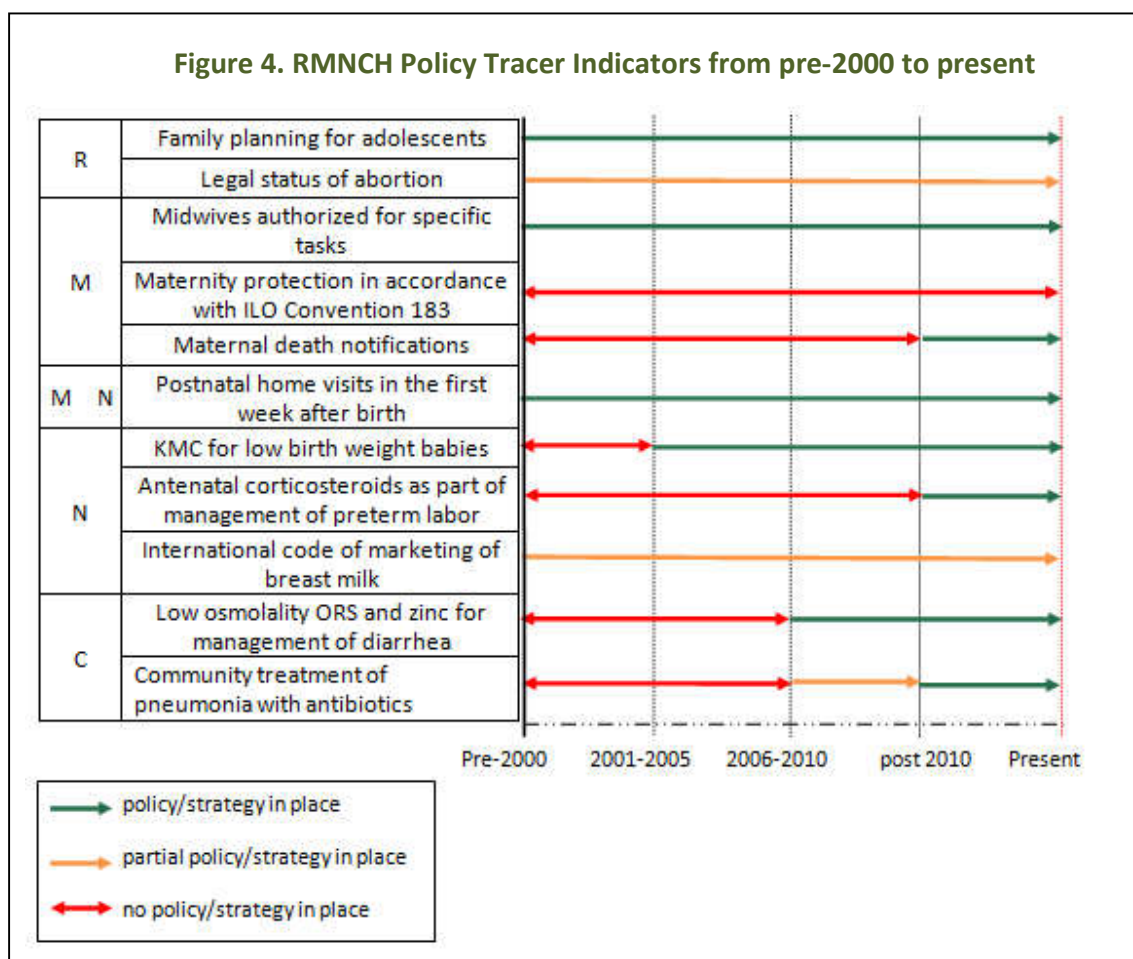
notable inputs during this period is the initiation of HEP, which accelerated the expansion of health services to the rural communities and changed the focus from mass campaigns and facility based services to routine service delivery. The program has been strengthened consistently through continuous reviews and issuance of updated guidelines. Reproductive health received some attention beginning in 2006. Clean and safe delivery and newborn health received focus from 2008 onwards, and is being strengthened through the community-based newborn care (CBNC) initiative introduced in 2013. Community case management of childhood illness started in 2007 and has been strengthened through the introduction of ICCM in 2010. Nutrition received more attention around 2006 and continued to be strengthened through community management of acute malnutrition introduced in 2010.

Figure 3. Timeline for key events, policies, strategies and programs relevant to RMNCH



3.1.6 Reproductive, Maternal, Neonatal and Child Policy Tracer Indicators

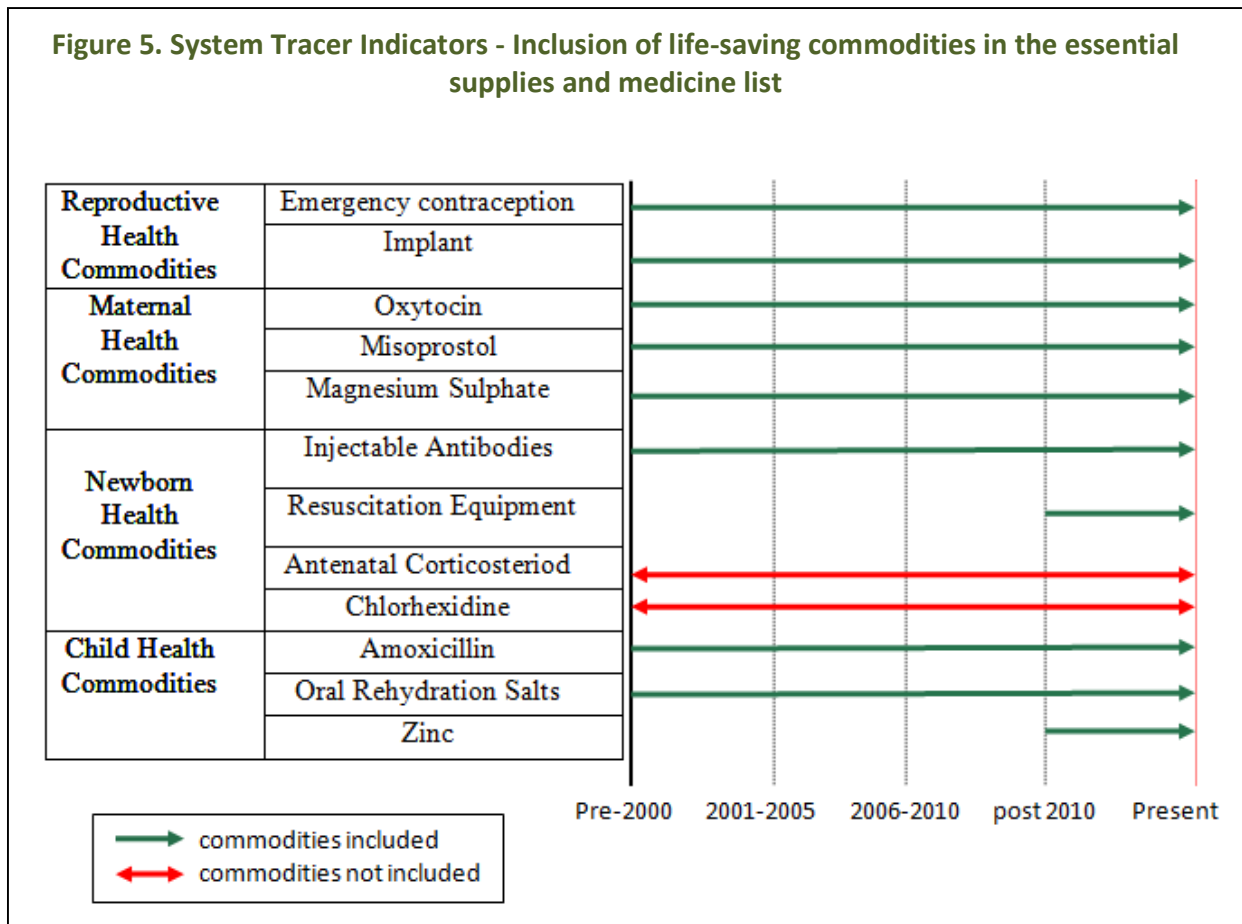
With the aim of gaining some insights into implementation of specific maternal and newborn care policies, information was collected on whether the following RMNCH activities and interventions were being rolled-out in Ethiopia. The results shown in Figure-5 indicate that maternity protection (Convention 183), maternal deaths notification, and the International Code of marketing of breast milk substitutes are not institutionalized. However, community treatment of pneumonia with antibiotics and the use of low osmolality ORS and zinc for management of diarrhea were introduced in 2010, whereas the authorization of midwives for specific tasks (5 of 7 tasks listed in tool 2) and postnatal home visits in the first week after birth were part of policies and programs even before 2000.



Further information was collected on whether a few life-saving RMNCH commodities were included in the list of drugs and commodities. The results shown in Figure-6, indicate that antenatal corticosteroid and chlorhexidine are not included so far;

resuscitation equipment was included beginning in 2006; zinc was included recently, while others; emergency contraception, implant, oxytocin, misoprostol, magnesium sulphate, and injectable antibiotics were included before 2000.

Figure 5. System Tracer Indicators - Inclusion of life-saving commodities in the essential supplies and medicine list



3.2 HEALTH CARE FINANCING ANALYSIS

Key Findings: Health Care Financing

- ❖ Total Health Expenditure (THE) over the last fifteen years increased dramatically; increase was consistent for all sources.
 - ❖ Total per capita expenditure showed a remarkable change, from 4 USD in 1995/96 to 20.77 USD in 2010/11.
 - ❖ Total expenditure and per capita expenditure for reproductive and child health has also shown an incremental trend over time, from 2004/05 to 2010/11.
 - ❖ Rapid increase in the total health expenditure in 2005 marked a turning point for the achievements in health outcomes.
 - ❖ Implementation of health care financing strategy, government commitment, harmonization and coordination of development partners towards government plan substantially contributed to the increase in health expenditures.
 - ❖ Increase in health expenditures may be associated to the observed improvements in coverage and health outcomes.
-

3.2.1 Overview of Health Care Financing in Ethiopia

It is widely recognized that health care financing is a main driving force in the realization of health sector goals, and key determinant for the delivery of health services. In Ethiopia, health care financing is one of the central elements of the HSDP's. As a priority area of health service investment, it was intended to generate additional revenue sources to improve quality, equity and accessibility of health services as well as improve public sector efficiency.

The Health Care and Financing Strategy endorsed in 1998 was designed to alleviate the deep-rooted health problems in the country that resulted from under-financing the health sector, along with limited financial capacity of the government to respond to an increased demand for modern health care services. Before this strategy, shortages of basic pharmaceutical supplies and equipment, poor maintenance of medical equipment and buildings, and under utilization of the health workforce existed. Furthermore, government regulation required that revenue generated from user fees charged for health services be

transferred to the central treasury, which left little incentive for the health facilities to collect such fees for service. By identifying key gaps, the strategy tried to address the country's overwhelming health problems that had persisted for decades. Specific aims were to: improve efficiency; generate additional sources of funds; encourage the participation of private organizations and NGOs; promote community participation; create linkages with bilateral and multilateral agencies; and develop health insurance (40).

The strategy highlighted the importance of giving clear directions to health financing alternatives classified as the: *first generation*, a major decision agreeing to pay providers at the time of services; and *second generation*, a new initiative in Ethiopia to minimize financial barriers to health services by risk-pooling among the population. The latter approach introduced two kinds of health insurance: community-based health insurance designed for the non-formal sector and social health insurance for the formal sector. Annex-4 depicts how Ethiopia's health care financing (HCF) alternatives have evolved over time.

The different HCF mechanisms implemented as a result of the strategy complemented each other in that implementation of one mechanism was a foundation for the other. Below are HCF mechanisms that are currently being implemented as part of the strategy.

- **User fee revision:** Charges levied by a public health facility to collect revenue to improve access and quality of health services. Despite its merit in improving health service quality and as a basis for the introduction of any type of health insurance scheme, the implementation of the user fee was criticized due to the associated risk of being a potential access barrier.
- **Fee waiver system:** Based on third-party payment principles, where health facilities will provide services free for pre-identified beneficiaries and be reimbursed by the Government. This waiver scheme was introduced to allow the poorest of the poor to access medical services while alleviating the burden of paying the already subsidized user fees for certain health services. However, as reported in HSDP-IV Mid-Term Reviews, the implementation of the waiver scheme is not progressing as it was planned. Reimbursing the cost of fee waivers to health facilities and the implementation of the waiver scheme has faced two major challenges: the correct identification of fee waiver beneficiaries and the shortage of funds to finance such waivers.
- **Exempted health services:** Health services that are rendered free of charge to all citizens irrespective of their level of income. Exemptions are mainly given to encourage the utilization of particular preventive, curative, or public health services. Exempted services identified are EPI, delivery at primary health care unit (PHCU) level, TB,

leprosy, PMTCT, post and antenatal care, voluntary counseling and testing (VCT) and fistula. The HSDP-III reported that delivery at the PHCU level was not free as recommended; this was supported by some facility-based research. Clients were charged in some health centers for the supplies used during deliveries and only obtained consultation free of charge.

- **Revenue retention and establishment of health facility governing body:** One of the major accomplishments of the strategy, is allowing health facilities to manage their own revenue obtained from user fees (rather than sending it back up to central treasury). Some of the regions were earlier adopters of this mechanism than others. This resource mobilization strategy helped health facilities to develop a sense of responsibility and inquire about service delivery gaps in terms of supplies and facility maintenance and renovation. This has helped health facilities to ensure availability of pharmaceutical supplies and infrastructure like water lines, electricity, and expansion or renovation of service rooms.
- **Private wing and outsourcing of non-clinical services in public hospitals:** These two mechanisms are implemented with the aim of minimizing the high attrition rate of health workers and providing the population with additional service options.
- **Social Health and the Community-Based Health Insurance (SHI and CBHI):** These two insurance schemes are seen as important vehicles for achieving universal health coverage in Ethiopia. The CBHI was piloted in 2011 in 13 woredas within 4 large regions (Oromia, Amhara, SNNPR and Tigray) and is to be scaled up to almost 200 woredas within the same regions. The SHI strategy was endorsed, and the national and regional authorized agencies are established and working toward full-scale implementation.

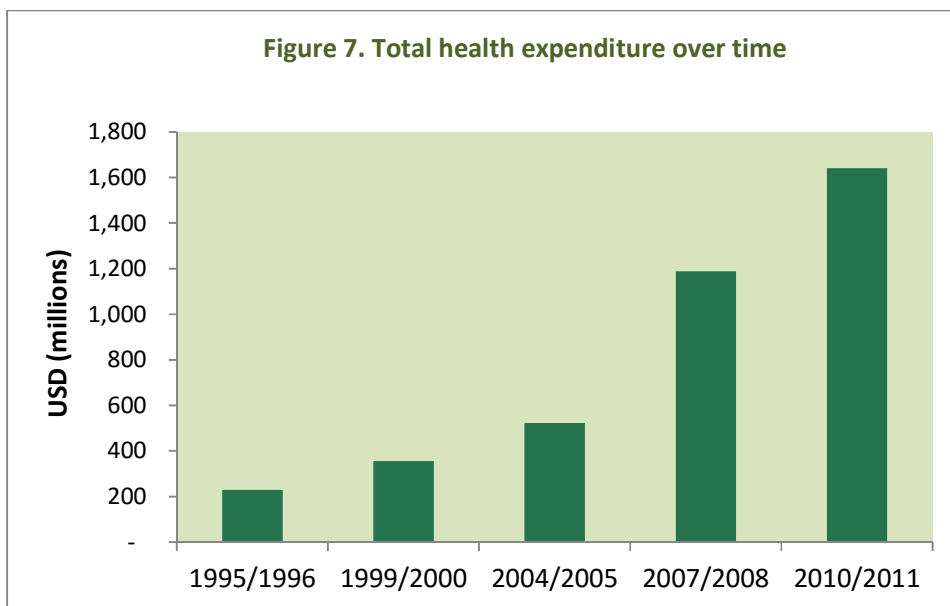
3.2.2 Trends of Health Care Expenditure

The National Health Accounts (NHA), an accounting platform that describes both public and private expenditure flows within the health sector, is the single most important source of information for the health care financing component of this case study.

In Ethiopia, the NHA survey has been conducted intermittently since 1995/96 with slight changes in the methodology and overall content (like including sub-accounts for specific diseases and maternal and child death) over the years. There were also efforts to improve the methodology, making use of an NGO survey for verification of data in addition to the use of audit reports from Disaster Prevention and Preparedness Commission (DPPC) and

CRDA so as to minimize the under-estimation of expenditures (41). According to Berman (1996), the core concept of the NHA is to track the flow of funds from one health care actor to another, including public, private, and donor expenditures for planning and managing the national health system and providing a basis for informed decision-making. The NHA is a tool to assess resources allocated and utilized thereby providing the best framework for modeling reform strategies and for monitoring their effects (42).

Overall the findings revealed that the NHA estimates of total health expenditures increased seven-fold in the time interval from 1995/96 to 2010/11 (Figure 7). This change is attributable to the introduction of strategies such as rapid increase of the overall health worker cadre and expands the scope of primary care services through the HEP. A pivotal change in the total health expenditure was observed from 2004/2005 onwards, which marked a turning point in the increasing resources for health resulting in the overall improvement of health service delivery. Between 1995/96 and 2004/05, Ethiopia's total health expenditure increased by more than two fold, while the increase in total health expenditure was twice as much between 2004/05 and 2010/11.

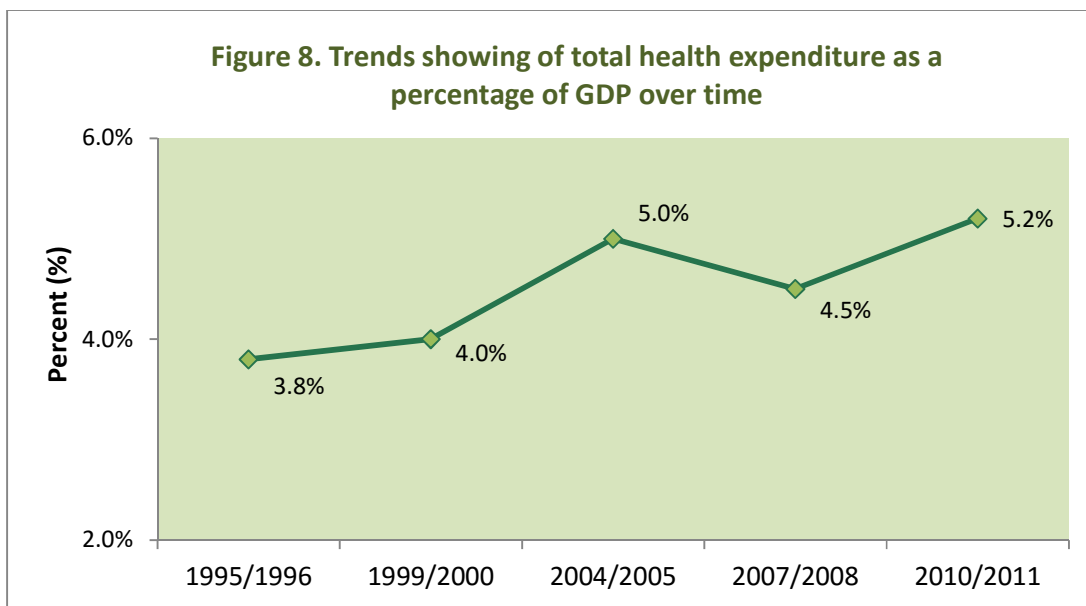


The incremental trend in total health expenditure over time was mainly attributable to the introduction of new health strategies and a more harmonized system of resource mobilization from all sources to support health service delivery. More rapid increase in the total health expenditure occurred since 2005 mainly due to the introduction of FMOH's flagship HEP, IMNCI, and other health service expansion activities. Furthermore, Ethiopia was able to mobilize more external resources for health by various advocacy mechanisms

and demonstrating efficiency in resource allocation and utilization through its harmonization initiative.

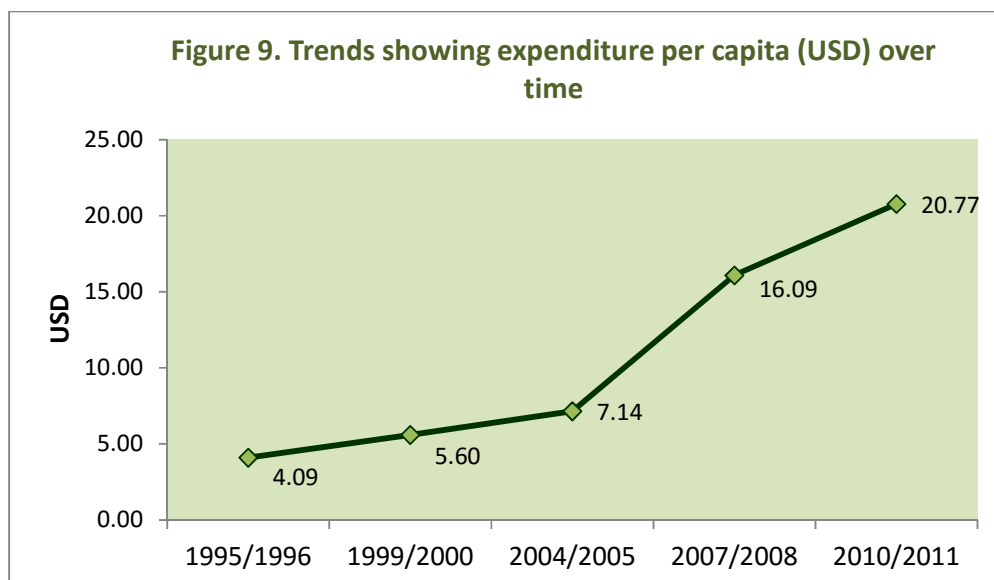
Total Health Expenditure as a Percentage of GDP

Total health expenditure as a percent of GDP increased even with rapid economic growth. According to the MOFED national accounts, from 1999/00 to 2010/11 Ethiopia experienced an average annual real GDP growth rate of 9%. Although total health expenditure as a percent of GDP increased over time from 3.8% in 1995/96 to 5.2% in 2010/11 (Figure 8), it is still below the average for low-income countries (6.43%) (43).



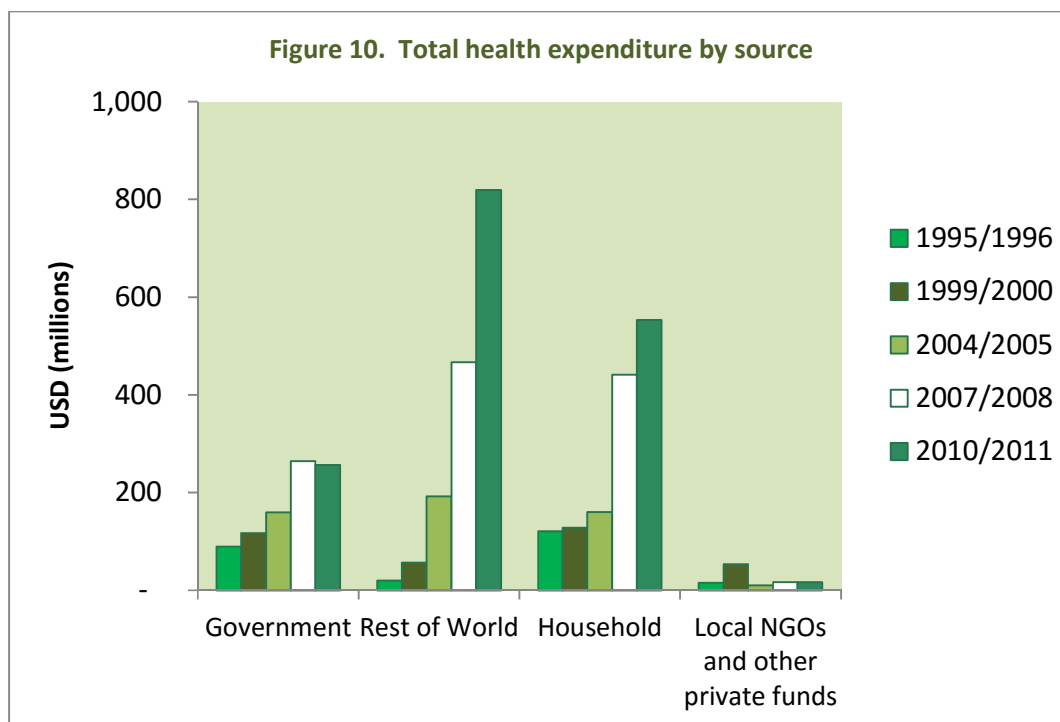
Total Health Expenditure Per Capita

The per capita health expenditure also showed an increasing trend over the years from 4.09 United States dollars (USD) in 1995/96 to 20.77 USD in 2010/11. Even accounting for population growth, there was a greater increase in per capita expenditure from 2004/05 to 2010/11 (an increase of nearly two-fold) compared to 1995/96 to 2004/05 (only a 75% increase). Despite this rapid increase in per capita health expenditure, it is still below the recommended amount by the WHO's Commission on Macroeconomics and Health of 34 USD (Figure 9). This recommendation is considered the minimum amount of per capita health expenditure required in developing countries for providing essential health interventions to achieve health related MDG targets and provide basic health care services to the population (44).

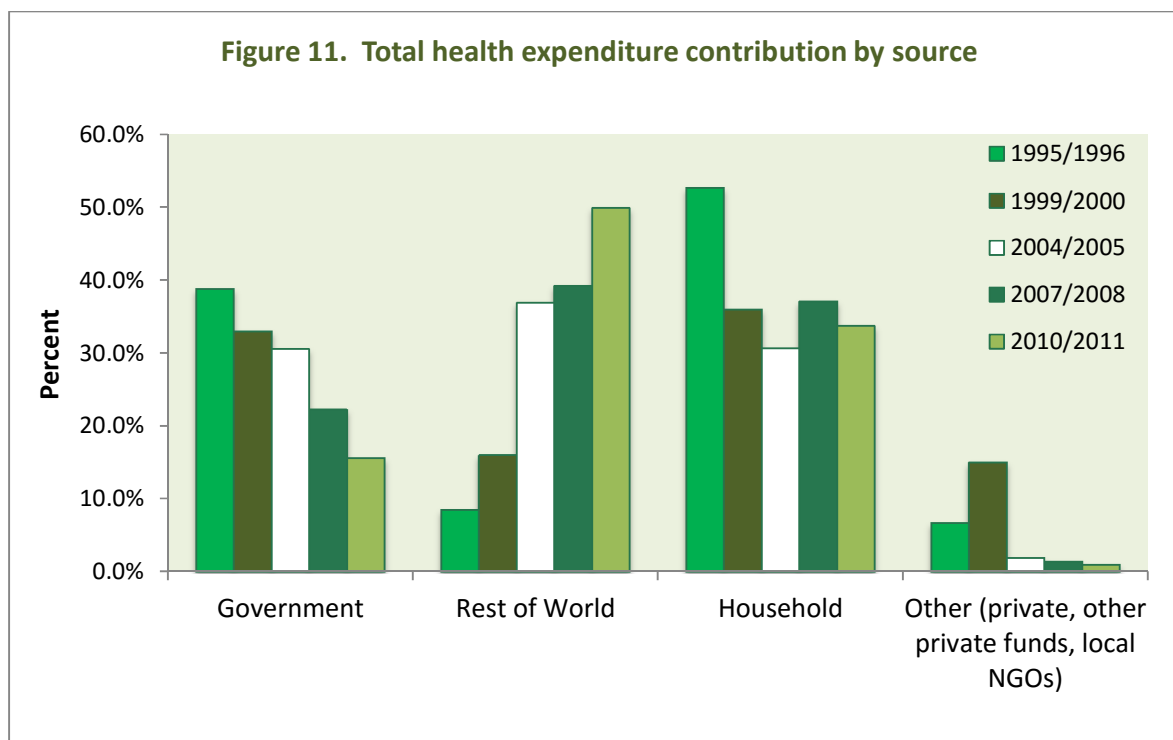


Total Health Expenditure by Funding Source

The rapid increase in total health expenditure in absolute terms from 2004/05 onwards, did not necessarily coincide with a rapid increase in health expenditure for each financing source. As depicted in (Figure 8), during 2005-2011 external resources, referred to as rest of world (ROW) in the NHAs, and household showed a significant increase in health expenditure while private/local NGOs remained stagnant and the government contribution followed an almost similar pattern (Figure 10). Based on this, ROW and household have become the main contributors for health after 2004/05.



The percent share of household contribution to the total health expenditure declined from 52.66% in 1995/96 to 33.7% in 2010/2011 (Figure 11). This may be related to the rapid increase in expenditures from the ROW as a result of the “one plan, one budget and one report” modality to support the HSDP's and enhance the progress towards the MDG targets. Furthermore, the implementation of the Health Care Financing strategy after 1998 may have slowed the increase in household Out Of Pocket (OOP) health expenditure given its emphasis on the fee waiver scheme, subsidized user fees, and facilities to provide certain fee-exempted health services for everyone. The WHO recommended that ‘when the direct payment falls between 15% to 20% of the total health expenditure the incidence of financial catastrophe and impoverishment falls to a negligible level’(45). Ethiopia has still not reached those levels despite the considerable decrease in household contributions as a share of total health expenditure.



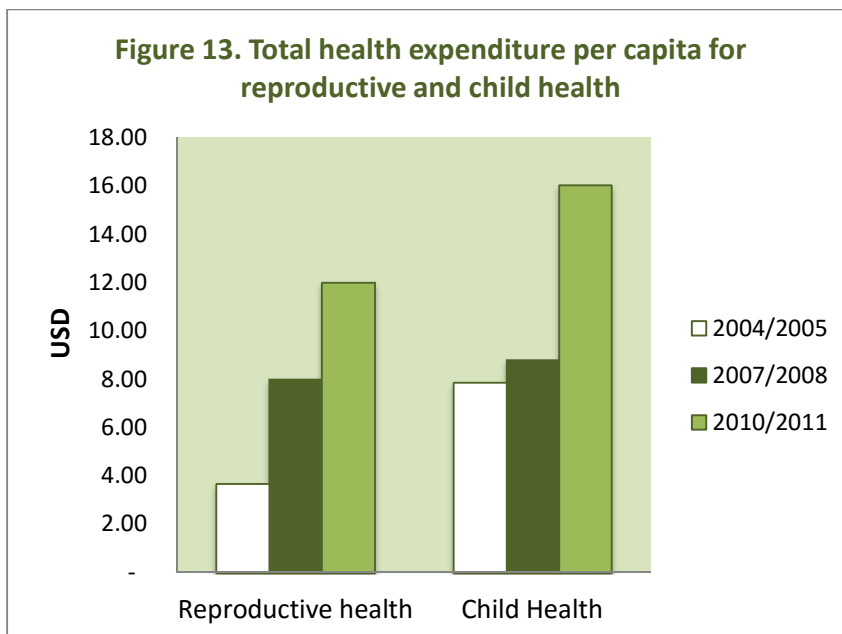
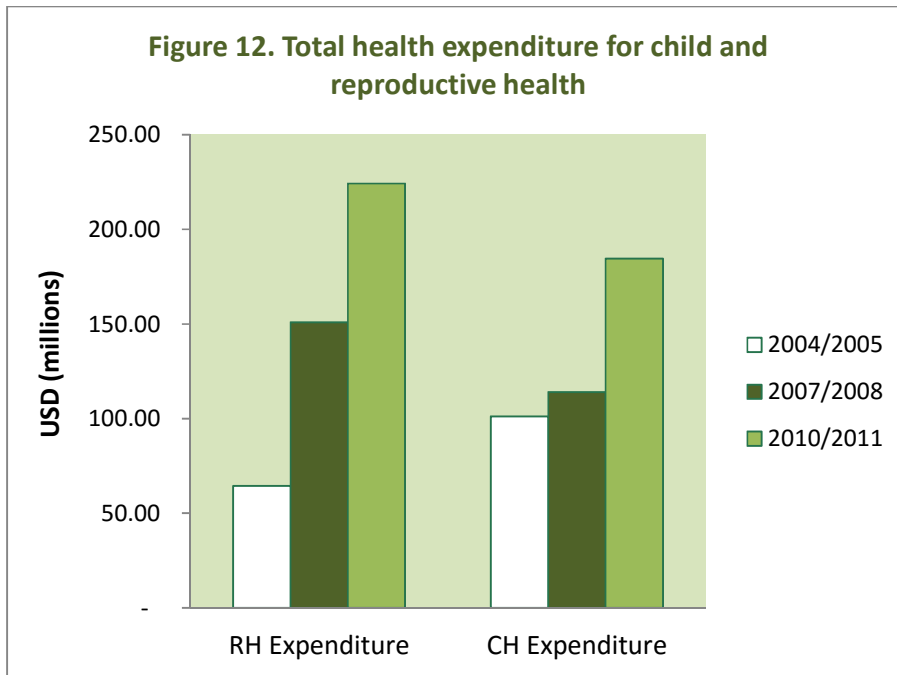
As illustrated in (Figure 11), the government’s contribution to health has declined as a percent share of total health expenditure. However, the government’s expenditure on health as a proportion of national expenditure has increased from 8.5% in 2000 to 13.4% in 2010. Ethiopia has still not met the ‘Abuja Declaration’ (2001) target requiring African government to allocate at least 15% of their total spending for health (55). In contrast to the government’s health policy directives to focus on primary health care services, more than 43% of health expenditure was spent on drugs and 22% was allocated to hospitals (46). The out-of-pocket burden for drugs was particularly high (75.8%).

3.2.3 Reproductive and Child Health Expenditure

The reproductive and child health sub-accounts were not included in the NHA surveys conducted in 1995/96 and 1999/2000. Thus, the results indicated here are only for the most recent three rounds of the report.

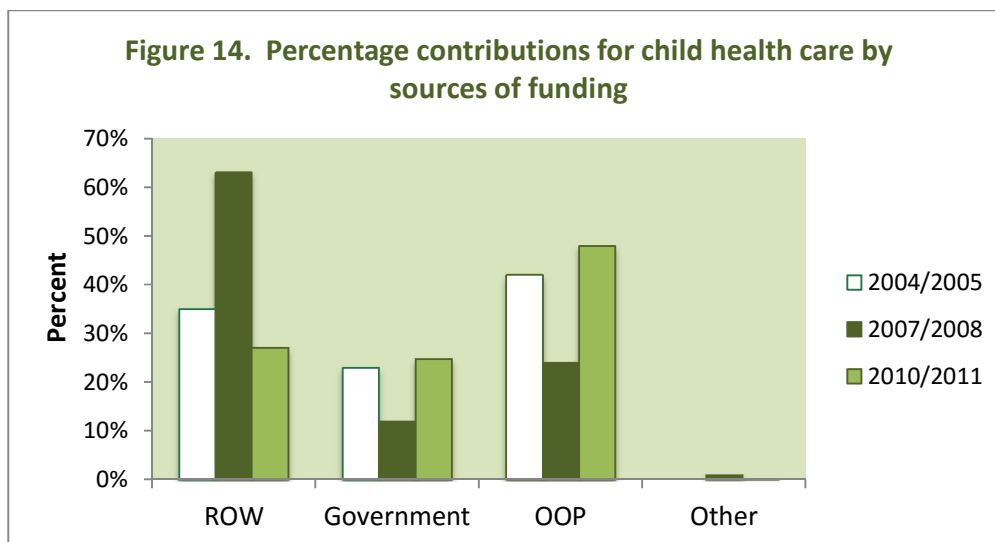
Referring to (Figure 12), expenditures on reproductive health consistently increased during the last three NHAs. In 2004/05, reproductive health expenditure was around 64.5 million USD, which nearly tripled to 224 million USD by 2010/11. Total child health expenditures almost doubled from 2004/05 (101 million USD) to 2010/11 (184.5 million USD), with a more rapid increase occurring between 207/08 and 2010/11.

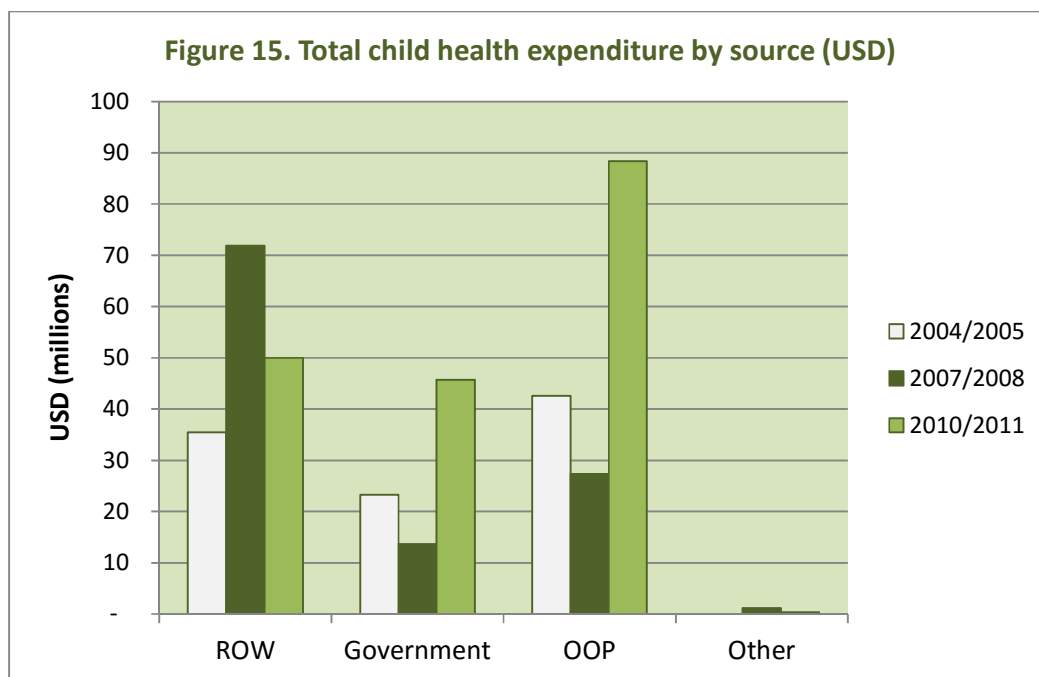
The per capita health expenditure for reproductive and child health followed a similar increasing trend (Figure 13). The per capita health expenditure for women of reproductive age increased more than three-fold, from 3.69 USD in 2004/2005 to 12 USD in 2010/11, while it increased more than two-fold, from 7.86 USD in 2004/05 to 16 USD in 2010/11 for child health over the same period.



Child Health Expenditure by Financing Source

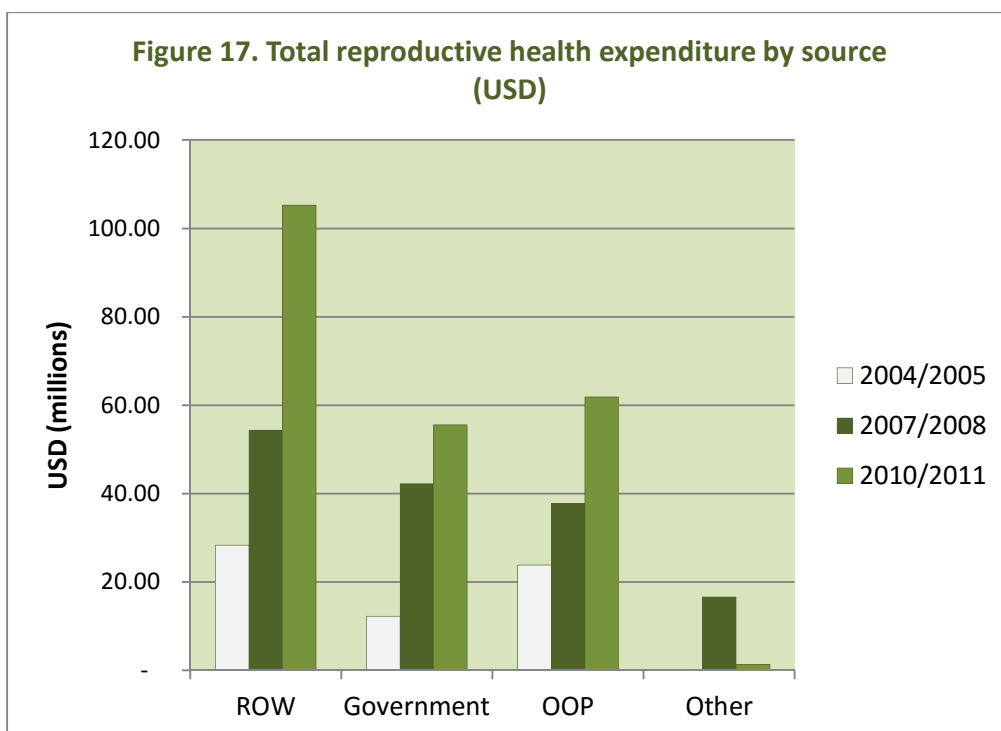
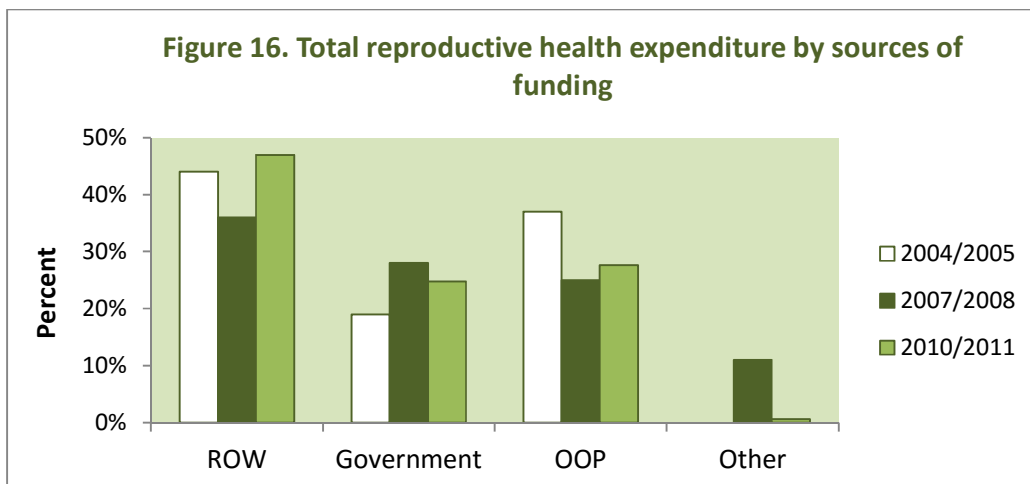
Although total child health expenditures increased over time, how these expenditures were financed varied from one year to the next. During 2007/08, there was a significant increase in ROW contributions for child health while considerable decreases from the government and household OOP (Figure 14). Despite the rapid increase in ROW contributions towards child health, the overall trend has been a decreasing one – contributing 35% of the total child health expenditures in 2004/05 to 27% by 2010/11 – despite the overall increase in absolute terms (Figure 15). The overall trend of the government’s contribution has been only about a percentage point increase from 2004/05 (23%) to 2010/11 (24.8%). Household OOP was the main contributor for child health expenditures, except in year 2007/08, doubling the amount contributed to child health between 2004/05 and 2010/11 (Figure 15). Other private and local NGOs contribute very little to child health care.





Reproductive/Maternal Health Expenditure by Financing Source

Reproductive health expenditure by financing source did not follow a similar pattern compared to child health expenditures. Overall the ROW has been one of the main contributors for reproductive health spending, with a slight increase of 44% contributions in 2004/05 to 47% in 2010/11 (Figure 16). Opposite of child health expenditures, ROW contributed less to reproductive health in 2007/08 despite its almost double contribution in absolute terms (Figure 17). Government has increased its contribution to reproductive health from 19% in 2004/05 to 25% in 2010/11. Both increases in the contributions by the Government and ROW has led to a reduction in household OOP payments for reproductive health care from 37% in 2004/05 down to 28% in 2010/11. Other private and local NGO contributions also decreased during the same time period. However, referring to (Figure) 15, the total amount in USD by financing source increased for ROW, Government, and household OOP from 2004/05 to 2010/11. Only other private and local NGOs decrease the absolute amount contributed to reproductive health.



3.3 TRENDS IN COVERAGE OF KEY INTERVENTIONS AND EQUITY

Key findings: Coverage and Equity

- ❖ Coverage for family planning and related indicators increased three-fold to four-fold, while the unmet need family planning declined by half.
 - ❖ Coverage for immunization, maternal and neonatal care services has shown substantial increase.
 - ❖ Despite notable change in major nutritional interventions, the levels of stunting and underweight declined between 2000 and 2011. In 2000, close to 60% and 41% of children were stunted and underweight; by 2011 the stunting and underweight rate dropped to 44.4% and 28.7%.
 - ❖ Ownership and utilization of ITNs increased from a level of non-existence in 2000 to over 60% in subsequent years.
 - ❖ Rate of latrine ownership by the household almost tripled, while the rate of open defecation declined by half (from 93% to 45%). Similarly, access to improved water sources has also increased more than two-fold.
 - ❖ The under-five mortality rate declined from 204 in 1990 to 68 per 1,000 live births 2012. However, the trend in neonatal mortality rate remained stagnant, contributing to nearly half of the under-five mortality rate.
 - ❖ Under-five mortality substantially decreased for the middle quintiles (Q2–Q4) between 2005 and 2011 except for the poorest 20% and the wealthiest 20%.
 - ❖ The wealthiest (Q5) quintile had a three-fold more chance of receiving essential child health care services as compared to the poorest (Q1). In addition, the coverage for CPR, ANC and SBA of the richest (Q5) was four times greater than the poorest (Q1).
 - ❖ A disparity in key RMNCH services utilization exists across various regions and urban-rural residence in the nation.
-

3.3.1. Overview of Coverage Indicators and Equity Measures in Health

Coverage refers to the proportion of a population in need of a public health intervention that actually receives it, while equity is fairness and justice in health and health care (47)(48)(49). As national averages can hide important inequalities, monitoring progress towards the MDGs using the coverage of health interventions across the continuum of care (from pre-conception to age five) in sub-groups of the population is the main focus of this section.

Coverage measures are a major focus of global monitoring because they can change much more rapidly in response to policy and program interventions than measures of impact (e.g., fertility, stunting etc.). Moreover, for interventions proven to reduce mortality, the coverage is a useful indicator of progress (48)(49). An increase in maternal and child health care coverage indicate that policies and delivery strategies are being implemented effectively to reach women and children. The level of disparities across multiple equity dimensions in key maternal, reproductive and child health care related indicators in Ethiopia will provide a useful framework for understanding the pathway towards achievement of the MDGs (50).

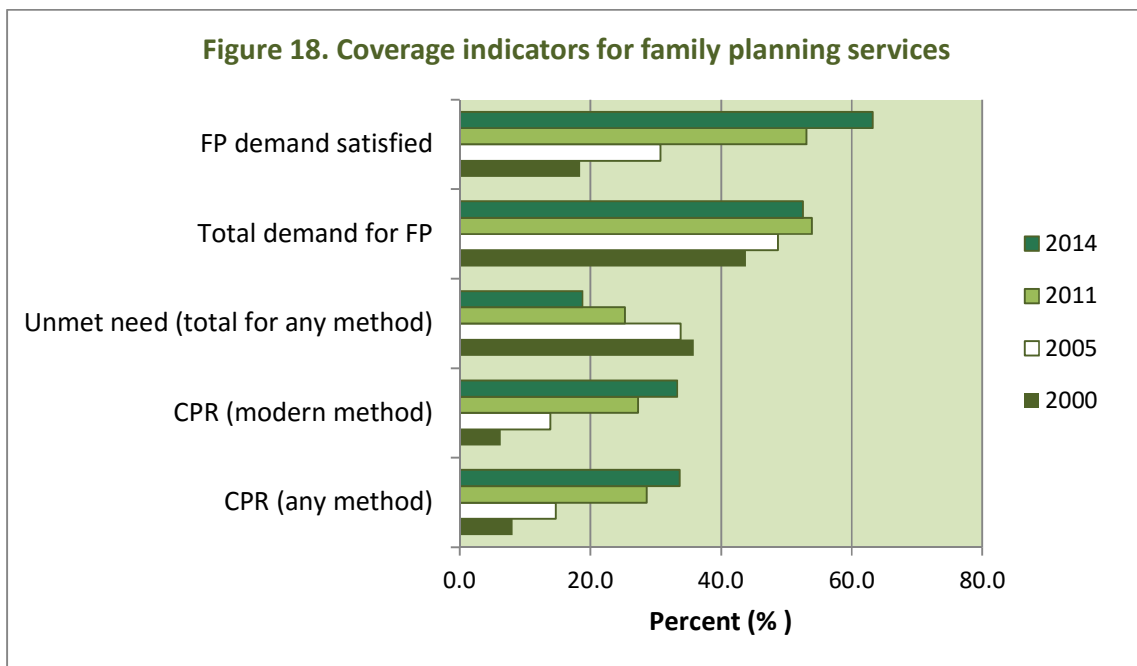
3.3.2 Trends in Major RMNCH Coverage Indicators (2000-2014)

The coverage indicators used in this study were selected based on their validity, relevance and consistency in definitions across the key time periods since 2000. Emphasis was also placed on selecting indicators that were used by the Countdown to 2015, as they had gone through a rigorous evaluation process. Additional indicators of particular relevance to Ethiopia were also included. National level data sets used in the analyses included: the Ethiopian Demographic and Health Survey (EDHS: 2000, 2005, 2011 & Mini DHS: 2014), National Malaria Indicator Survey (2007 & 2012), National Nutrition Program baseline Survey (2009), the National Immunization Coverage Survey (2012), and Performance Monitoring and Accountability 2020 (PMA 2020). Before re-calculating and analyzing datasets from each of these sources, data quality assurance was conducted by running frequencies and re-calculating indicator variables for comparison with the reported values in published reports.

The EDHS data sets were most frequently utilized as they contained the most relevant indicators for the time periods corresponding to major policy and program developments using a nationally representative sample with built-in system for data quality assurance.

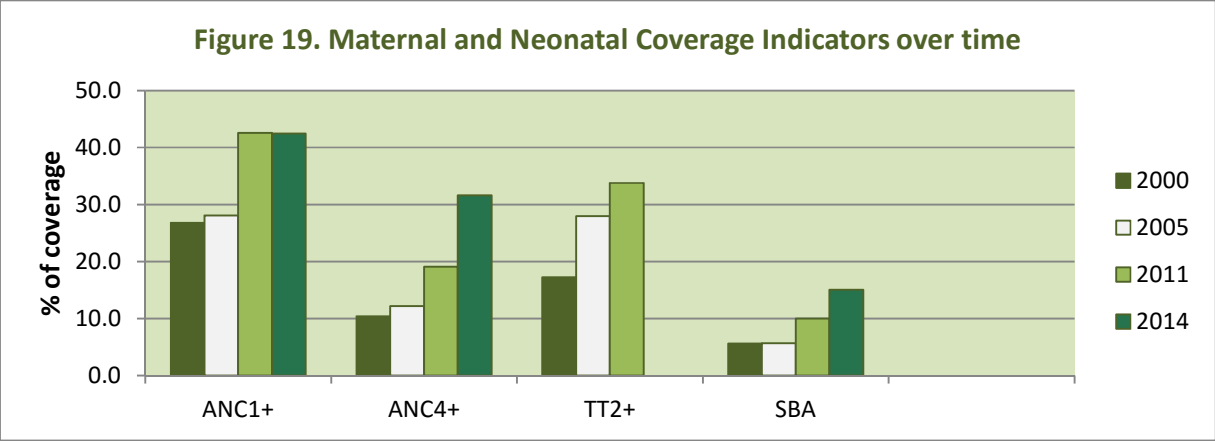
a) Preconception: Family Planning and Related Coverage Indicators

Figure 18 compares six available coverage indicators of family planning from 2000 to 2014. Between 2000 and 2005, the CPR for any method increased by 81.5% (from 8.1% to 14.7%) with an average increase of 16.3% per annum. Between 2005 and 2011, the average increase was 15.8% and doubled and tripled in subsequent years with a rate of increase of 19.8% and 33.7% per annum respectively. The other family planning indicators supported this trend resulting in a steep increase in the proportion of married women whose demand for family planning were satisfied for modern as well as all family planning methods.



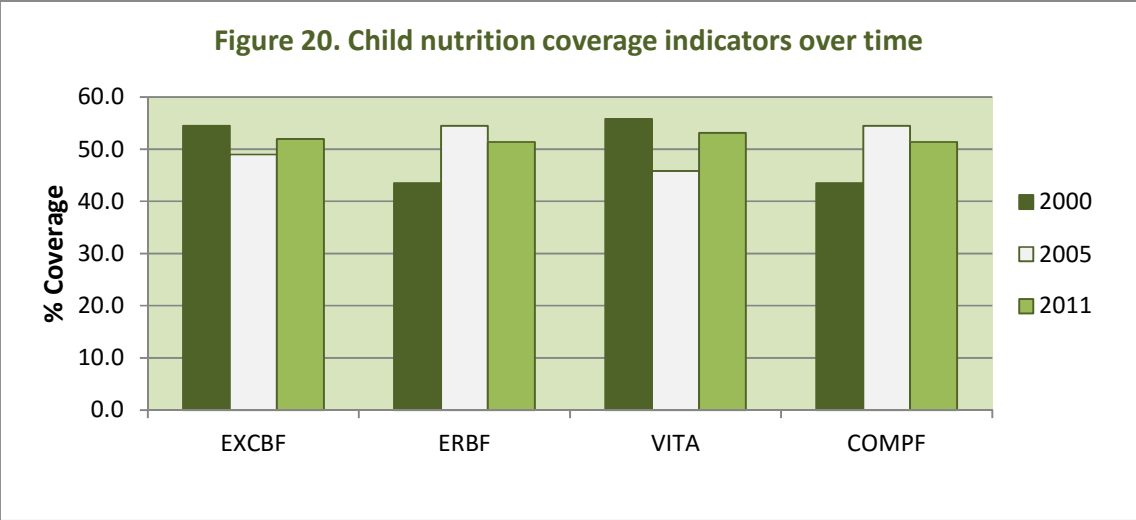
b) Maternal and Neonatal Care Services

Maternal and newborn health care services coverage indicators have also improved between 2000 and 2014 (Figure 19). The coverage for antenatal care (ANC) that is, having at least one or more visits) increased by 5% between 2000 and 2005 and by over 50% between 2005 and 2011 but remained the same in 2014. The increase in ANC coverage of having completed the fully recommended number visits (four or more) followed a similar pattern. So by 2014, 31.6% of women were receiving ANC services. The coverage for skilled birth attendance almost doubled in the years between 2005, 2011 and 2014 (5.7%, 10% and 15%, respectively). Similarly, coverage for neonatal tetanus protection increased by 63% and 21% between 2000 and 2011, respectively.



c) Nutrition

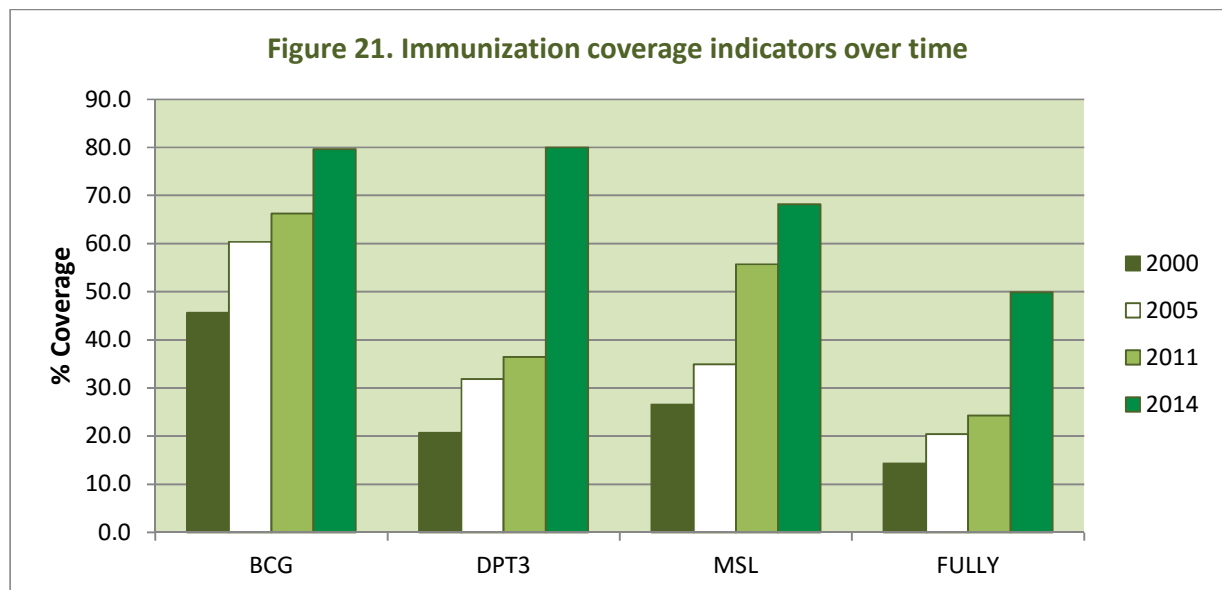
Coverage indicators in this category showed an inconsistent trend across the key time periods considered. Early initiation of breastfeeding increased from 43.5% to 54.5% between 2000 and 2005, but decreased to 51.4% in 2011. A similar pattern was observed for complementary feeding. However, coverage for exclusive breast feeding decreased from 54.5% to 49% between 2000 and 2005 and then showed a slight increment between 2005 and 2011. The same pattern was observed for vitamin A supplementation (Figure 20).



d) Trends in Immunization

Immunization is a health intervention with a high impact on child morbidity, child mortality and permanent disability (51). The usefulness of immunization coverage is not simply as a measure of the implementation of one health intervention, but as a proxy for the overall performance of the health system to deliver priority health interventions.

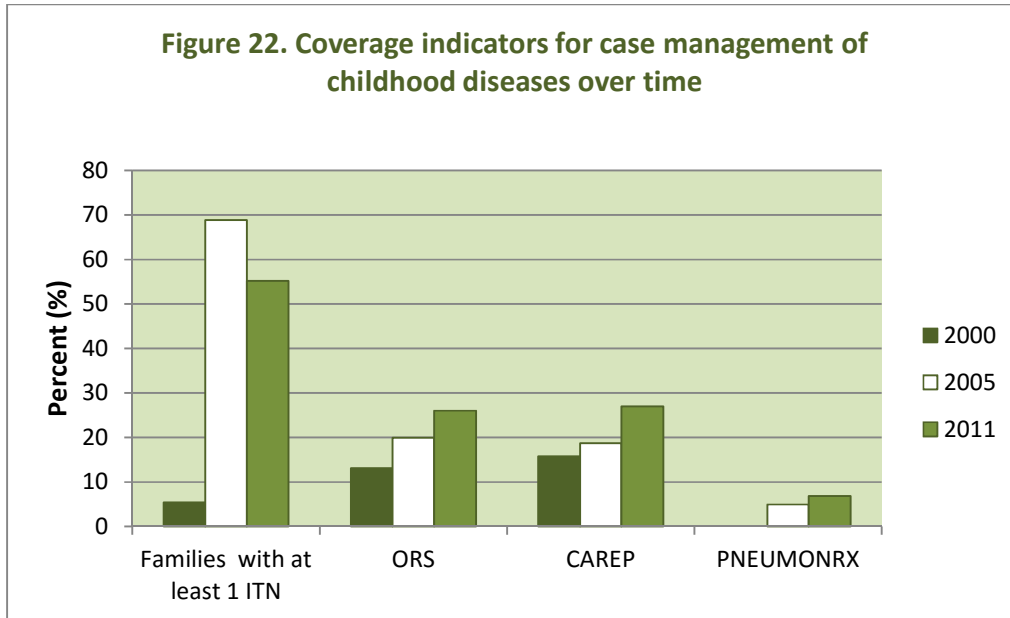
In Ethiopia, the coverage indicators for all immunization services (BCG, DPT, measles and fully vaccinated children) have continually increased since 2000. Between 2000 and 2005 alone, the coverage for BCG, DPT, measles and fully immunization has increased by 32%, 54%, 31% and 43%, respectively. The increase in immunizations continued on an upward trajectory for the next five years from 2005 to 2011, although the rate of increase had slowed for most of the indicators, except measles. In contrast to this pattern, the 2012 National Immunization Coverage Survey (NICS) reported much higher coverage that exceeded the 2011 EDHS report for BCG, DPT3, measles and full. As evidenced by these results, using different data sources limits comparability even if similar sampling methods, approaches, and data collection tools are used (Figure 21).



e) Care Seeking Behavior and Case Management

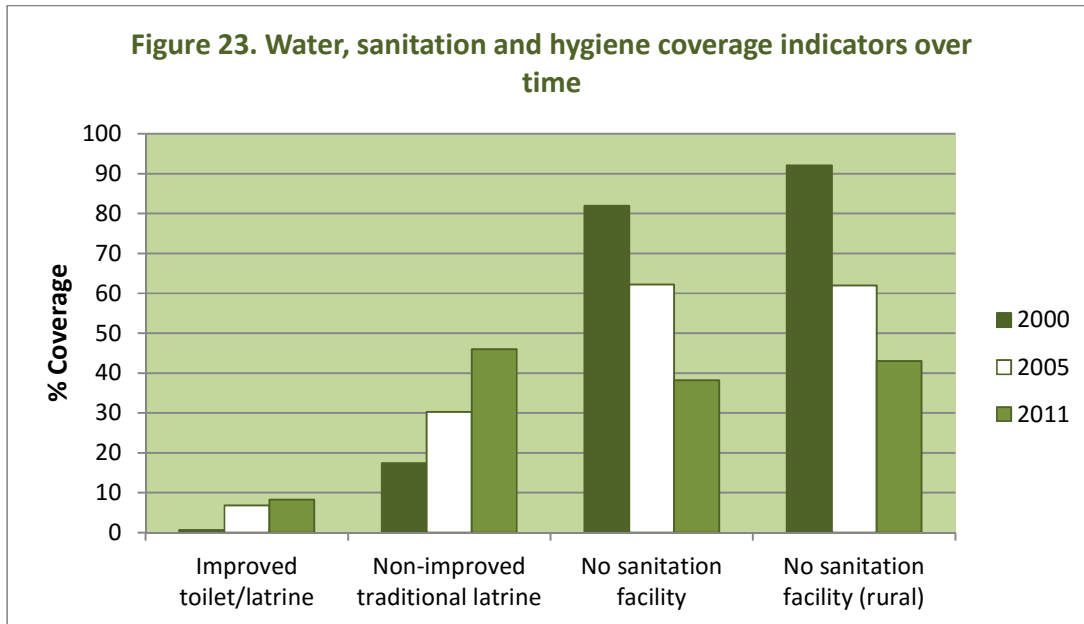
Figure 22 compares trends in coverage for key preventive practices, care seeking behaviors and treatment (case management) of childhood illnesses of under-five children since 2000. Although the absolute levels of coverage vary greatly, most indicators have improved from 2000 to 2011. In this regard, care seeking for pneumonia (CAREP) and utilization of Oral

Rehydration Solution (ORS) for treating childhood diarrhea have almost doubled from 2000 to 2011. However, the treatment for pneumonia (PNEUMONRX) has hardly budged and remains very low at 6.8%. Another positive development is that ITN ownership by families has increased from near non-existence in 2000 to over 69% in 2005 and 55% in 2011.

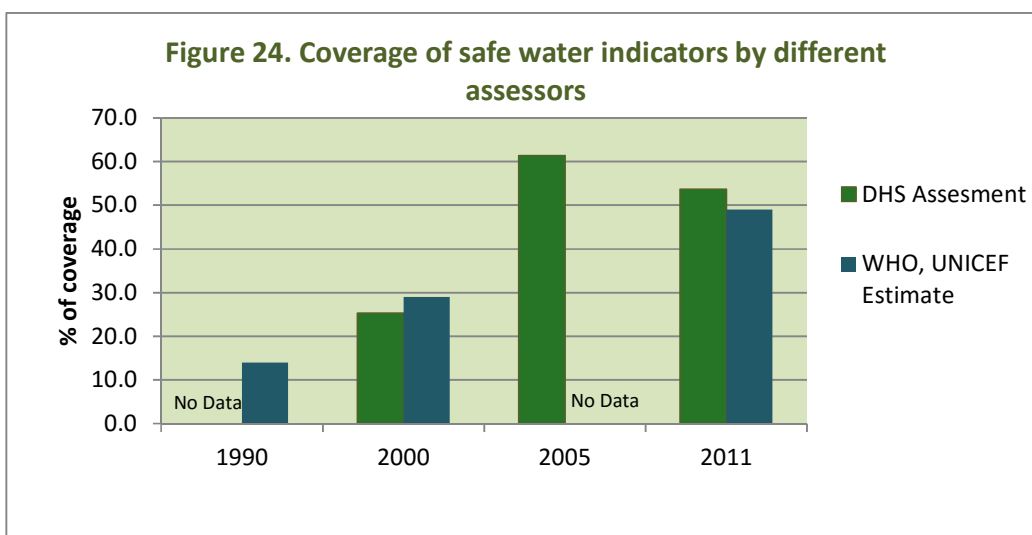


f) Water, Sanitation and Hygiene (WASH)

The trend and level of coverage indicators for WASH related indicators showed a sharp increase in the period under study (Figure 23). In 2000, as high as 92% of the rural and 82% of the total population did not have access to a sanitation facility. By 2011, this number had been cut in half to 43% and 38%, respectively. During the same time period (2000-2011), the proportion of families using any form of latrine almost tripled, increasing from 18% to 54.3%. This corresponds to a 48% decline in open defecation: from 93% in 1990 to 45% in 2011. Despite this progress, the proportion of families with an improved latrine or toilet has remained low (8.3%) in 2011 even though it increased eleven-fold (0.6% to 6.8%) from 2000 to 2005.



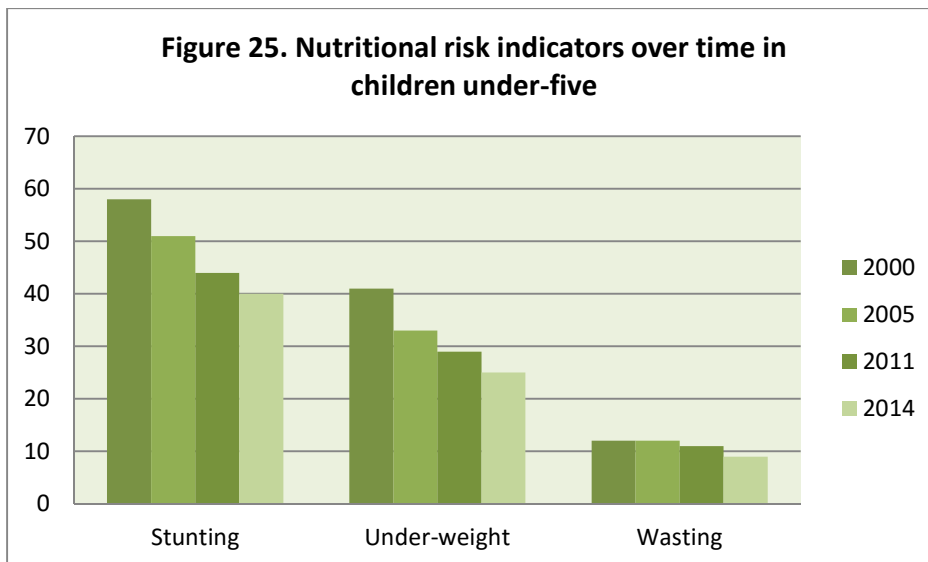
According to the EDHS, access to an improved water source increased from 25.3% to 61.4%, between 2000 and 2005, but declined to 53.7% between 2005 and 2011. These measures are similar to the WHO/UNICEF joint reports on Progress on Sanitation and Drinking Water 2013 Update (51), although the 2005 data point is missing and the trend between 2005 and 2011 cannot be confirmed by both data sources (Figure 24).



3.3.3. Trends in Risk Factors

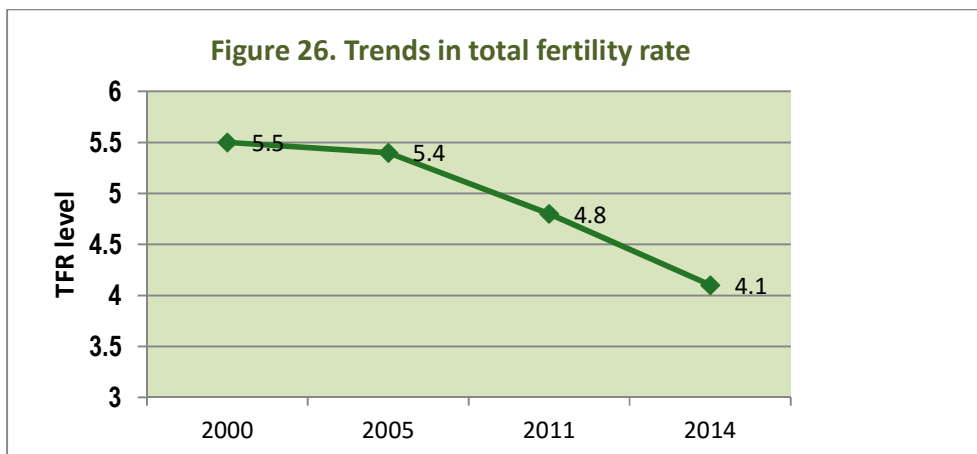
a) Nutrition Related Risk Factor Indicators: Stunting and Wasting

Analysis of the trends in the coverage of nutritional risk factors shows a big decline in the proportion of children under-five years of age that are stunted, underweight or experienced wasting over the years (2000-2014) (Figure 25). In 2000, close to 60% of children were stunted; by 2005 the stunting rate dropped to 51% and decreased to 44.4% in 2011 and further reduced to 40% in 2014. Over the same time period, 41% of the children were categorized as underweight in 2000, but it declined to 28.7% and 25% by 2011 and 2014, respectively. However, wasting, a measure of acute malnutrition remained almost the same from 2000 to 2014.



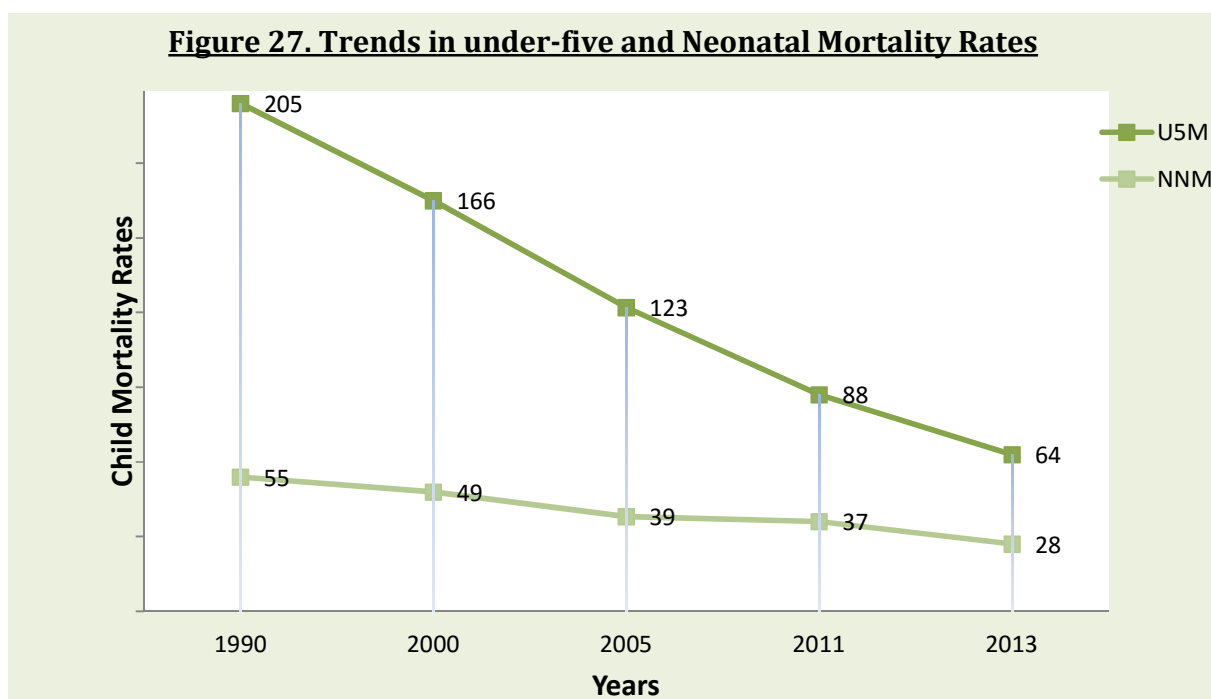
b) Trends in Fertility Rate (TFR)

During the first five years, the total fertility rate remained almost the same (5.5 vs. 5.4). With the increase in the CPR after 2005, the TFR has shown significant decline (4.1) in 2014 (Figure 26).



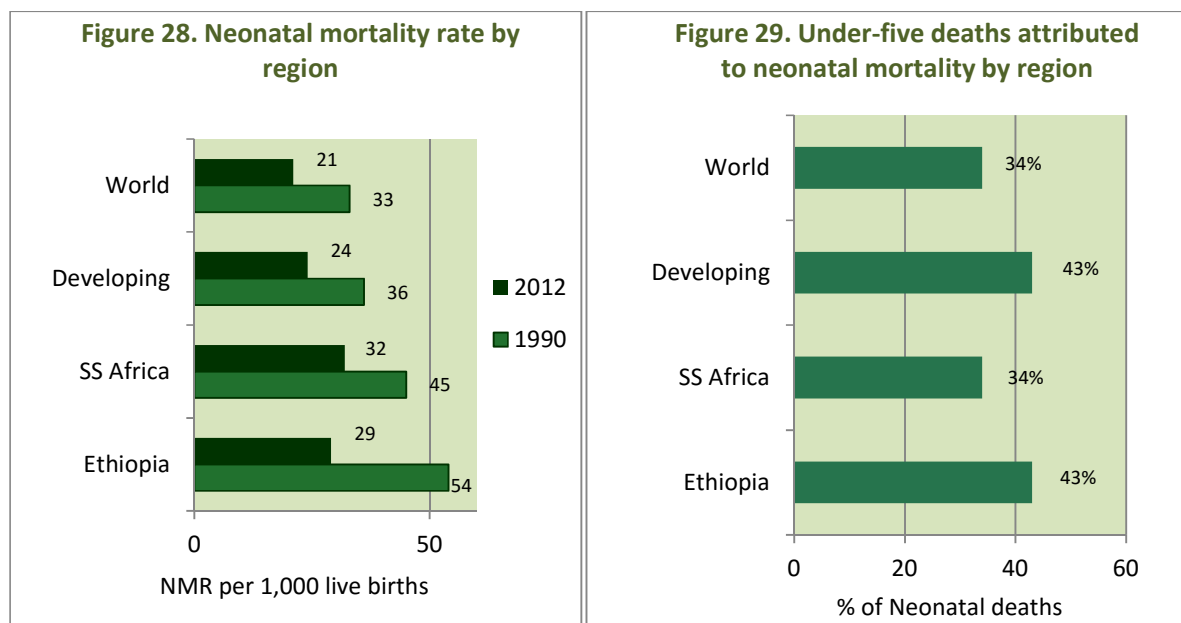
3.3.4. Trends in Child Mortality

In 1990, the under-five mortality rate for Ethiopia was one of the highest in the world at 205 per 1,000 live births. Nevertheless, by 2011 and 2013, according to 2011 EDHS findings and the 2013 United Nations Inter Group for Mortality Estimation (UN IGME), this rate was reduced to 88 and 64 per 1,000 live births, respectively. With an under-five mortality rate of 64, Ethiopia has attained MDG4. Despite this great achievement, the trend in neonatal mortality remained stagnant and contributed a large proportion (nearly half) of the under-five mortality rate (Figure 27).



Globally, the proportion of under-five deaths that occur within the first month of life (the neonatal period) increased from 19% in 1990 to 37% in 2000 and 44% in 2012, because declines in the neonatal mortality rate are slower than those in the mortality rate for older children (2). Sub-Saharan Africa, with the highest risk of death in the first month of life, is among the regions showing the least progress in reducing the neonatal mortality rate. Ethiopia, had a similar, if not worse rate of reduction of neonatal mortality.

As compared to the baseline of 55 neonatal deaths per 1000 live births in 1990, the neonatal mortality rate declined by 46% in 2012, reaching a rate of 29 deaths per 1000 live births. In 2012 alone, as high as 43% of the under-five mortality rate is attributed to deaths that occurred during the first months of life(2)(Figure 28 & 29).



3.3.5. Measures of Inequality in Interventions Coverage and Outcomes by Socioeconomic Status and Residence

Health equity refers to the study of differences in the quality of health and health care across different populations and it often reveals social injustice. To elucidate the nature and levels of equity in RMNCH care services in Ethiopia, the following measures were used: co-coverage, composite index and concentration index or slope index to measure disparity between the poor and the rich, the rural and the urban, across regions in Ethiopia. The definitions of measures of inequality are located in Box 3.

a) Inequality and Wealth

Wealth is a household characteristic that often has a large effect on health. The wealth index allows for the identification of differential access to health care as measured by coverage indicators across the socio economic strata in a population, ranging from poorest to wealthiest. Generated with a statistical procedure known as principal components

analysis, the wealth index (a composite measure of a household's cumulative living standard) places individual households on a continuous scale of relative wealth.

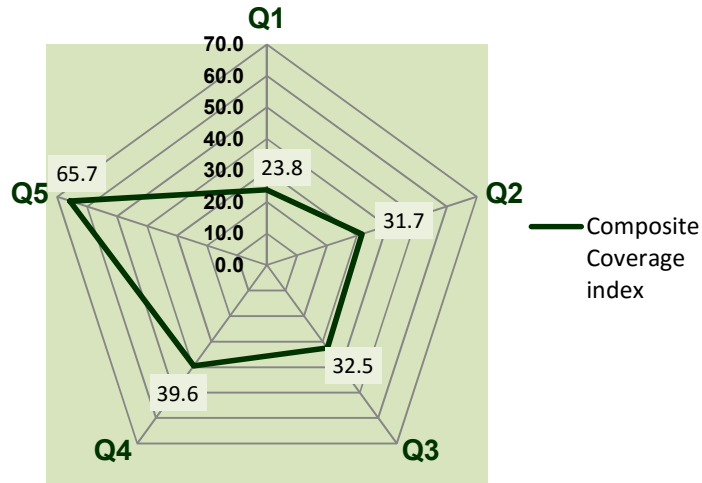
The DHS wealth index categorizes households into five wealth quintiles (ranging from the poorest 20% to the richest 20%), illustrating how health differs across socioeconomic levels (51). Research on inequalities in child health outcomes demonstrate a linear socio-economic gradient. Child mortality levels also correlate closely with income quintiles, with those in the lowest income brackets are the most severely affected(52).

Coverage and Composite Coverage Index: This socioeconomic gradient continues to exert an important role for measures of intervention coverage that are associated with child health outcomes. The calculated composite coverage index of eight different RMNCH interventions using 2011 DHS data produced a three-fold higher level of coverage for the wealthiest quintile as compared to the poorest in receiving essential services (Figure 30).

Box 3: Definitions of Measures of Inequality

- **Co-coverage** describes the number of interventions the child receives.
- **Composite coverage index** is the average of selected interventions across the continuum of care from pre-conception to childhood.
- **Concentration index of inequality (CII)** is a measure of the *relative inequality* between the two study groups (poorest vs. richest, urban vs. rural, etc).
- **Slope Index of inequality (SII):** the slope of the regression of outcome on midpoints of wealth groups. It is a measure of an *absolute inequality*.

Figure 30. Composite Coverage Index across a continuum of care for 8 RMNCH care services, DHS 2011



In examining key indicators for reproductive and maternal care, the CPR, and ANC for women in the highest 20% (Q5) of the distribution was almost four times as high as that of the 20% poorest (Q1), 51.8% versus 13.3% and 75% versus 17%, respectively. Skilled delivery services utilization for the wealthiest quintile was as high as 25 times that of the poorest (45.6% versus 1.7%) (Figure 31)

Figure 31. Key reproductive and maternity care services by wealth quintiles, DHS 2011

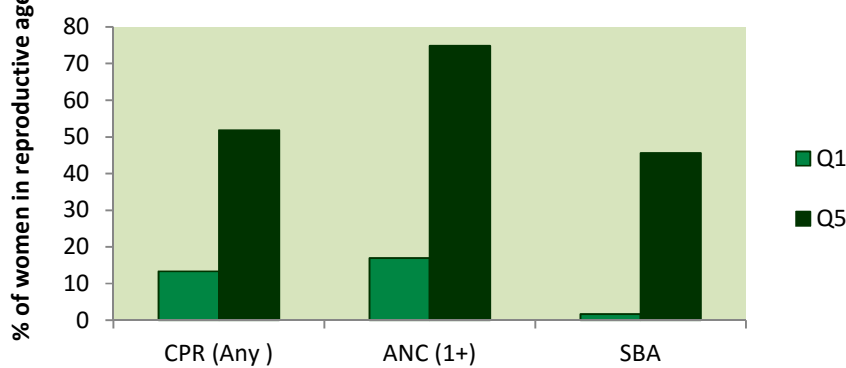
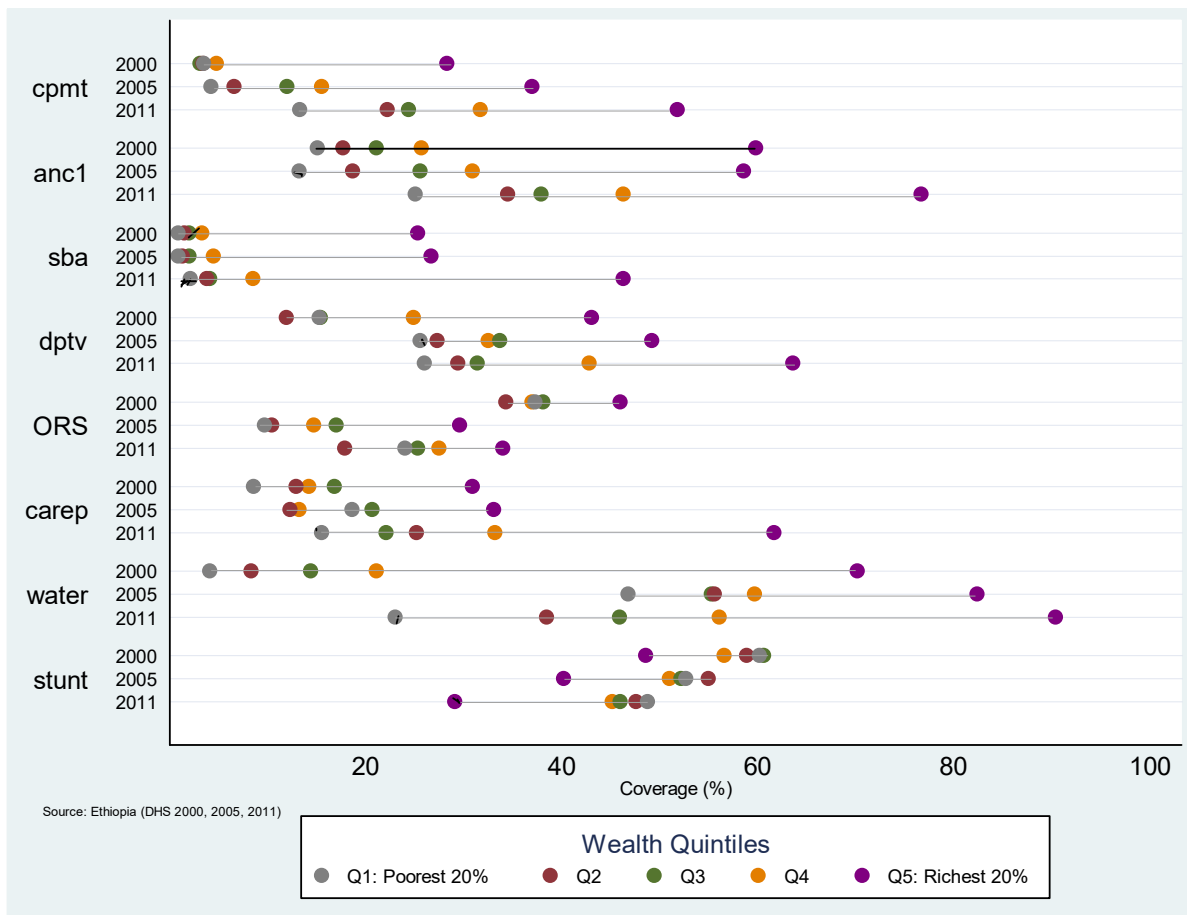


Figure 32 compares the trends in the levels of coverage of selected key RMNCH services, commodities and outcomes across all wealth quintiles tracing changes over three time periods, 2000, 2005 and 2011. There are multiple ways to examine the results: 1) whether

the inequalities are getting worse over time by assessing the distance between the two extremes of wealth quintiles (Q1 and Q5) across the three time periods; 2) to assess the level of absolute improvement for each quintile; and 3) to examine the changes within each quintile. For most indicators, the levels of inequality are worsening over time. The lowest four quintiles cluster together at the bottom while the top 20% have a large advantage and have more improvement in coverage of key services and reduction in stunting over time. The disparity is most pronounced in SBA, CAREP and access to improved water sources. For indicators such as CPMT, SBA and CAREP, there is barely any change in coverage over the years for the poorest quintiles, which are hovering below 15%.

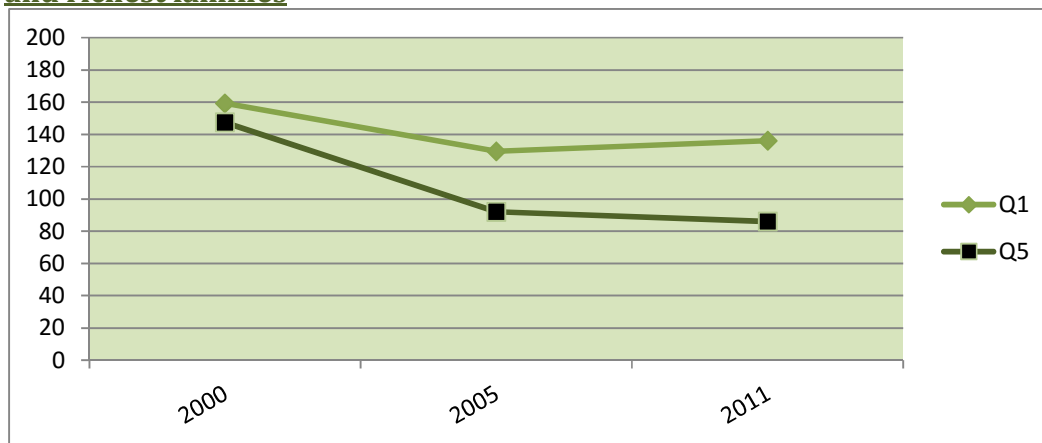
Figure 32. Trends in coverage of selected key RMNCH indicators across wealth quintiles (Q1 -Q5), DHS, 2000 - 2011



The trend in disparity for the under-five mortality persists between children born to the poorest and the richest household over years. The observed gap in the level of under-five mortality between the poorest and the richest is apparently the direct consequences of inequitable coverage of preventive interventions, compounded with the overall socio-economic inequality in the country. While under-five mortality rate generally showed a

declining trend over time, the existing gap between the poor and the rich is widening over the years (Figure 3). Indeed, the greatest reductions in under-five mortality was observed for children born from the richest household.

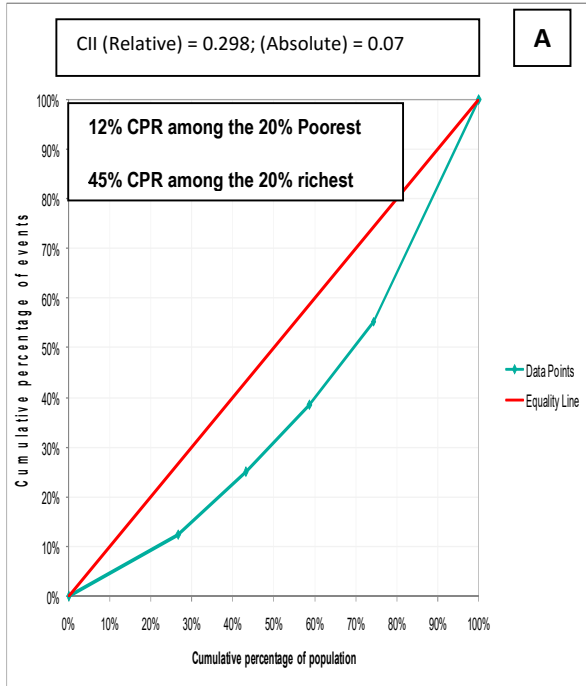
Figure 30 Disparities in under-five mortality rate between children from the poorest and richest families



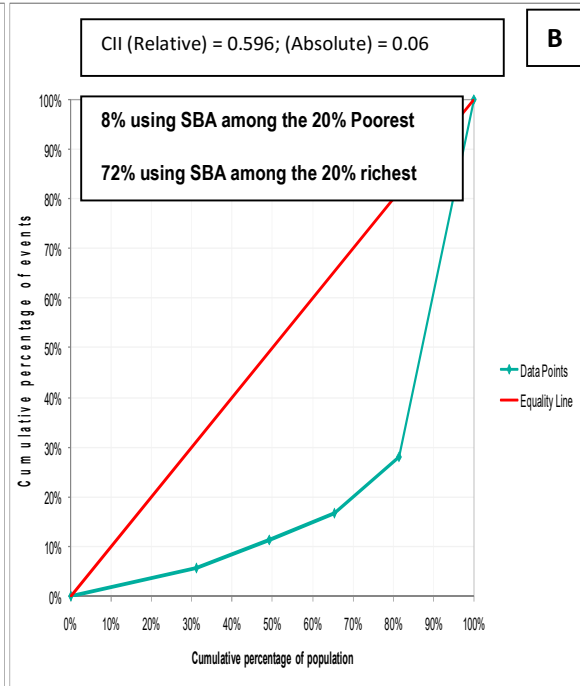
Concentration Index of Inequality: Another method for measuring the level of disparity in health care is the Concentration Index of Inequality (CII). The concentration curve graphs are interpreted by examining the linearity of the data points (blue) and equity line (red) as well as considering the CII for both the relative and absolute values. The further the data points are away from the equity line or the more the curve is tilted in or outward and has a high CII value, the more the disparity across the wealth strata. For instance, in Figure 34 (B) below, the data points of the concentration curve of SBA are highly curved downwards with a concentration index of 0.5959 (59.6%). This shows that there is a big disparity between the poorest and the richest in the coverage of SBA services in the country.

On the other hand, as seen in Figure 34 (E), the data points of the concentration curve for stunting is very close to the fitted equity line and has CII of -0.07. Here, the CII having a negative value implies that, it is a pro-poor indicator and closeness to the fitted CII line implies that disparity between the poorest and the richest is small. In the same figure, it is seen that 35% of the 20% poorest (Q1) children are stunted and as high as 13% of the richest are, as well. The absolute disparity between this two is 35% - 13% = 22%, which is a much smaller number than the absolute variation between SBA (72% - 8% = 64%). The relative disparity for SBA service between the 20% poorest and 20% richest is nine ($72/8 = 9$) while it is less than 3 ($35/13 = 2.7$) for stunting.

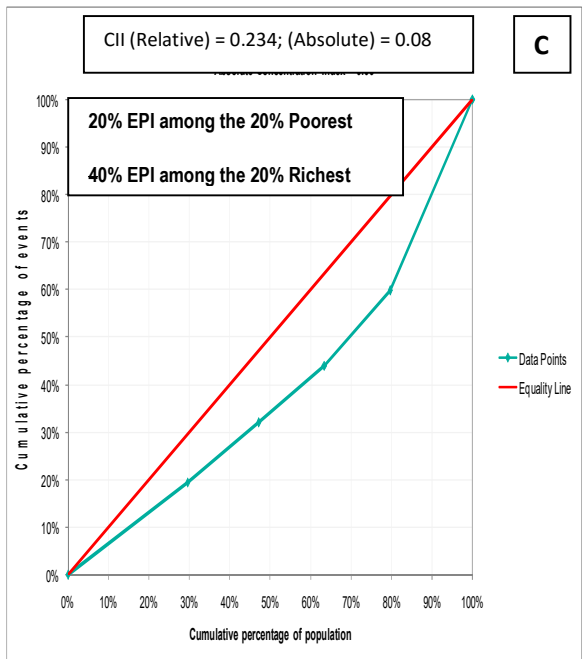
Figure 34. Concentration Curves for CPR, SBA, EPI and CAREP services among the poorest (Q1) and the richest (Q5) 20% of the population, EDHS 2011



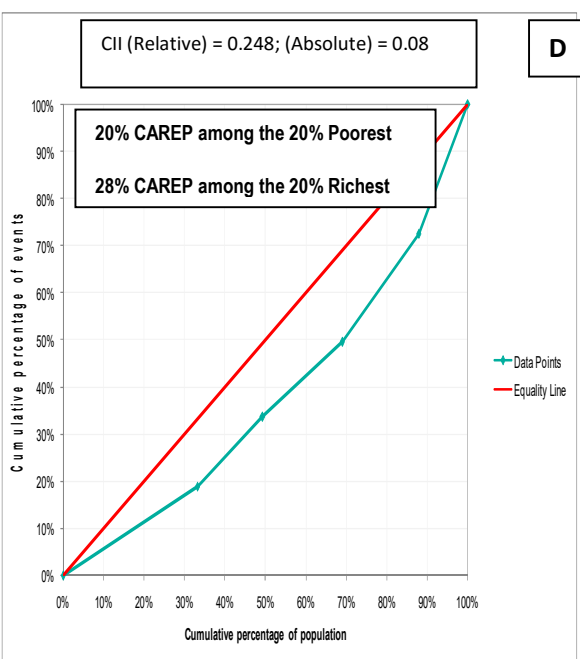
A) CII for CPR



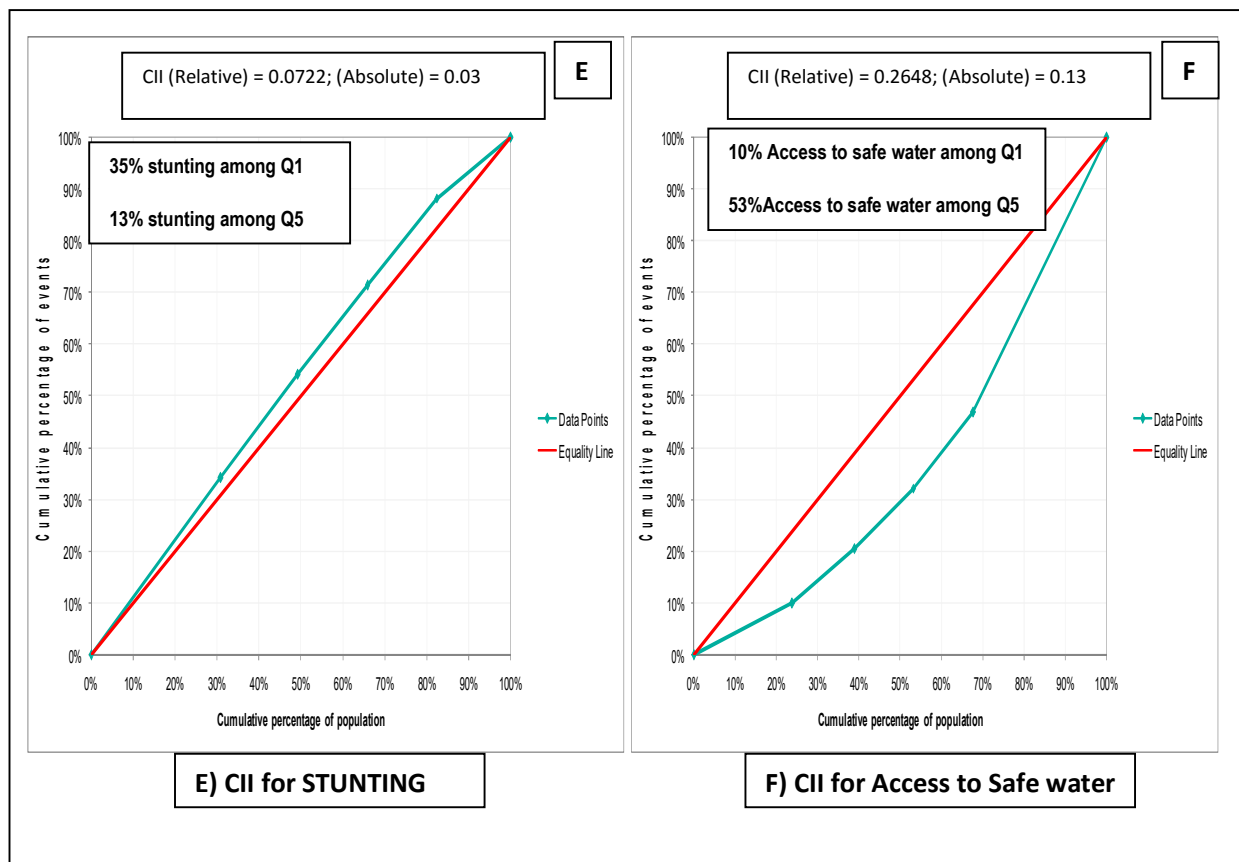
B) CII for SBA



C) CII for EPI



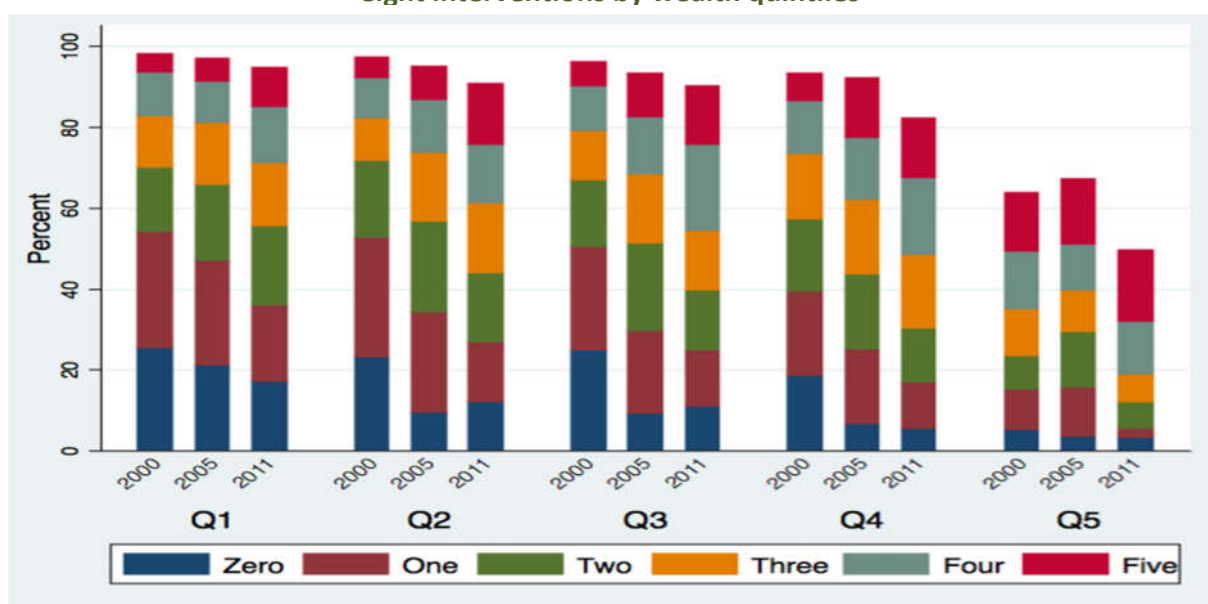
D) CII for CAREP



Co-Coverage: Even if the coverage for the number of interventions received across wealth quintiles has improved over time, the disparity in the number of interventions received (co-coverage) remains the same or with little improvement between 2000 and 2011. Figure 35 shows the variation across the different wealth quintiles (Q1-Q5) for the number of interventions received, from zero to eight. For more visual clarity the figure displays the top five interventions and the space adding up to 100% is left for interventions 6-8, which is minimal except for the top 20%.

In 2011, the proportion of families from the poorest (Q1) that did not receive any interventions was as high as 18%, while very few (2%) of the richest 20% (Q5) did not receive any of these eight key RMNCH interventions. Similarly, the proportion of the poorest 20% (Q1) who received a maximum of three or five interventions out of the eight computed is 73% and 95%, respectively, while the percentage is not more than 18% and 50% for the richest 20%.

Figure 35. Proportion of families (mothers and children) who received at most five out of eight interventions by wealth quintiles

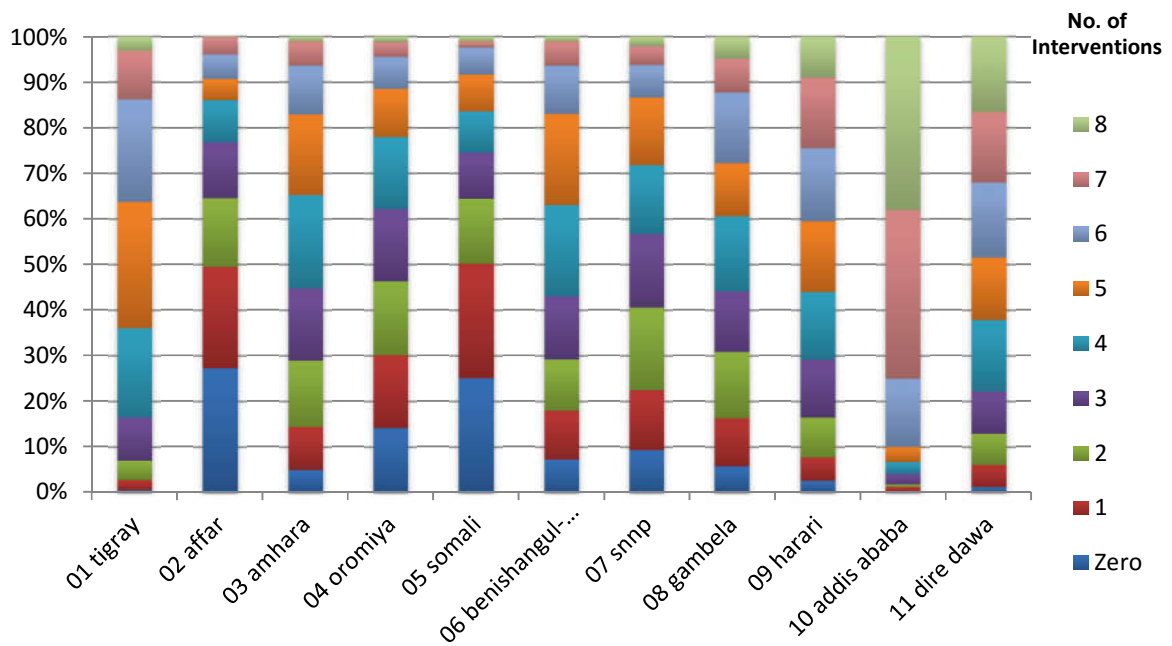


b) Major Intervention Coverage Across Different Regions and Residential Areas (Urban/Rural) in Ethiopia

Regional and residential disparities in key RMNCH indicators were also examined. Co-coverage was used to measure levels of intervention coverage across regions. Thus, the number of key RMNCH services the child received out of the total eight was analyzed using 2011 DHS data (Figure 36).

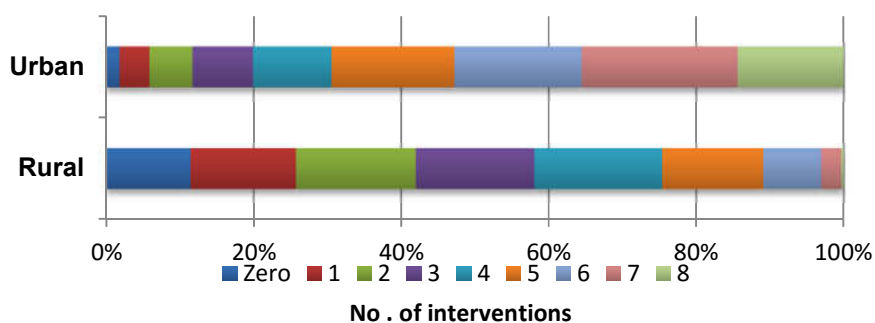
The regional contrast in intervention co-coverage intersects with the rural urban divide. In Addis Ababa, at least 40% and 78% of the eligible population groups received either all eight or seven of eight key RMNCH care services. On the other hand, not more than 5% of the same population received all the services in the four major regions (Benishangul Gumuz, Amhara, SNNPR and Oromia). On the extreme side, two emerging (mainly pastoralist) regions, Somali and Afar, had a significant proportion of their target population completely left out of any of the eight essential RMNCH services (25%-30%). Other regions like Harari, Dire Dawa and Tigray demonstrated good co-coverage of key RMNCH services, following Addis Ababa.

Figure 36. Proportion of eligible population segments across regions and city administrations with respect to key RMNCH interventions received

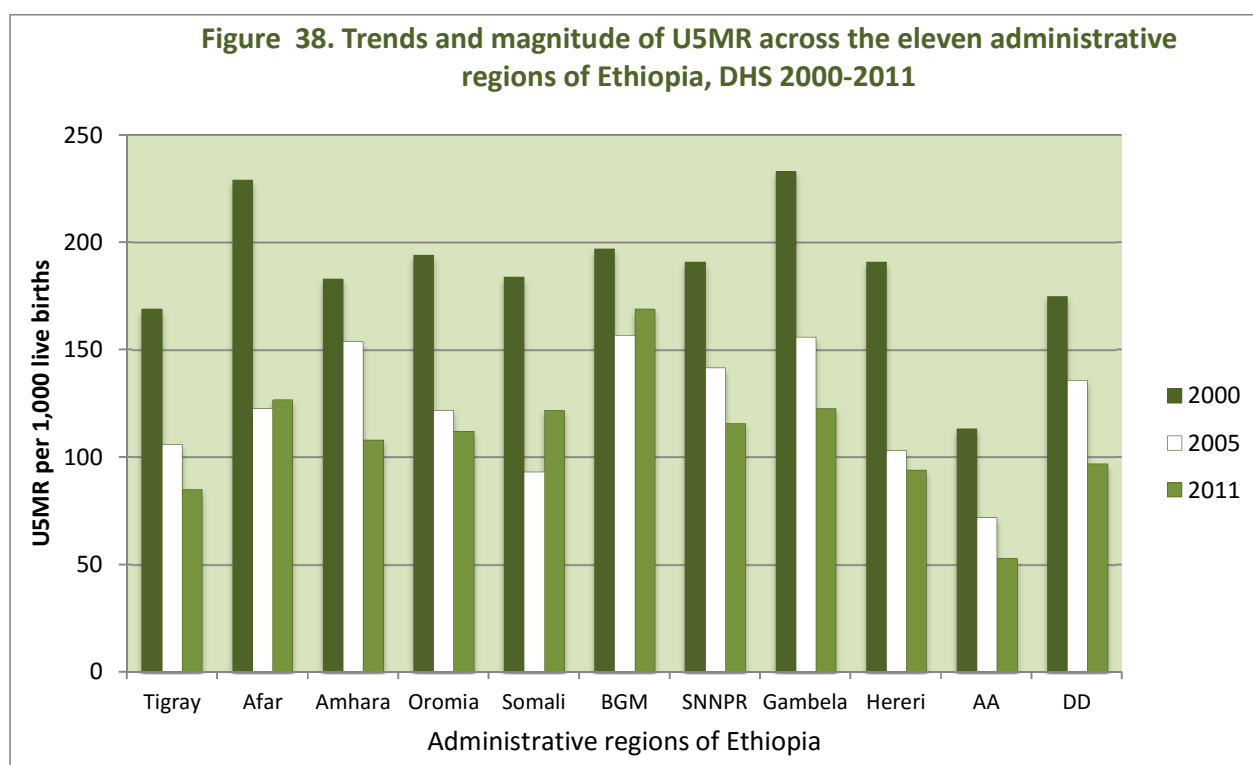


The-level of disparities also remains visible between residents of urban and rural areas (Figure 37). In 2011, the proportion of the eligible urban population who received all eight key RMNCH services reached close to 20%, and conversely fewer than 3% received no interventions. In contrast, across rural Ethiopia, the proportion of the eligible population that received all eight essential services was less than 1% and the proportion that did not receive any intervention was five times higher than in the urban population (15% vs. 3%).

Figure 37. Proportion of eligible population in rural vs. urban residential areas receiving none to all selected key RMNCH interventions

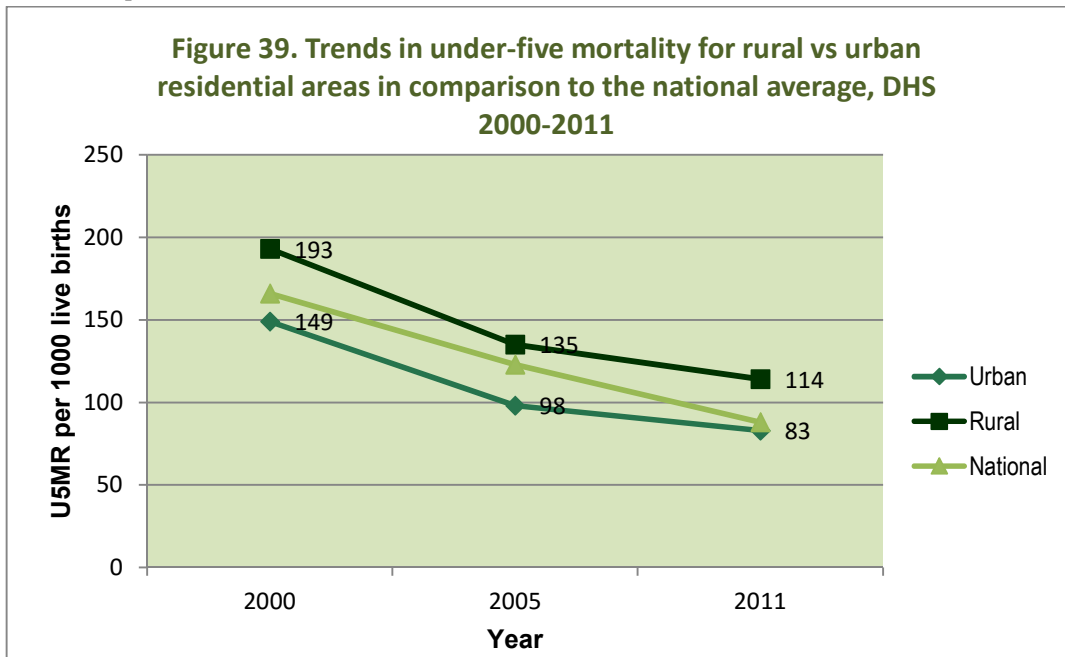


The levels of inequality in under-five mortality rates across all regions in the country over three time periods (2000, 2005 and 2011) were examined (Figure 38). The steepest reduction in under-five mortality occurred between 2000 and 2005 for most regions except Amhara, where the greatest change in mortality was between 2005 and 2011. Although some of the relative positions of regions in under-five mortality changed, the regions with the highest mortality rates (Gambela, Afar, and Benishangul Gumuz) and lowest (Addis Ababa, Dire Dawa and Tigray) remained the same. Therefore the levels of under-five mortality in Addis Ababa, Tigray, Harari and Dire Dawa are still lower than the other regions. In the same way, the U5MR of the four emerging regions (Benishangul Gumuz, Afar, Gambella and Somali) is higher than any of the other regions. Oromia, Amhara and SNNP had relatively similar and nationally comparable, but still much higher under-five mortality rates.



Analysis of under-five mortality across urban-rural areas follows a decreasing trend from 2000 to 2011 (Figure 39). Over time, the rate of decrease in under-five mortality has been higher for rural versus urban areas. However, this trend was not able to compensate for the initial high differential in the level of under-five mortality in the rural areas. The rate remains high in the rural as compared to-urban areas (114 versus 83) (Figure 39). Children

born and raised in rural areas have at least a 38% higher risk of dying as compared to their urban counterparts.



3.4. LIVES SAVED TOOL (LiST) ANALYSIS

Key Findings

- ❖ As result of the scale up of major interventions about half a million (469,000) child deaths were averted among children under-five years of age during 2000-2011 in the country.
 - ❖ Reduction in stunting and wasting together has helped to avert 50% (234,500) of the total number of child deaths in this period.
 - ❖ The reduction in stunting alone has saved 44%, followed by the introduction of Hib 14% and the scale-up of oral rehydration salts for diarrhea, which accounts for 9% of the total lives saved in the same period.
 - ❖ Estimated under-five mortality rates by LiST modeling showed a rapid decline from 2000 to 2011 with a significant percent decline (26%).
 - ❖ The percent decline in under-five mortality rate for 2005-2011 is nearly four times higher than that of 2000-2005.
 - ❖ The overall percent decline in under-five mortality explained by LiST relative to IGME for the period 2000-2011 is 51%.
 - ❖ The percent decline explained by LiST relative to IGME for the periods 2000-2005 and 2005-2011 is 25% and 60%, respectively.
-

3.4.1 An Overview of the LiST

Lives Saved Tool (LiST) is a computer projection model used to estimate the number of deaths that can be averted as a result of scaling up effective maternal and child health interventions. LiST operates within the Spectrum model, where maternal and child health data are integrated with demographic (DemProj) and HIV/AIDS (AIM) projections (53). The LiST modeling has been developed using information from the Child Health Epidemiology Reference Group (CHERG) of WHO and UNICEF. Along with its institutional sponsors, CHERG has developed rules of evidence to decide which interventions should be included in the model as well as how to develop the estimates of efficacy and effectiveness interventions used in the model (52).

LiST uses estimates of the effects of interventions on cause-specific child mortality as a basis for generating projections of child lives that could be saved by increasing coverage of effective interventions. Estimates of intervention effects are the essential elements of LiST, and need to reflect the best available scientific evidence(54). Analysis with LiST gives additional information on possible results of scaling-up interventions. Some studies have illustrated how LiST can be used in planning and evaluation of health programs at the regional and national level (55). It also provides reasonably accurate estimates of child mortality decline in an area where a package of community-based interventions was implemented(56).

In this section the findings of LiST modeling is presented. The LiST analysis is used to estimate the relative contributions of major high impact interventions within the health sector towards progress in the reduction of under-five mortality. It is also used to estimate under-five mortality rates and the percent of reduction within the reference period (2000-2011). The estimate of percent decline in under-five mortality rates using LiST is explained relative to the UN Inter-agency Group for Child Mortality Estimation (IGME) estimates (57). This is to be in alignment with IGME results, which estimated that Ethiopia has achieved MDG4 ahead of time in 2012.

3.4.2 Additional Deaths Averted and Trends in Under-five Mortality Rates

In this analysis for the purpose of comparison, the reference period of 2000–2011 was selected on the basis of the availability of data and the scale-up of high impact interventions relevant to child survival and the implementation of major strategies and programs in Ethiopia. A reference year of 2000 is considered as the baseline for modeling in LiST, with a forward projection of input parameters to the year 2005 and then to 2011 using all available data sources on changes in intervention coverage and nutritional status.

Table 4 presents additional deaths averted due to scale up of health interventions based on the LiST estimate for 2000-2005 and 2000-2011. About 23,000 child deaths were averted among children under-five in 2005 through the scaling-up of interventions from 2000 to 2005. If the intervention coverage were unchanged after 2005, nearly 27,000 child deaths would have been averted in 2011. However, more than 101,000 child deaths were averted among children under-five in 2011 through the scaling up of all available interventions from 2000 to 2011. This means that an additional 74,000+ child deaths were averted by 2011 as a result of activities implemented during 2005 to 2011.

Table 4. Additional deaths averted across two scenarios relative to scenario 1 by year

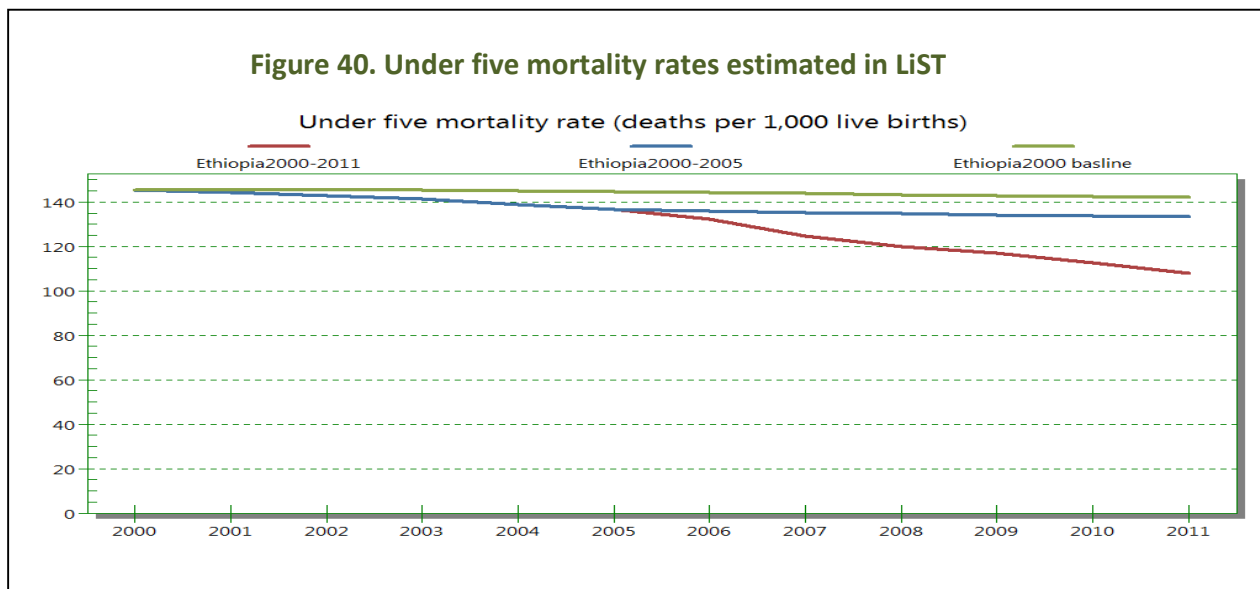
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Scenario 2: 2000-2005											
Total (0-60months)	3700	7100	10000	17000	23000	24000	24000	25000	26000	26000	27000
<1 months	700	1500	2000	3000	4000	4000	5000	5000	5000	5000	5000
1-59 months	3000	5700	8000	14000	18000	19000	20000	20000	21000	22000	22000
Scenario 3: 2000-2011											
Total (0-60months)	3700	7100	10000	17000	23000	34000	55000	68000	76000	88000	101000
<1 months	700	1500	2000	3000	4000	5000	6000	6000	6000	7000	7000
1- 59 months	3000	5700	8000	14000	18000	29000	49000	62000	69000	81000	94000

The estimate of under-five mortality rate was calculated using LiST modeling for the three scenarios, on the basis of changes in intervention coverage from 2000 to 2011. Table 5 presents the findings of the LiST estimates for under-five mortality rates from 2000 to 2011 for each scenario. Accordingly, the estimate of under-five mortality rates for the second scenario (changes that occurred during 2000-2005) shows a decline from 145.6 per 1000 live births in 2000 to 133.3 per 1,000 live births in 2011. But for the last scenario (changes in intervention from 2000 to 2011), the estimated under-five mortality rate declines from 145.6 in 2000 to 108 in 2011 per 1,000 live births. The overall percent decline for the first, second and third scenarios were 2%, 8% and 26%, respectively. The annual rate of reduction in under-five mortality rate for the third scenario was 2.3%, lower than the annual rate of reduction in under-five mortality estimated by IGME, which was twice the LiST estimate from 2000 to 2011.

Table 5. Estimated under-five mortality rates by year across scenarios

Year	Scenario 1 (base line year 2000)	Scenario 2 (2000-2005)	Scenario 3 (2000-2011)
2000	145.6	145.6	145.6
2005	144.7	136.5	136.5
2011	142.2	133.3	108.0
Overall % decline	2%	8%	26%
Annual rate of change	0.2	0.8	2.3

As shown in Figure 40, the trend in under-five mortality rates estimated using LiST modeling between the two periods (2000-2005) and (2000-2011), attributable to the scale-up of high impact child health interventions, presumed to enhance child survival relative to the baseline year. Accordingly, the estimated under-five mortality indicated a rapid decline from 146 deaths per 1000 live births in 2000 to 108 deaths per 1000 live births in 2011, with a significant percent decline (26%). The percent decline in under-five mortality rate for the period 2000-2005 is only 6% whereas for 2005-2011 it was about 21%, which is nearly four times higher than the percent decline observed in 2000-2005. As displayed in Figure 39, a drastic change in under-five mortality rates have been realized owing to interventions implemented since 2005.



It is important to note that the estimated under-five mortality rate obtained by LiST modeling in 2011 was 108 deaths per 1000 live births, which is higher than IGME estimates of nearly 72 deaths per 1000 live births. The LiST results showed that a faster reduction rate of the under-five mortality estimates during 2005-2011 than the years 2000-2005, where the former was closer to IGME estimates. The percent decline estimated by LiST for the period from 2005-2011 was 21% whereas the percent decline for IGME is 35%. However, the overall percent decline in under-five mortality explained by LiST relative to IGME for the period 2000-2011 was 51%.

It is worthwhile to note that the LiST estimates are subject to at least three limitations. First, LiST can only estimate the deaths averted and under-five mortality rates based on available measured values of interventions within the health sector that have a rigorous

evidence base. Second, the maternal sepsis case management, care for premature infants after birth (including kangaroo mother care and full supportive care), therapeutic feeding for severe wasting and treatment for moderate acute malnutrition were not included in LiST modeling. Moreover, it is limited by the fact that LiST typically resulted in conservative estimates with the interventions used in the model. Third, the model did not account for all indirect effects of family planning practices and the socio-economic status of parents on U5MR reduction.

It is clear that the reduction of the under-five mortality rate is the result of combined activities in different health and non-health sector. Therefore, it is important to note that the remaining percent decline in under-five mortality rate probably resulted from contributions of developmental activities outside of the health sector; such as rapid economic growth, expansion of education, inter-sectoral collaboration, high political commitments from the government, access to roads and improved sanitation facilities, and other health interventions that were not included in LiST.

However, the percent decline in under-five mortality rate varies by time period. The percent decline explained by LiST relative to IGME for the periods 2000-2005 and 2005-2011 is 25% and 60%, respectively. This suggests that the implementation of new and effective programs like HEP, PSNP, NNP and scale-up of other effective interventions post 2005 made a difference in reducing under-five mortality. These programs and interventions were also supported by increased health care financing as reflected in the reproductive and child health accounts in 2005-2011 as compared to 2000-2005.

3.4.3. Analysis of Relative Contributions of High Impact Interventions

The LiST analysis was also employed to examine the relative contributions of high impact interventions for the observed reductions in under-five mortality. Figure 38 presents the relative contributions of high impact interventions in averting under-five deaths in the period 2000-2005. About 23,000 child deaths were averted in 2005 relative to the baseline scenario. Reduction in stunting played a significant role in averting 51% of the total child deaths among children under-five years of age during the period. Scale-up of oral rehydration salts (ORS) and change in access to improved water sources averted 14% and 13% of the total deaths averted, respectively. Tetanus toxoid (2+ dose), measles and DPT vaccinations each prevented 4% of the total deaths averted among children under-five in this year (Figure 41).

Figure 41. Percentage of lives saved in 2005 by high impact interventions in 2000-2005

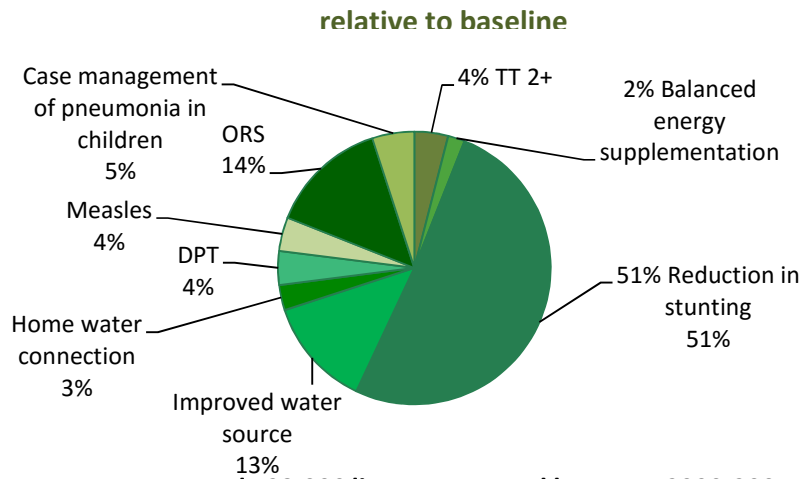
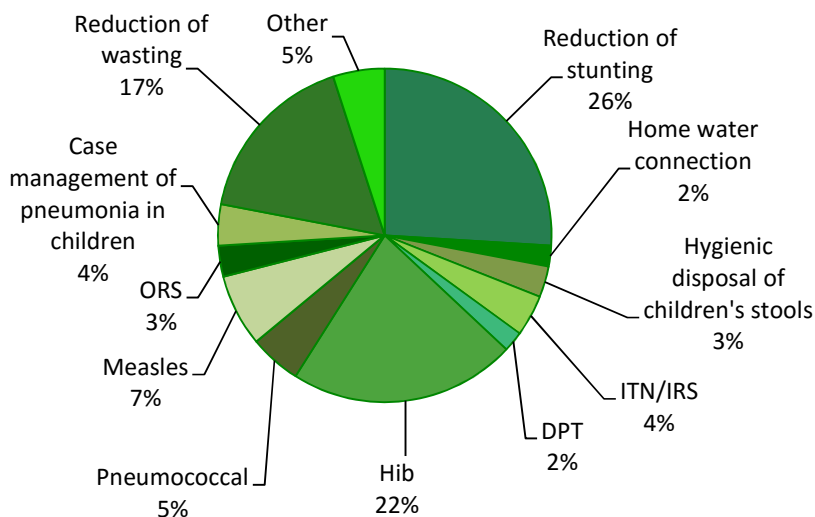


Figure 42 presents the relative contributions of high impact interventions for the period of 2005-2011, which estimated that the lives of more than 74,000 children under-five were saved in 2011 relative to interventions scaled-up between 2000 and 2005. Changes in interventions and activities in reducing stunting, the introduction of the *Haemophilus Influenza* type-B (*H. influenza* B) vaccine, and the reduction in wasting have played a significant role in averting 26%, 22% and 14% of the total deaths averted among under-five children, respectively. Similarly, vaccines against measles, pneumococcal, case management for pneumonia and ITN/IRS have each averted 7%, 5%, 4% and 4% of the total deaths in under-five children in this specific year.

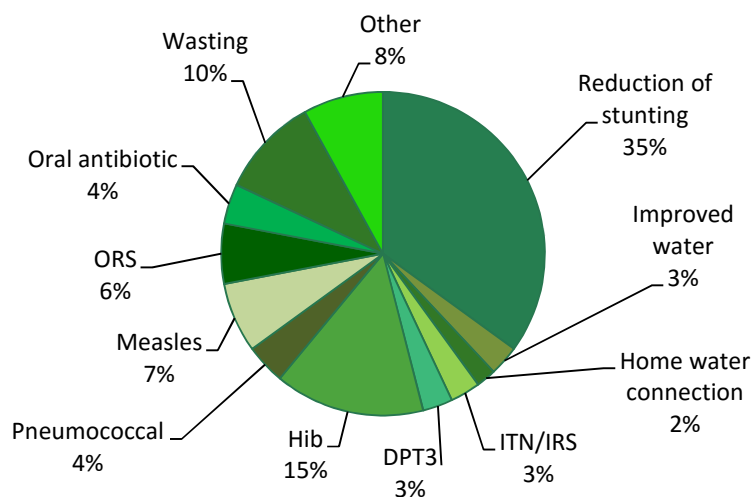
Figure 42. Percentage of lives saved in 2011 by high-impact interventions from 2005-2011 relative to interventions scaled up between 2000 and 2005



Note: More than 74,000 lives saved

As depicted in Figure 43, the overall proportion of high impact interventions in averting child deaths in 2011 is attributable to changes in interventions coverage from 2000-2011. Nearly 103,000 child lives were saved by 2011 as result of implemented interventions. Changes in nutritional and socio-economic status that helped to reduce stunting and wasting seemed to be the major contributors to lives saved among children under-five in 2011. The reduction in stunting and wasting together contributed to save nearly half (45%) of the total child lives saved in this year. The reduction in stunting alone averted 35% of under-five child deaths. The introduction of *H. influenza* B (Hib) vaccine saved 15% of the total child lives saved among children under five. The scale-up of measles vaccine and oral rehydration salts for diarrhea averted 7% and 6% of the total deaths averted, respectively.

Figure 43. Percentage of lives of children under-five saved in 2011 by high impact interventions

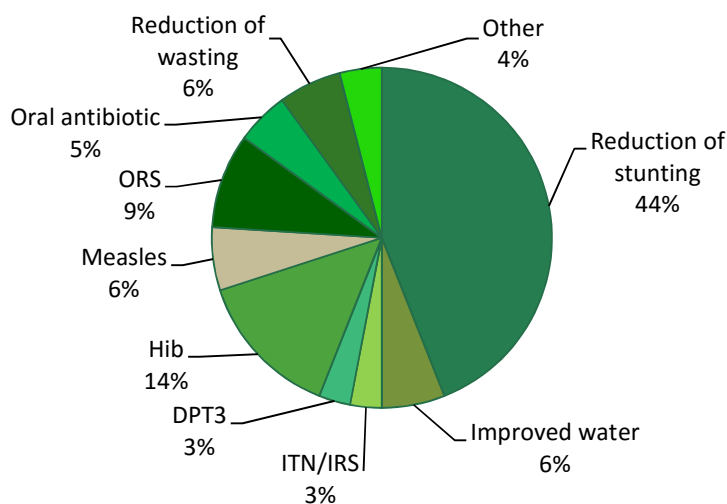


Note: 103,000 lives were saved in 2011

LiST has estimated that a cumulative total of nearly 469,000 under-five child deaths were averted during the period 2000-2011. The change in stunting and wasting played a significant role in averting the highest number of child deaths among children under-five years of age during the period. The reduction in stunting alone saved 44%, followed by the introduction of Hib, which contributed 14%, and the scale-up of oral rehydration salts for diarrhea, which accounted for 9% of the total lives saved (Figure 44).

In the aggregate, the reduction in malnutrition, followed by a scale-up of immunization and oral rehydration salts for diarrhea, played a great role in averting child deaths between 2000-2011. The implementation of appropriate policies and interventions targeting underlying causes, such as the expansion of education, improvements in socio-economic status and women's empowerment have contributed to a reduction in child malnutrition. As a result of these efforts, the reduction in stunting and wasting together contributed to saving about 50% (234,500) of the lives of children during this period. This finding substantiates that stunting and other forms of malnutrition indicators were the major contributors to under-five mortality in Ethiopia.

Figure 44. Cumulative percentage of lives of children under-five saved from 2000-2011 by high impact interventions



Note: Nearly 469, 000 lives were saved in 2000-2011

Regarding immunization, preventive vaccines such as measles and DPT3, including *Haemophilus Influenza* type-B Hib (which was introduced recently in 2007), were among child health interventions, which greatly contributed to averting childhood deaths in Ethiopia from 2000-2011. A total of nearly 108,000 (23%) of total child deaths were averted by a scale-up of vaccinations for measles, DPT3 and Hib during the reference period.

The scale-up of oral rehydration salts for childhood diarrhea, and access to improved water, played a significant role in averting under-five child deaths. Taken together, these interventions helped to save 15% of total lives saved during this period.

The LiST estimate demonstrates a rapid percent decline in U5MR for the period 2005-2011; nearly four-times higher than in 2000-2005. Among the many reasons for this difference are: updating of HSDP's, implementation of HEP, child survival strategy, National Nutrition Strategy, NNP, and other food security programs such as PSNP, all of which are examples of new or strengthened policy strategies and programs implemented to reduce child mortality during 2005-2011.

To support this improved health care system that enhanced access to services, total health expenditures doubled between 2005 and 2011, as compared to the prior five-year period. Further health care financing components of the case study have also shown increase in reproductive and child health sub-accounts since 2004/2005. Particularly, the per-capita health expenditure for child health has shown a radical change from 3.69 USD in 2004/2005 to 12 USD in 2010/2011.

3.5. QUALITATIVE STUDY FINDINGS

A total of 68 key informants from all regions, and the two federal administrative cities (Addis Ababa and Dire Dawa) and non-governmental organizations were interviewed. Of those, 47 were from regional health offices and the remaining 21 were participants from federal level offices including NGOs and federal ministry of health (FMoH). Most of these respondents were public health professionals 27 to 72 years of age. We interviewed professionals from different background; nurses, physicians, demographers, nutritionists, environmental health officers and sociologists where all had at least a BSc degree and most had a Master's degree. As to their working experience, most had an average of 7 years of work experience, with a range from 1 to 35 years (*see Annex 1 & 2 for details*).

Child Health Care Activities of Regional and Federal level offices

The key informants across the regions had a comprehensive and consistent understanding of most of maternal and child health programs that were being implemented. They emphasized that many interventions focused on both maternal and child health care services to promote and enhance child survival and well-being. Some of the child health care programs implemented by government levels include: routine immunization (EPI) services, Vitamin A supplementation, integrated community case management (ICCM) of childhood illnesses and periodic de-worming for parasites through anti-helminth supplementation. Other respondents mentioned region specific initiatives including the Community Based Nutrition (CBN) program, for children less than two years of age as well as growth monitoring for under-five children, and routine screening for Therapeutic Supplementary Feeding (TSF) based on the life cycle approach. Outreach therapeutic programs (OTP) and community based newborn care are also among those child health care specific programs implemented by some regions to improve child health care and newborn survival.

The other interventions related to both maternal and child health care that were described by the respondents are: family planning, antenatal care, skilled delivery care services, counseling for birth preparedness, post natal care services, PMTCT, Tetanus Toxoid (TT) vaccination and iron folic acid supplementation to pregnant mothers. In some regions,

interventions like, BEmONC and CEmONC services, de-worming of pregnant women and post abortion care services are also implemented to maintain the health of both the mother and the newborn. Only a few regions mentioned the implementation of health surveillance, maternal death surveillance, and enhanced outreach services for maternity services as a key to achieving the MDG 4 goal.

The health extension program was singled out to be a critical means for delivering health interventions to the grass root level. Some of key activities included building open defecation areas (ODA), procurement and distribution of medicines and medical supplies, prevention and control of HIV/AIDS, TB, STI programs and the implementation of IEC/BCC interventions.

In addition to what the government is implementing, many NGO respondents reflected on their role in strengthening the capacity of the federal and regional government health offices' to implement health programs. Specific attention was placed on building the capacity of health professionals, especially in the prevention and control of diseases.

Success Factors for the Achievement of the MDG 4 Goal

a) Factors within the health sector/system

Respondents were asked to identify what they felt may have contributed to the success in achieving MDG4. The health policy focusing on prevention and decentralization was emphasized to be the leading cause for success. More specifically, child health and nutrition programs, as well as attention to maternal health were important. The national health policy drafted in 1991 and the series of health sector development programs (HSDP I to IV), were key to the smooth implementation of strategies, programs and interventions.

The other highly acclaimed national program is the rural Health Extension Program (HEP). The program was launched in 2003 with the objective of reaching every population segment, particularly the poorest of the poor. The philosophy of HEP is that if highly effective knowledge, skills and practices are transferred to households, they will be able to maintain their own health. The HEP is the main vehicle for delivering key maternal, neonatal and child health interventions to the community. It is expected that almost all of the activities listed in the National Child Survival Strategy to be implemented through the HEP. Built on its contributions so far, the regional and federal level participants concurred that HEP is a unique and innovative program.

“We can clearly say that the government's decision and direction to follow a national health policy geared towards prevention and decentralization are key factors for today's result...had it not been for it, we might not have achieved this outcome....The policy has addressed the majority of leading causes of child mortality in our country and most of them are preventable.” - NGO participant

Regarding the specific programs, strategies and interventions specific to child health, the majority of the participants mentioned the following initiatives of the child survival strategy in descending order of frequency: the rapid expansion and accessibility of immunization (EPI) services to the rural community, and the integrated community case management (iCCM) of childhood illnesses. Also mentioned were the Integrated Management of Neonatal and Childhood Illnesses (IMNCI), the vitamin A supplementation program and the periodic de-worming of children.

Similarly, some maternal and child health interventions were given equal importance with respect to the results obtained. Special mention was made of the reproductive health strategy and rapid expansion of family planning coverage and its utilization. Experts and managers from one of the UN agencies country office claimed that the rapid change in family planning coverage and utilization has contributed significantly to improved child survival and maternal well-being.

“... As to my experience in this organization, Ethiopia's rate of progress in family planning coverage and utilization in the last decade is unique, ...the rate of increase surpasses the globally recognized annual rate of increase, ...this has a lot to do with the rapid reduction of under-five mortality in addition to the maternal mortality reduction role...”- UN agency worker in family planning

The other components of success within the health system, which were highly emphasized include achievements related to the planning and implementation of various nutrition programs, emergency nutrition activities and the National Nutrition Programs (NNP).

Lastly, other important interventions within the health system the respondents identified were rapid expansion of health facilities, improved supplies and human resources for health, deployment of ambulances to the district level and an improved monitoring and evaluation system. According to the participants, these interventions along with emphasis placed on the prevention of chronic disease helped increase the utilization of the health care services.

b) Factors outside the health sector

Study participants from federal level and NGOs also identified a number of factors outside the health system. The government's commitment and implementation of effective developmental policies and strategies set the stage for positive changes in the macro economic situation of the country. Effective partnerships across multiple sectors and collaboration with NGOs further strengthened the momentum for economic development. In parallel to this trend, the resultant social development observed in the country during the last ten to fifteen years was also credibly enabled Ethiopia to achieve the MDG 4 target.

Political Commitment

As far as the role of the federal and regional level governments for child health care and survival is considered, participants mentioned there was a strong political commitment from the officials to prioritize and allocate available resources to the health sector. Many of the senior government leaders were willing to plan, coordinate and implement relevant and effective health policies, work in harmony with international NGOs and other partners, and decentralize power to the local level administration. This enabled local managers and administrators to have some autonomy in decision-making to support child health and mobilize their communities to create demand for health services.

Economic Development

The rapid economic development & infrastructure expansion was believed to have—a significant effect on the rest of the activities within and outside the health sector. Participants witnessed that the country has recorded fast economic growth with which infrastructure like road, telecom services, education, health facilities and water sources have been robustly constructed and made available to the population in general and the rural poor farmers in particular. In the same way, construction of higher learning institutions including those training health professionals has been expanding quite rapidly, which brought about availability of adequate number of health work force for the country.

Similarly, due to changes seen in the macro economic situation and free market economy, the community's access to various media and communication channels has increased. According to the participants, this has brought about better awareness and information to the community, particularly mothers, and hence health care seeking behavior for ill children has increased.

Social and Cultural Developments

The participants also explored social and cultural advancement as success factors. They believed that social developments mainly in women's education, reduction in early marriage, expansion of primary education to rural communities, religious leaders and institutional support for social services had an important role to play in the reduction of under-five mortality. Other factors such as a community's decision and agreed upon norm to use health services, establishment of networking via the women development army, better access and improvement of water and sanitation and overall capacity building activities for the community were also mentioned.

Food Security

The other major reasons and contributing factors mentioned outside the health system are improvements in agriculture resulting in improved nutritional status. This is mainly attributable to better food security and agricultural development observed in the last few decades mainly after 1989. The Productive Safety Net Program, for example helped millions of people to come out of poverty and secure food at household level. This has also led to the improved nutritional status of children. To identify and provide early intervention to the community, an early warning system was made through nutritional surveillance activities, which involves identification of 'hot spot' woredas every six months to provide supplementary foods for most at risk population groups, mainly pregnant mothers and children.

The Reasons for Slow Progress in Achieving MDG Targets Related to Neonatal and Maternal Mortality Reduction

"In my opinion, availability of health workers to the rural and emerging regions like that of us is one of the key success factors for the results obtained. If you were to come here some 10 years ago, it was hardly possible to get even mid-level health workers. Nowadays we are getting qualified personnel adequately because of rapid expansion of higher learning institutions in the country." - Senior level Regional Health Bureau Expert

Despite Ethiopia's success in achieving the MDG 4 target, the country has made relatively slow progress in reducing both neonatal and maternal mortality rates. The study participants explored the reasons for this observation. Some of the reasons mentioned include: lack of focus and attention by concerned bodies, deep rooted cultural practices related to maternal and neonatal health care, issues related to economic development and governance.

Participants emphasized that less commitment and priority is given by many of the stakeholders for newborn health care. Within this environment, other problems such as inadequate skill levels of the health workers in neonatal care, weak and uncoordinated referral systems and lack of accountability contributed to inadequate access to services and inadequate quality of care

Some participants stated that there is a strong cultural barrier in the community to caring for newborns. Some harmful traditional practices in the rural and pastoralist community include feeding newborns with butter and other solid foods, and withholding colostrum that may contribute a lot to prevent early neonatal deaths. Coupled with these problems is the lack of confidence among the HEWs in providing essential neonatal care services and finding effective ways to influence the reduction of harmful traditional practices. Cultural and traditional beliefs also affect the use of health facilities for deliveries and neonatal care services, as many women prefer to have home births. The low rates of skilled birth attendance are also influenced by relatively few or inaccessible ambulance service for the rural community and lack of facilities readiness to provide delivery care.

The health system has not been ready to handle facility births, especially births with complications. Participants stated that neonatal care services need more attention, as they are more resource intensive. Health facilities for basic emergency obstetric care (BEMONC) and comprehensive care (CEMONC) requires skilled professionals, sophisticated and advanced equipment and expensive drugs, which are hardly available in many of the health centers across the nation.

Perception of Equitable Achievement and Success Across Regions

Many of the federal and regional level experts recognized that there is a difference in access and utilization of health services, especially for regions on the periphery. They also noted a disparity between various zones, the rural versus urban areas, and health service utilization and access based on the socio economic status.

*"In our region, there is a clear variation across zones and districts by health service utilization and health status. We have reports and observations that people in **Mejenger** zone are by far better than **Agnwak** and **Nuwer** in their health status and awareness. We believe that adequate attention is given to all across the region, but due to cultural and other societal conditions, health services are better utilized, and this holds true for child survival conditions."- Regional Level WASH Coordinator*

The participants attributed various reasons for the observable differentials in child mortality as well as health services utilization across regions, zones, residence areas (urban/rural) and wealth status. These include: the inequitable presence or distribution of basic infrastructure, poor focus and commitment of leadership, the prevailing skill gap among health workers especially in rural areas, uneven distribution of development partners, high staff turn-over in rural and peripheral areas, lack of health staff commitment, population mobility in the pastoralist areas, and cultural influences.

Model child health and related activities

Some participants were impressed by the good job of other institutions or organizations in performing model child health or related activities. The following organizations with their activities were found exemplary in the contributions made to successes for MDG4:

- iCCM implemented by IRC in Benishangul Gumuz region
- PMTCT supports of ICAP, PHSP, ESOG and Intra-Health in 35 government health facilities of Addis Ababa
- UNICEF, IFHP, L10K, Maternity Worldwide (Norway) are partners for maternal health for specific zones and woredas, For Family Planning, there is Engender and IPAS (for abortion care)
- UNICEF- financial and material support, review meetings
- IFHP, USAID supports family planning
- L10K - health extension program
- Save USA - in child nutrition and survival activities
- FGAE - reproductive health services
- DKT - family health services

4. Discussion

On September 13, 2013 the FMOH of Ethiopia and UNICEF announced that Ethiopia has successfully reduced under-five mortality rate by two thirds between 1990 and 2012, which is the target of reduction in child mortality (MDG 4). In 1990, the under-five mortality rate in Ethiopia was one of the highest in the world at 204/1,000 live births. However, by 2012, this rate had declined to 68/1,000 live births with an average annual rate of decline of 5%. This exceeded the 4.3% annual rate of decline needed to achieve the MDG4 and was significantly higher than the decline rates observed in many sub-Saharan African countries and other low and middle-income countries. Ethiopia also recorded the fastest rate of decline in East Africa exceeding that of neighboring countries such as Kenya (1.4%), Sudan (2.6%), Djibouti (1.8%), and Burundi (2.1%) (2)(4). The synthesized results and key findings of this case study suggest that a number of factors, both within and outside the health care system, have contributed towards the remarkable success Ethiopia attained in reducing under-five mortality.

Government Leadership and Political Commitment

The establishment of a new government in 1991 resulted in a new paradigm for improved governance. The strong political commitment to social and economic development and early endorsement of MDGs brought about a strategic focus on rolling out policies and programs backed by enough resources to make them work better. Endorsement of the MDGs helped the Ethiopian government to receive support from a number of global initiatives, UN agencies and international NGOs. The government leaders were willing to forge a pathway to implement effective health policies translating into increased coverage of essential services.

The Government of Ethiopia has made impressive efforts in improving health system management, governance as well as developing health infrastructure along with human resources. Civil service reform programs together with capacity building efforts have contributed to an effective and efficient management system. Supervision, monitoring and evaluation systems are strong, reinforced by annual and joint review meetings as well as mid-term and end line evaluations. The adoption of one plan, one budget and one report, has been a good opportunity to strengthen joint planning, supervising, monitoring and evaluation activities. Most of the key informants attribute the gains in child survival as the outcome of strong follow-up mechanisms. The decentralization of power to local level administration allowed grass roots level decision-making through bottom-up planning and strengthened community participation and ownership.

Policies and Strategies

The national health policy, which was ratified early in the 1990s, is considered the cornerstone for the conception, development and implementation of several health related programs, strategies and interventions. The policy is highly geared towards disease prevention, health promotion and expanding primary health care services to the rural community (12). The policy also ushered in decentralization, democratization and more equitable distribution of health services to the rural poor and disadvantaged population, particularly women and children. Most of the case study respondents affirmed the pivotal role of the national health policy in paving the way for the development of subsequent programs and strategies, which contributed, to the success achieved for MDG4.

For the effective translation, monitoring and implementation of the health policy, the HSDP (I-IV) was designed and implemented since 2001 (13)(14)(15)(16). These four comprehensive health sector development plans provided opportunities for better coordination and integration of health sector efforts and enabled development of relevant strategies, programs and interventions that addressed and prioritized existing or emerging health concerns. Accordingly, several high impact interventions for child survival like; the child survival strategy, Integrated Community Case Management (iCCM), National Nutrition Strategy, National Nutrition program (NNP), CBN, CMAM and other programs and interventions were formulated and implemented under the umbrella of the HSDP's. In summary, the HSDP served as the health sector's comprehensive national plan and guiding framework for the detailed planning and implementation of the whole health sector in general and RMNCH activities in particular (14)(15)(16).

Rapid economic development and infrastructure expansion was identified as a key factor in influencing the child survival and health outcomes. Respondents concurred that the country has recorded fast economic growth that has been translated into infrastructure expansion such as construction of roads, telecom services, schools, water resources and health facilities. This overall economic development also brought about a reduction in early marriage practices, better access to education and improved water and sanitation facilities. These factors along with the overall capacity building efforts have played complementary roles in the success attained.

Four cross-cutting macro-level policies and strategies appear to have played important roles in bringing down the under-five mortality rates. The Rural Development Policies and Strategies (RDPS) are of strategic importance for the health sector development and helped enhance socio economic development, underpinning health as a basic human right. Policies and strategies in the agricultural sector were also strengthened to address food security problems and became a national priority in order to withstand the effects of the recurrent

drought. Disaster management policies brought about a paradigm shift in disaster management. This policy aimed to address the root causes of drought and emphasized the need to streamline the disaster management efforts to improve food security. Lastly, the role of the Productive Safety Net Program cannot be underestimated as millions of people in drought prone areas receive support via this program.

Health Extension Program

The HEP is considered as Ethiopia's flagship program and is the main vehicle for bringing key maternal, neonatal and child health interventions to the community. It was conceived in 2003 as a result of the recommendations based on the midterm review of HSDP-I and was introduced at the beginning of HSDP II (13). The HEP has an objective of reaching every population segment, particularly the rural poor. HEP's is based on the assumption that if information and skills are transferred to households, they will promote and maintain their own health. In-depth analyses of events in the timeline reveal that advent of this innovative health service delivery system accelerated access of health care services to the rural community. Key experts and other program managers who were key informants of the qualitative component of this study have concurred about the unique role of HEP in advancing the health status of the rural population with special attention to mothers and children. It should also be noted that along with the expansion of services to the community levels through the health extension program, efforts to strengthen health services at health centers and hospitals has also been intensified. The expansion of integrated management of childhood illness at health centers and hospitals also took place. Although the progress is slow, delivery at health institutions, expansion of emergency obstetric surgical interventions services, post-abortion care and PMTCT services have been pursued.

Analyses of trends and levels of key RMNCH services from nationally representative surveys in the country confirms that HEP has played a key role in expanding health services. Most of the high impact RMNCH interventions coverage rapidly increased after the introduction of HEP in 2004. For instance, the coverage for CPR, family planning demand satisfaction, ANC 1+, SBA services, neonatal protection against tetanus (TT2+), immunization (EPI), nutritional interventions and access to water and sanitation facilities increased many fold mainly after 2005. The coverage for new antenatal care clients increased only by 5% (from 26.8% to 28.1%) between 2000 to 2005; while it increased by over 50% (from 28.1% to 42.6%) between 2005 to 2011. The coverage for skilled birth attendance remained the same between years 2000 to 2005 (5.7%), while it almost doubled by 2011 (10%) and reached 15% by 2014. In the same way, the proportion of children receiving immunizations, those who sought care for pneumonia and utilized ORS also increased significantly just after 2005. More interestingly, the proportion of families

owning ITNs for malaria protection went from being almost non-existence in 2000 to over 60% in subsequent study periods. Before 2005, as high as 92% of the rural and 82% of the general communities in Ethiopia had no sanitation facilities; however, by 2011 the proportion of households who did not have sanitation facilities dropped down to 38% and 43%, respectively. The rate of open defecation has also declined from 93% in 1990 to 45% in 2011. The proportion of families owning an improved latrine remained low (8.3%) in 2011 despite having increased eleven-fold (0.6% to 6.8%) between 2000 to 2005.

LiST Analysis

The LiST analysis to estimate the number of deaths averted showed that about 469,000 child lives were saved between 2000 and 2011 as a result of scaling-up of high impact interventions. The analysis also revealed that reduction in under-nutrition followed by scale-up of immunization and oral rehydration salts for diarrhea has played a great role in averting child deaths in this period.

In Ethiopia, implementation of appropriate multi-sectoral policies in agriculture, health, nutrition, food security and water and sanitation have helped to reduce the burden of child under-nutrition. As result of these nutrition related interventions and socio-economic changes in reference period, stunting has declined from 58 % in 2000 to 44% in 2011, whereas wasting declined from 12% in 2000 to 9.7% in 2011 (8). This reduction in stunting and wasting together has helped to avert 50% (234,500) of the total under-five deaths averted between 2000 and 2011. This finding substantiates that stunting and other forms of under-nutrition are clearly the major contributing factors to under-five mortality. Evidence from research shows that a severely stunted child faces a four times higher risk of dying, and a severely wasted child is at a nine-times higher risk of death(58).

Preventive vaccines such as measles and DPT3 including *Haemophilus Influenza* type-B (Hib) which was introduced in 2007 are among effective interventions that have made relatively high contributions in averting childhood deaths in Ethiopia from 2000-2011. An estimated 108,000 (23%) child deaths were averted by scale-up of measles, DPT3 and Hib during this time period. Hib alone has helped to save 14% of total child lives saved between 2000 and 2011. Moreover, the scale up of oral rehydration salts for diarrhea has been attributed to saving about 9% of total child lives saved.

The overall percent decline in under-five mortality rates explained by LiST relative to IGME for the period 2000-2011 is 51% whereas for the periods 2000-2005 and 2005-2011 it is 25% and 60%, respectively. LiST can only estimate the deaths averted and under-five mortality rates based on available intervention coverage within the health sector. It is obvious that the reduction of under-five mortality rate is the result of combined effects of health and non-health factors. Therefore, it is important to note that the remaining percent

of decline in under-five mortality rate was likely to be explained by the contributions of developmental activities outside of the health sector such as rapid economic growth, expansion of education, inter-sectoral collaborations and political commitment, access to transportation as well as the health interventions that were not included in LiST. For instance, intervention coverage for maternal sepsis case management, care for premature infants after birth, therapeutic feeding for severe wasting and treatment for moderate acute malnutrition were not included in modeling process due to lack of data.

Remaining Challenges

Human Resources

Most of the key informants discussed challenges related to a shortage and high turnover of skilled health workers and the HEWs. This lack of highly qualified health workers was particularly evident for advanced level care including the skills needed to provide lifesaving child health care services. These deficiencies were exacerbated by poor leadership, lack of supportive supervision and over burdening the HEWs by continuing to expand their workloads in health as well as non-health activities. Much of their time is also spent on dealing with new reporting structures such as the newly revised HMIS. Respondents also identified situations where there was lack of commitment and engagement among the newly deployed health workers, and general lack of accountability as well as, ethical and behavioral problems.

Inequity

The issue of equity still remains a major health sector challenge. The analysis of levels of disparity (inequity) in coverage of interventions as well as under-five mortality across the main stratifying variables (region, wealth quintiles and residence) confirmed that disparities continued to prevail for almost all of the major lifesaving interventions. The results of measures of equity in Ethiopia over the last ten to fifteen years signifies that inequality of coverage for key RMNCH services is more pronounced across wealth quintiles, urban-rural residence and across administrative regions in the country. Considering disparity across wealth quintiles, there is huge difference across the poorest 20% and the richest 20% of the population. The disparity is extreme in some coverage indicators like: SBA, CPR, care seeking for pneumonia access to improved sanitation facilities and access to improved water sources. It is interesting to note that the under-five mortality rate has declined for all the wealth quintiles except for the poorest 20%. For this wealth quintile the mortality worsened by increasing from 130 to 137/1,000 live births between 2005 and 2011.

Similarly, disparity of key RMNCH coverage indicators and mortality was observed, not only across wealth quintiles but also across various administrative regions and urban-rural residence. In terms of regional variation by interventions coverage or mortality, it seems that the four emerging regions are far behind the other regions. Coverage indicators for target populations in big cities like Addis Ababa and Dire Dawa continue to be much higher than the other regions,

Given the current equity profile of Ethiopia, achieving health equity will be a long process that will require a determined commitment and focus on equity goals and related measures. Increasing inputs and resources from government, partners and stakeholders, even beyond the health sector will be needed to reduce pervasive health inequalities. Long term commitments to expand education, create better and healthier living environments, and improve socio-economic conditions across the board will be part of the exercise to improve equity in health (60).

Neonatal Mortality

Newborn health has also received some attention since 2007. During this year newborn resuscitation equipment was introduced at facility and community level following the implementation of community based IMNCI. Despite all these community and health institution level efforts, interventions targeting newborn and neonatal health appeared to have lagged behind the targets as evidenced by relatively low levels of decline in the neonatal mortality rate. As compared to the baseline rate of 54/1000 live births in 1990, the neonatal mortality rate decreased in 2012 to 29/1000 live-births. Ethiopia still has one of the highest rates of neonatal deaths compared to other developing countries (24/1,000 live births) and the world (21/1,000 live births). IGME estimates that as high as 43% of the under-five mortality rate is attributed to the deaths that occur during the first month of life (61). Several reasons and contributing factors were mentioned for the slow progress in the reduction of neonatal mortality rate. Lack of focus, attention and commitment by concerned bodies, weak and uncoordinated referral systems, widely prevailing and deep rooted inappropriate cultural practices, lack of good health system governance, lack of skills and low confidence among the HEW in providing essential neonatal care services were some of the reasons mentioned by study respondents. Moreover, health care facilities for BEMONC and CEMONC require a skilled professionals, sophisticated and advanced equipment and expensive drugs, which are difficult to provide. These are some of the reasons why the achievement towards reducing neonatal and maternal mortality rates has not been successful as compared to the reduction in under-five mortality.

Health Care Financing

The budget allocated for the health sector saw a marked increase after 2005 and can be considered as one of the key factors that enabled Ethiopia to achieve MDG4. The national health account analysis reveals that both the total health expenditure and per capita health expenditure tripled between 2005 and 2011 compared to earlier periods. In the same period, total child health care expenditure and reproductive health expenditure increased by at least 3-4 folds. The strategic shift in financial flow, utilization and accountability, as a result of adoption of the 'one plan' one budget, and one 'M&E' appears to have contributed to the successful and sustainable flow of funds into the health sector.

Despite a remarkable increase in health expenditure, the government's total health expenditure as a percentage of GDP was 5.2% in 2010/11, which seems low. In addition to this, the government's expenditure on health as a proportion of national expenditure was 13.4% in 2010, which is also lower than the target of 15% set by the 'Abuja Declaration' in 2001. Most of the government health expenditure (43%) is spent on drugs while only 22% was allocated to hospitals (46). This is in contrast to the government's health policies, which call for the focus to be placed on improving primary health care services.

5. Recommendations

1. **Policy makers should pay equal attention to both health system and non-health system factors to attain better health results in the future.** The case study has shown that factors both within and outside the health care delivery system contributed towards the achievement of the MDG4 target. Therefore, continuing to address both these factors simultaneously will enable Ethiopia to produce better health outcomes.
2. **Political leaders should maintain the momentum on their commitment and support for better achievement in the future.** Strong commitment of concerned local and federal level government officials laid the ground work for a smooth and effective formulation, implementation and evaluation of the key RMNCH programs, strategies and interventions. Their continued support is necessary to keep this momentum going forward.
3. **Focus on improving nutritional interventions and early neonatal care practices.** While interventions targeting multidimensional factors that determine child under-nutrition such as food insecurity, education, economic status and women's

empowerment have been effective in the last decade, other key interventions have not progressed very well. These interventions include: exclusive breastfeeding, early initiation of breastfeeding, and complementary feeding. Further investigation should be performed to analyze how nutritional status was able to improve despite low coverage of some key practices.

4. **Address high levels of neonatal mortality.** The neonatal mortality rate contributes about half of the overall under-five mortality level. Addressing the causes of neonatal mortality will enable Ethiopia to reduce under-five mortality rate even further.
5. **Alleviate health inequality.** The regional, urban-rural and wealth status disparities in utilization of health care services needs to be addressed. Skilled delivery services utilization for the wealthiest quintile was as high as 25 times that of the poorest. Regional level case studies can provide valuable insights that can be used to develop demand generation activities and reduce health system barriers to care.
6. **Scale up interventions like: iCCM, CMAM, EOS and Hib vaccination** - These programs have contributed immensely in reducing under-five mortality level, even more than other longstanding programs and interventions. It is recommended that the scale up and quality of these services be strengthened.
7. **Strengthen and expand community based newborn care and advanced obstetric care (CEMOC & BEMOC) services:** There should be further acceleration of training of midwives to improve maternal and newborn health outcomes.
8. **Strengthen behavior change communication activities to tackle cultural barriers and harmful traditional practices** The findings suggested that the major constraints preventing mothers from seeking skilled delivery services are related to lack of awareness and community and household conformity to traditional practices.
9. **Further strengthening of the planning process, quality of implementation, monitoring and evaluation of health programs as well as use of HMIS will create more improvement in key health indicators.**

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Annex 1: KII Guide for Federal Level Respondents

Key informant in-depth interview guide for Ethiopian country case study

Interviewer Name: 1) _____

2) _____

Interview Date: _____

Introduction and Consent

Thank you very much for setting aside time to talk with us today. We are Dr./Mr. _____ & _____ currently working as consultants for the Ethiopian Public Health Institute (formerly EHNRI). FMOH of Ethiopia through its research implementing wing i.e. EPHI in collaboration with the Global Countdown group and other partners have organized a team of research consultants and in-country technical working group to undertake and oversee the conduction of a case study to better understand how Ethiopia managed to achieve MDG goal 4; that is, reducing under-5 child mortality.

As you may know, the Countdown to 2015 for maternal, newborn, and child survival reported in its 2012 cycle, that Ethiopia has achieved substantial progress in several primary health care and reproductive health indicators. In September of 2013, the FMOH announced that Ethiopia has reduced its under-five mortality by two thirds between 1990 and 2012 - the required reduction for meeting the MDG 4 target on child survival. In 1990, the under-5 mortality rate was one of the highest in the world at 204/1,000 live births; by 2012, this rate had been slashed to 68/1,000 live births. This achievement has motivated the Ministry of Health of Ethiopia and other partners to share the experiences and achievements attained so far, so as to tell this success story to the rest of the world.

The purpose of this Case Study is to build a comprehensive story of Ethiopia's progress by employing a mix of quantitative and qualitative methods and tapping into the collective wisdom of all the partners, donors, implementers and government agencies. In addition to talking about specific programs, your experience and perceptions about the importance of changing social and economic conditions; the influx and distribution of funding and resources; the development of different strategies and how they played out through development partners and government; and drivers of key decision that were taken can provide valuable lessons for Ethiopia and other countries.

By meeting with you as a key expert in RMNCH policy and programs, we hope to gain a better understanding of:

- WHAT programs and interventions were delivered since 2000?
- HOW they were implemented and scaled up? and
- WHERE and WHEN they were delivered?

We hope that you had an opportunity to fill in the detailed chart that we sent out before this interview and we can use that information to guide our further discussion.

Before we begin, we want to let you know that any information or examples we discuss during this interview will not be attributed to any specific person or institution to maintain your privacy. All quotes used in the evaluation report will be attributed to a general stakeholder group not by individual, and all identifying information will be removed. You are free to choose not to respond to any of our questions or stop the interview at any time. This interview will take about one hour. If you don't mind, we would like to record this conversation, solely for the purposes of listening attentively now and taking notes later. Is that alright?

Before we begin, do you have any questions?

PART I: KEY INFORMANTS BACKGROUND INFORMATION

1. Name of informant _____
2. Sex a) Male b) Female 3. Age _____ Years
4. Profession / Occupation _____
5. Name of the Organization in which You are working _____
 - Department/unit in the organization _____
 - Physical address of where you work _____
 - Email _____ Telephone _____
6. Work Experience
 - Total Working Experience (in any institution) _____
 - Years worked in this organization _____
 - Years of Experience working on RMNCH _____
 - Work role and responsibilities in current organization

PART II: PERCEPTION AND VIEWS OF NATIONAL/INTERNATIONAL EXPERTS, PROGRAM MANAGERS, POLICY MAKERS AND RESEARCHERS ON ETHIOPIA'S SUCCESS OF ACHIEVING MGD4 GOAL AHEAD OF 2015.

1. Perhaps you could start by telling us about your engagement or work in RMNCH since 2000?
 - *What key RMNCH related areas were you working on since 2000 in Ethiopia?*
 - *Which organizations did you work for and on what programs or projects?*
2. From your long time professional experience and scientific observation, how do you think that Ethiopia managed to achieve MDG4 before the end of the MDG timeline?
 - *What policies, strategies and programs, either inside or outside the health sector, contributed towards the success?*
 - *How was it done? (please elaborate on government action, coordination and cooperation between different sectors and external donors and partners, implementation,*

- updates/improvements/reviews, monitoring and evaluation ...etc) of the policies and programs.*
3. There are certain components of the Under 5-Mortality that did not improve, such as neonatal mortality, what do you think are the reasons for this lack of progress?
 4. What are the variations in child mortality across the country and how can they be explained?
 - *(Probe for: levels of resources provided, different levels of development at the starting point, different levels of support from NGOs, INGOs)*
 5. In your experience, what contextual factors (such as: social, economic, political ...etc) that have played a significant role in U5 child mortality in Ethiopia?
 6. Based on our discussion so far, what would you say are the top three reasons or factors that led to the achievement of MDG4 in Ethiopia?

PART III: DETAILED DESCRIPTION OF INTERVENTION/PROGRAM

I hope you had a chance to fill in the program and intervention matrix sent to you via email/post office before this discussion. Now, let's briefly review it, so that we can understand it.

Instruction for interviewer: *Go through all the columns and rows and make sure all the information is filled out. If something is missing, ask to find someone else to talk to and fill in the gap or identify someone else outside that organization that may have the information or get a document to get more information on the particular aspect of the program)*

1. Which of these programs and interventions/packages (from the matrix you filled) has played significant contribution for the success in U5 mortality?
 - *Please, would you rank the programs and interventions based on their contributions?*
2. Please elaborate on all the programs and interventions that you listed and ranked on the excel sheet as exerting maximum impacts on RMNCH.
 - *(Implementation updates/improvements/reviews, monitoring and evaluation: supervision coverage, scale up, costing, human resource such as training, density of health workers)*
3. Are there any other programs that you know a lot about based on your work experience in other organizations? If yes, please let me know what they are and we can add this information to the matrix.
 - *(Include as much information as possible, so that can supplement whatever information that may be coming from other organizations)*

PART IV: CHALLENGES AND MISSED OPPORTUNITIES

1. What are the major challenges/problems/bottlenecks that might have affected the pace of the progress made in program implementation by the regions or certain economic or occupational groups in the country?
 - *What actions were undertaken at all levels to overcome these challenges?*
2. Were there any missed opportunities?

- *If so, please elaborate on what these opportunities were and why they did not occur?*

PART V: CONCLUSION AND THE WAYS FORWARD

1. What are the key lessons learned from previous RMNCH practices of Ethiopia? What can other neighboring nations and as well as other developing countries learn from Ethiopia's achievement? What do you recommend as a way forward?
2. Is there anything else that you want to tell me but didn't, because I didn't ask the right question or you just thought of it right now?
3. What questions do you have for me?

THANK YOU VERY MUCH FOR YOUR TIME AND INSIGHTS.

Annex 2: KII Guide for Regional Level Respondents

KEY INFORMANT IN-DEPTH INTERVIEW GUIDE FOR ETHIOPIAN COUNTRY CASE STUDY

Interviewer Name: 1) _____

Interview Date: _____

Introduction and Consent

Thank you very much for setting aside time to talk with us today. We are Dr./Mr. _____ currently working as consultants for the Ethiopian Public Health Institute (formerly EHNRI). FMOH of Ethiopia through its research implementing wing i.e. EPHI in collaboration with the Global Countdown group and other partners have organized a team of research consultants and in-country technical working group to undertake and oversee the conduction of a case study to better understand how Ethiopia managed to achieve MDG goal 4; that is, reducing under-5 child mortality.

As you may know, the Countdown to 2015 for maternal, newborn, and child survival reported in its 2012 cycle, that Ethiopia has achieved substantial progress in several primary health care and reproductive health indicators. In September of 2013, the FMOH announced that Ethiopia has reduced its under-five mortality by two thirds between 1990 and 2012 - the required reduction for meeting the MDG 4 target on child survival. In 1990, the under-5 mortality rate was one of the highest in the world at 204/1,000 live births; by 2012, this rate had been slashed to 68/1,000 live births. This achievement has motivated

the Ministry of Health of Ethiopia and other partners to share the experiences and achievements attained so far, so as to tell this success story to the rest of the world.

The purpose of this Case Study is to build a comprehensive story of Ethiopia's progress by employing a mix of quantitative and qualitative methods and tapping into the collective wisdom of all the partners, donors, implementers and government agencies. In addition to talking about specific programs, your experience and perceptions about the importance of changing social and economic conditions; the influx and distribution of funding and resources; the development of different strategies and how they played out through development partners and government; and drivers of key decision that were taken can provide valuable lessons for Ethiopia and other countries.

By meeting with you as a key expert in RMNCH policy and programs, we hope to gain a better understanding of:

- WHAT programs and interventions were delivered since 2000?
- HOW they were implemented and scaled up? And,
- WHERE and WHEN they were delivered?

We hope that you had an opportunity to fill in the detailed chart that we sent out before this interview and we can use that information to guide our further discussion.

Before we begin, we want to let you know that any information or examples we discuss during this interview will not be attributed to any specific person or institution to maintain your privacy. All quotes used in the evaluation report will be attributed to a general stakeholder group not by individual, and all identifying information will be removed. You are free to choose not to respond to any of our questions or stop the interview at any time. This interview will take about one hour. If you don't mind, we would like to record this conversation, solely for the purposes of listening attentively now and taking notes later. Is that alright? Before we begin, do you have any questions?

PART I: KEY INFORMANTS BACKGROUND INFORMATION

1. Name of informant _____
2. Sex a) Male b) Female
3. Age _____ Years
4. Profession / Occupation _____
5. Name of the Organization in which you are working _____
 - Department/unit in the organization _____
 - Physical address of where you work _____
 - Email _____ Telephone _____
6. Work Experience
 - Total Working Experience (in any institution) _____
 - Years worked in this organization _____

- Years of Experience working on RMNCH _____
- Work role and responsibilities in current organization

PART II: PERCEPTION AND VIEWS OF NATIONAL/INTERNATIONAL EXPERTS, PROGRAM MANAGERS, POLICY MAKERS AND RESEARCHERS ON ETHIOPIA'S SUCCESS OF ACHIEVING MGD4 GOAL AHEAD OF 2015.

- Perhaps you could start by telling us about your engagement or work in RMNCH since 2000?
 - *What key RMNCH related areas were you working on since 2000 in Ethiopia?*
 - *Which organizations did you work for and on what programs or projects?*
- From your long time professional experience and scientific observation, how do you think that Ethiopia managed to achieve MDG4 before the end of the MDG timeline?
 - *What policies, strategies and programs, either inside or outside the health sector, contributed towards the success?*
 - *How was it done? (Please elaborate on government action, coordination and cooperation between different sectors and external donors and partners, implementation, updates/improvements/reviews, monitoring and evaluation ...etc) of the policies and programs.*
- There are certain components of the Under 5-Mortality that did not improve, such as neonatal mortality, what do you think are the reasons for this lack of progress?
- What are the variations in child mortality across the country and how can they be explained?
 - *(Probe for: levels of resources provided, different levels of development at the starting point, different levels of support from NGOs, INGOs)*
- In your experience, what contextual factors (such as: social, economic, political ...etc) that have played a significant role in U5 child mortality in Ethiopia?
- Based on our discussion so far, what would you say are the top three reasons or factors that led to the achievement of MDG4 in Ethiopia?

PART III: DETAILED DESCRIPTION OF INTERVENTION/PROGRAM

I hope you had a chance to fill in the program and intervention matrix sent to you via email/post office before this discussion. Now, let's briefly review it, so that we can understand it.

Instruction for interviewer: *Go through all the columns and rows and make sure all the information is filled out. If something is missing, ask to find someone else to talk to and fill in the gap or identify someone else outside that organization that may have the information or get a document to get more information on the particular aspect of the program)*

- 2) Which of these programs and interventions/packages (from the matrix you filled) has played significant contribution for the success in U5 mortality?
 - *Please, would you rank the programs and interventions based on their contributions?*
- 3) Please elaborate on all the programs and interventions that you listed and ranked on the excel sheet as exerting maximum impacts on RMNCH.
 - *(Implementation updates/improvements/reviews, monitoring and evaluation: supervision coverage, scale up, costing, human resource such as training, density of health workers)*
- 4) Are there any other programs that you know a lot about based on your work experience in other organizations? If yes, please let me know what they are and we can add this information to the matrix.
 - *(Include as much information as possible, so that can supplement whatever information that may be coming from other organizations)*

PART IV: CHALLENGES AND MISSED OPPORTUNITIES

1. What are the major challenges/problems/bottlenecks that might have affected the pace of the progress made in program implementation by the regions or certain economic or occupational groups in the country?
 - *What actions were undertaken at all levels to overcome these challenges?*
2. Were there any missed opportunities?
 - *If so, please elaborate on what these opportunities were and why they did not occur?*

PART V: CONCLUSION AND THE WAYS FORWARD

1. What are the key lessons learned from previous RMNCH practices of Ethiopia? What can other neighboring nations and as well as other developing countries learn from Ethiopia's achievement? What do you recommend as a way forward?
2. Is there anything else that you want to tell me but didn't, because I didn't ask the right question or you just thought of it right now?
3. What questions do you have for me?

THANK YOU VERY MUCH FOR YOUR TIME AND INSIGHTS



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