



# STATE OF THE NATION'S HEALTH REPORT

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University of Ghana, School of Public Health

# Contributors to the Report

This report was authored by the following persons:

## **Chapter 1: Overview**

**Dr. Justice Nonvignon**, University of Ghana School of Public Health

**Dr. Richmond Aryeetey**, University of Ghana School of Public Health

## **Chapter 2: Health Service Delivery and Outcome**

**Dr. George Amofah**, Ghana Health Service

**Dr. Mawuli Dzodzomenyo**, University of Ghana School of Public Health

**Dr. Reginald Quansah**, University of Ghana School of Public Health

**Professor Augustine Ankomah**, University of Ghana School of Public Health

## **Chapter 3: Financing the Health Sector**

**Dr. Genevieve C. Aryeetey**, University of Ghana School of Public Health

**Professor Moses Aikins**, University of Ghana School of Public Health

## **Chapter 4: Human Resources for Health**

**Dr. Abu Manu**, University of Ghana School of Public Health

**Dr. Ernest Tei Maya**, University of Ghana School of Public Health

**Dr. Adolphina Addo-Lartey**, University of Ghana School of Public Health

**Dr. Aaron Abuosi**, University of Ghana Business School

## **Chapter 5: Health Commodities and Technology**

**Dr. Kwabena Frimpong-Manso Opuni**, University of Ghana School of Pharmacy

**Dr. Amos Laar**, University of Ghana School of Public Health

**Dr. Kojo Arhinful**, Noguchi Memorial Institute for Medical Research

## **Chapter 6: Health Management Information System**

**Dr. Patricia Akweongo**, University of Ghana School of Public Health

**Dr. Bismark Sarfo**, University of Ghana School of Public Health

## **Chapter 7: Leadership and Governance**

**Dr. Abdallah Ibrahim**, University of Ghana School of Public Health

**Dr. Emmanuel Asampong**, University of Ghana School of Public Health

**Dr. Samuel Sackey**, University of Ghana School of Public Health

## **Chapter 8: Cross-cutting Issues (Health and Development)**

**Dr. Phyllis Dako-Gyeke**, University of Ghana School of Public Health

**Professor Philip Adongo**, University of Ghana School of Public Health

# Foreword

This report serves as a physical representation of the long-standing collaboration between University of Ghana School of Public Health and the state agencies responsible for health delivery – Ministry of Health and Ghana Health Services. Staff from these three institutions have worked together to review varied publications and datasets related to the health of Ghanaians and have produced this comprehensive review on health in Ghana.

The state of health in Ghana is covered by many different sources, including service reports from the Ghana Health Service, policy documents from the Ministry of Health, academic publications in peer-reviewed journals and reports from donor agencies. Even for experienced and established researchers, going through all this primary material in order to answer a question can be a daunting task. It is however important that all these sources be consulted and evaluated in order to have a clear picture of the current situation,

The State of the Nations Health Report will serve as a one stop destination for students, researchers, teachers and policy makers who want to obtain information about health service delivery and outputs without having to perform a review of all primary documents. The report also highlights the important issues and challenges related to different aspects of the Ghanaian health system. In addition to this the report also provides historical information on the evolution of health service delivery in Ghana which is invaluable information for people involved in designing interventions to improve health in the country.

The incubation period between the idea to have such a report and the delivery of the report has been long and we are happy that the final report is now out. The challenge that this publication now poses to the University of Ghana School of Public Health is to now ensure that there is regular and timely updating for the benefit of all the different groups who will make use of this first edition.

**Richard M.K. Adanu**

# List of Acronyms

<b>Acronym</b>	<b>Meaning</b>
ACT	Artemisinin-based Combination Therapy
ADR	Adverse Drug Reaction
AEFI	Adverse Event Following Immunization
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ART	Anti-retroviral Therapy
ARV	Antiretroviral
ASR	Ashanti Region
BAR	Brong Ahafo Region
BCG	Bacille Calmette Guerin
BOD	Burden of Disease
C and S	Consultants and Specialists
CBR	Crude Birth Rate
CBD	Community Based Distribution
CFR	Case Fatality Rate
CHAG	Christian Health Association of Ghana
CHN	Community Health Nurse
CHOs	Community Health Officers
CHPS	Community-based Health Planning and Services
CHIM	Centre for Health Information Management
CR	Central Region
CSM	Cerebrospinal Meningitis
CVDs	Cardiovascular Diseases
DALYs	Disability-adjusted Life Years

DHMT	District Health Management Team
DHIMS	District Health Information Management System
DHS	Demographic and Health Survey
DOCFR	Direct Obstetric Case Fatality Rate
DPs	Development Partners
DRGs	Diagnostic Related Groups
DPT	Diphtheria Pertussis Tetanus
EIB	Early Infant Diagnosis
EMONC	Emergency Obstetric and Newborn Care
EN	Enrolled Nurse
ENT	Ear Nose and Throat
EPI	Expanded Programme on Immunization
ER	Eastern Region
ERH	External Resources for Health
ERP	Economic Recovery Program
EVM	Effective Vaccine Management
FDA	Food and Drug Authority
FFS	Fee for- service
FHD	Family Health Division
GAR	Greater Accra Region
GDHS	Ghana Demographic and Health Survey
GDP	Gross Domestic Product
GFR	General Fertility Rate
GHC	Ghana Cedis
GHS	Ghana Health Service
GHSA	Global Health Security Agenda
GGHE	General Government Health Expenditure
GNI	Gross National Income
GoG	Government of Ghana
GSGDA	Ghana Shared Growth and Development Agenda
HDI	Human Development Index
HIB	Haemophilus Influenza Type B
HIMS	Health Information Management System
HIV	Human Immuno-deficiency Virus

HO	Medical House Officer
HRH	Human Resources for Health
HSMTDP	Health Sector Medium Term Development Plan
HTC	HIV Testing and Counselling
HW	Health Worker
IALC	Inter-Agency Leadership Committee
IGF	Internally Generated Fund
IMCI	Integrated Management of Childhood Illness
IMF	International Monetary Fund
IMNCI	Integrated Management of Neonatal and Childhood Illness
IMR	Infant Mortality Rate
IMMR	Institutional Maternal Mortality Rate
IPPD	Integrated Personnel Payroll Data
ITNs	Insecticide Treated Nets
LF	Lymphatic Filariasis
LLINs	Long Lasting Insecticide-treated Nets
LMIC	Low Middle Income Countries
LSD	Laboratory Services Department
MAF	Millennium Development Goals (MDG) Acceleration Framework
MCV	Measles Containing Vaccine
MDA	Mass Drug Administration
MDAs	Ministries, Department and Agencies
MDBs	Multilateral Development Banks
MDC	Medical and Dental Council
MDGs	Millennium Development Goals
MHA	Mental Health Act
MHO	Mutual Health Organizations
MICS	Multiple Indicator Cluster Survey
MMDAs	Metropolitan, Municipal and District Assemblies
MMR	Maternal Mortality Rate
MO	Medical Officer
MoH	Ministry of Health
MTEF	Medium-Term Expenditure Framework
MW	Midwife

NACP	National AIDS/STIs Control Programme
NCDs	Neglected Tropical Diseases
NDPC	National Development Planning Commission
NGO	Non-governmental Organisation
NHIA	National Health Insurance Authority
NHIF	National Health Insurance Fund
NHIL	National Health Insurance Levy
NHIML	National Health Insurance Medicine List
NHIS	National Health Insurance Scheme
NMC	Nursing and Midwifery Council
NMCP	National Malaria Control Program
NMR	Neonatal Mortality Rate
NR	Northern Region
NRCD	National Redemption Council Decree
ODA	Official Development Assistance
OOP	Out-of Pocket Expenditure
OPD	Outpatients Department
OPG	Operational Policy Guidelines
PAB	Protected At Birth
PC	Pharmacy Council
PHEIC	Public Health Events of International Concern
PIN	Professional Identification Number
PMI	Presidents Malaria Initiative
PMTCT	Prevention of Mother to Child Transmission
PN	Professional Nurse
POW	Programme of Work
PPP	Public-private-partnership
PPME	Policy Planning Monitoring and Evaluation
PrivHE	Private Health Expenditure
PU	Procurement Unit
PubHE	Public Health Expenditure
QAMSA	Quality of Antimalarial Medicines in Sub-Saharan Africa

RDT	Rapid Diagnostic Test
RHA	Regional Health Administration
SAFE	Surgery Antibiotics Facial washing and Environment
SAP	Structural Adjustment Program
SDGs	Sustainable Development Goals
SP	Sulphadoxine Pyrimethamine
SPP	Sulfamethoxypyrazine/pyrimethamine
SSA	Sub-Saharan Africa
SSDM	Stores Supplies and Drug Management
SSNIT	Social Security and National Insurance Trust
STH	Soil-transmitted Helminths
TAS	Transmission Assessment Survey
TFR	Total Fertility Rate
THE	Total Health Expenditure
RTAs	Road Traffic Accidents
UER	Upper East Region
UNDP	United Nations Development Program
USG	United States Government
USAID	United States Agency for International Development
UNICEF	United Nations Children Fund
USP	United States Pharmacopoeia Convention
UWR	Upper West Region
U5MR	Under-five Mortality Rate
VAT	Value Added Tax
VR	Volta Region
WHO	World Health Organization
WICRs	Walk-in-cold rooms
WISN	Workload Indicator of Staffing Needs
WR	Western Region



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# Executive Summary

This book provides findings of a comprehensive review of the state of Ghana's health using the World Health Organization's six building blocks of the health system comprising service delivery, health financing, health workforce, medical supplies/equipment (including health commodities and vaccines), management information system, and leadership/ governance. The book assesses the current situation, the main challenges in the health system, future outlook, and then proposes recommendations for action.

Overall, Ghana's health system is performing relatively well. Given that progress towards expanding physical infrastructure (i.e. number of health facilities) as well as bringing health care closer to communities, on the whole, has been remarkable in Ghana. The number of functional Community-based Health Planning and Services zones (according to GHS criteria) has been dramatically expanded from 190 in 2005 to 2,948 in 2014. These structure improvements have influenced health indicators. For example, maternal mortality reduced from 634 per 100,000 live births in 1990 to 319 per 100,000 live births in 2015. The infant mortality rate has declined from 77 per 1,000 live births in 1988 to 41 per 1000 live births in 2014, while under-5 mortality rate decreased from 155 per 1,000 live births in 1988 to 60 per 1000 live births in 2014. Under-five mortality rate has decreased from 155 per 1,000 live births in 1988 to 60 per 1000 live births in 2014. NMR has decreased from 8.8 per 1000 live births in 2010 to 4.3 per 1000 live births in 2014. Under five case fatality ratio for malaria in 2014 is 0.51% which is a decrease from 0.6% in 2013. National TB prevalence rate of 290 per 100,000 population with successful cure rate of above 85%. Malaria Case Fatality Rate also showed a downward trend from 1.32% in 2010 to 0.54% in 2014. HIV prevalence declined from 1.8% in 2007 to 1.37% in 2012 and thereafter 1.3% in 2014.

Despite this progress, there are challenges that need to be addressed. For instance, periodic outbreaks of communicable disease still persist. The outbreak of cholera in 2014 which infected over 28,975 individuals resulted in 243 deaths. This epidemic identified persisting challenges related sanitation practices. The 2015/2016 outbreak of pneumococcal meningitis in nine of the ten regions in Ghana also resulted in the death of 91 out of 543 cases. This also highlights the health system's limited capacity to respond to health emergencies. Increasing non-communicable diseases (NCD) prevalence also demands revised strategies.

Ghana has also made progress in reproductive health services. Minimum frequency of antenatal care attendance (ANC 4+) was 76.1% in 2014, an increase from 74.3% in 2010. Skilled delivery increased from 44.6% in 2010 to 56.7% in 2014. About 70 women receive postnatal care within 24 hours of delivery, 81 percent within the first two days and 4% between the third and fortieth day after delivery. Twenty-seven percent of currently married women use contraception while 22% used a modern method in 2014. The total fertility rate for Ghana is 4.2 children per woman. Overall, 98% of children are still being breastfed at age 9-11 months and 50 percent at age 20-23 months. Although 99% of children under age 6 months are being breastfed, only about half (52 percent) are exclusively breastfed.

In terms of financing, the transition of Ghana from low-income to lower-middle-income status in 2010 contributed to the decline of critical donor funds, from GHC624, 060 in 2012 to GHC194, 460 in 2013. In nominal terms, internally generated Funds (IGF) increased from GHC 108,000 in 2009 to GHC 1,831,400 in 2013. IGF constitutes about 35% revenue for sub-district and district health facilities and 25% for regional hospitals in 2013. GOG transfers to the sector has increased over the decade from GHC334, 400 in 2009 to GHC 508,980 in 2013. However, majority of funding is used for employee compensation. The distribution of health Sector expenditure is as follows; employee compensation (55%), goods and services (32%) and assets (13%).

Between 2001 and 2013, government spending as a percentage of GDP rose steadily from 1.5% to about 3.3% while private spending remained stable around 1.6% over the same period. Government spending as percentage of GDP is below the threshold of 15% with respect to the Abuja Declaration of 2000. The total health expenditure per capita was \$84.53 in 2013 but declined to \$57.89 in 2014.

The National Health Insurance Scheme (NHIS) operation has resulted in increased utilization of health care services. The scheme processes about 19 million claims annually, of which 60% are Outpatients and 40% are inpatient claims. This has led to increased spending on claims payment to service providers from GHC 397.77 million in 2010 to GHC 785.64 million in 2013. Thus, more than 75% of the scheme's inflows were spent on claims payment. At the end of 2014, over 30, 0000

insured clients utilized services at the various accredited facilities in the country but enrolment into the scheme remains below 40% of the total population since the NHIS commenced implementation 11 years ago. There is therefore the need for innovative strategies to improve enrolment especially among poor. Given Ghana's lower middle-income status, donor funds will continue to decline, hence alternative sources of funding for health care should be identified and employed.

Over the past 15 years, the health workforce (all cadres of health workers) in Ghana has increased dramatically from 28,662 in 1999, to 94,696 in 2015. The doctor/population ratio has improved from 1:10,431 in 2012 to 1:8,840 people in 2015. However, rural-urban and regional disparities exist with more health workers working in urban areas. There is, therefore, the need for the Ministry of Health and Ghana Health Service to devise a distributional mechanism to ensure that health workers are fairly distributed across all the regions. Migration of health workers, especially doctors and nurses from Ghana has slowed in recent years.

Availability of medicines, vaccines, medical supplies and products has also received a boost. The median percentage availability of selected generic medicines in a sample of private health facilities increased from 18 % (2001-2008) to 44.6 % (2001-2009). On the contrary, the median percentage availability of selected generic medicines in a sample of public health facilities decreased from 45% (2001-2008) to 17.9 % (2001-2009). In 2014, a total of 1,373,800 pupils attending classes two and six in more than 14,000 primary schools received insecticide treated bednets and information on ITN use. In addition, over 1.1 million ITNs were distributed through ANC clinics and CWCs to reduce the burden of malaria which consistently emerges as the highest condition reporting at OPDs in Ghana. Availability of Artemisinin-based Combination Therapy (ACTs) for malaria treatment in Ghana increased from 31% in 2009 to 83% in 2011 and beyond. The availability of ACTs in public health facilities was 80.7% while that of private health sector was 82.6% in 2011. However, concerns are raised about the influx of unregistered products (approximately 5%) in the pharmaceutical market in Ghana. The extent of counterfeit medicines present on the Ghana pharmaceutical market is hard to estimate as no local market surveillance studies on this issue have been performed. There is, therefore, the need to regularly conduct routine pharmacovigilance studies to estimate level of unregistered product. Stringent measures are required to regulate the influx of counterfeit and unregistered medical products and devices.

The adoption of the District Health Information Management System (DHIMS II) has improved information for decision making across all levels of health care delivery. The proportion of facilities reporting to the DHIMs was as low as 27% in 2012 and increase sharply to 70% in 2014. The timeliness of reporting is now high across the country (83%; range 54-83%). This notwithstanding, the failure of the data system to capture data from private health facilities and all six building blocks makes it

difficult to have holistic data on certain health indicators in Ghana. If DHIMS will have to be the main tool for making decisions, its database must reflect all the six building blocks in the health system.

The 2014 human development report shows that Ghana is making improvement in human development index (HDI) with an average annual growth rate of 1.26% between 2000 and 2013. The HDI increased from 0.487 in 2000 to 0.573 in 2013 as compared to Sub Sahara African (SSA) regional average of 0.389. The country ranks 130 out of 169 countries and is placed among Medium Human Development countries. The correlation between Gross Domestic Products (GDP) and neonatal mortality and under-five mortality were negative 0.45 and 0.50 respectively. This means lower rate of neonatal and under-5 mortality is related to improved health and development. On the other hand there was a weak positive correlation between immunization against DPT and GDP (0.29), and measles (0.31). The positive correlations are indicative of economic development with increase immunization coverage. A strong correlation between GDP and improved sanitation in both rural (0.53) and urban (0.52) areas. The correlation between GDP and improved access to portable water in both rural and urban areas were positive 0.5 and 0.5 respectively. It was generally observed that life expectancy soars alongside increasing trends in GDP growth averaging 3.9% per annum over the last 15 years. In addition a general increase in standard of living and alongside declining poverty trend (from 28.8 to 24.2) and malnutrition and other social and environmental health and development indicators were observed.

In conclusion, Ghana has made major progress in all sectors of the health system. However, the managers of nation's health system have a huge responsibility and they face the unenviable challenge of improving the performance of the health system across the six building blocks and ensuring there is no risk of future deterioration in health indicators to meet the Sustainable Development Goals (SDGs). Fundamental to achieving the SDGs is the recognition of the interdependence between economic growth, poverty and health. This therefore calls for integrated multi-sectoral approach which should emphasize the global agenda of health-in-all policies. Otherwise Ghana stand the risk of lamenting on another unfinished business and a carry forward into any development goals that may come after 2030.

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# CHAPTER 1

## Overview

A healthy nation is a wealthy nation. In view of this, considerable attention has been paid to health evidence from global policies and treaties. The Alma Alta declaration on primary health care was aimed at making health care available and accessible using culturally appropriate strategies. Decades after this declaration, the world is still burdened with both communicable and non-communicable diseases, with periodic outbreaks of infectious diseases that lead to catastrophic outcomes.

Globally, the number of deaths due to infectious diseases, including parasitic diseases and respiratory infections decreased from 12.1 million in 2000 to 9.5 million in 2012. The percentage of all deaths due to infectious diseases also decreased from 23% to 17%. However, communicable diseases continue to dominate in developing countries, despite the upsurge of non-communicable diseases in recent times. In the African, South-East Asia and Eastern Mediterranean Regions, communicable diseases are still a leading cause of death accounting for 81% of all deaths and 89% of all years of life lost (YLL) in the world.

Major progress has been made globally in the coverage of health interventions to reduce the burden of infectious diseases. In 2014, 14.9 million people living with HIV were receiving antiretroviral therapy (ART) and an estimated 68% of children under five years were sleeping under an insecticide treated bednets (ITN) in 2015 in sub-Saharan Africa (WHO, 2015). Tuberculosis case detection also increased from 38% to 63% whilst treatment success rate has been 85% and higher in some countries including Ghana.

The emergence of new outbreak of infectious diseases remain an issue of global concern. Outbreak of severe acute respiratory syndrome (SARS in 2003), Hemagglutinin 1 Neurominidase 1 (H1N1 A in 2009), cholera (2010-2011 in many countries) and most recently Ebola in 2014-2015 have received global attention. These outbreaks which were largely attributed to weak health system and slow emergency response systems highlight the need for countries to build a robust system that can respond to health emergencies.



As the economies of these developing countries grow, non-communicable diseases are becoming more prevalent. This is largely due to the adoption of “western” lifestyles and their accompanying risk factors - smoking, high-fat diet, obesity and lack of exercise. It has been projected that 75% of deaths in sub-Saharan Africa will be attributable to non-communicable diseases by the year 2020 with higher mortality in urban than in rural areas. In developed countries, non-communicable diseases remain dominant. Heart disease and stroke have declined as causes of death in recent decades, while death rates from some cancers have risen.

In September 2015, world Leaders of 293 countries assembled in New York to sign on to the 17 Sustainable Development Goals (SDGs), which have 169 targets; the new development milestones to be achieved by the year 2030. These goals are meant to address the several environmental, political economic and health challenges facing the world. These goals also recognise the interconnectedness of the various sectors to produce a healthy society. Much focus is therefore given to intersectoral collaboration and action and evidenced-based decision-making. Goal 3 specifically recognises the burden of communicable and non-communicable diseases. Hence, member countries are expected to develop appropriate strategy to strengthen the health system to prevent, detect and manage both communicable and non-communicable disease conditions.

The WHO defines a health system as “all the organizations, institutions, resources and people whose primary purpose is to improve health” (WHO, 2000). In the year 2007, the WHO identified six building blocks that are deemed relevant in strengthening the health system. These building blocks include: service delivery, health financing, health workforce, medical supplies/equipment (health commodities, vaccines and technology), information system and leadership/governance. These building blocks have been adopted in presenting the chapters in this book with a final chapter that examines the relationship between health and development.

Chapter two of the book discusses service delivery and health outcome in Ghana. Service delivery can be viewed as an output of the health system which requires inputs such as the health workforce, procurement and supplies, and financing. The chapter gives an overview of how health services are organized in Ghana and the impact of those services on morbidity and mortality indicators. The chapter also provides descriptions of Ghana’s performance on special global programmes such as immunization, HIV, TB, nutrition, emergency obstetric and newborn care and blood transfusion services.

Chapter three of this book is devoted to the health financing building block. Health financing is concerned with mobilizing and allocating financial resources to enable services to be delivered. This chapter discusses how health interventions are funded and how individuals pay for the health care they seek. The chapter further provides a historical antecedent of some major development and reforms in health financing in Ghana, detailing analysis of the structure of health financing and how Ghana is faring regarding the achievement of global declarations (e.g. Abuja declaration) on health financing. The chapter concludes by providing an analysis on how to meet funding gaps for health in Ghana.



At the heart of good health systems is well trained and dedicated human resource with skill mix to provide the high quality services required by the population, and this is covered in chapter four of this book. Human resource is often measured as an indicator of the number of qualified health workers per population. This is done by assessing the number of health care personnel (physicians, nurses and midwives) that are employed full-time in a given year in public and private health establishments expressed as the density per 10,000 population. The national and regional distribution of health workers is presented in this chapter. Furthermore, the chapter provides information on how various cadre of health workers are trained, regulated, hired, receive promotion and retirement. It further provides information on attrition and staffing norms in Ghana.

In the next chapter (five), the authors describe the system of delivering medical supplies and commodities to ensure effective health care. Logistics and supplies entails a system of ensuring that the right products and commodities are delivered at the right time, right place and in right quantities. In this chapter, the authors provide a detailed description of medical supplies, products and vaccines along the logistic management cycle, including storage management, good inventory management and stock control, distribution of appropriate stock from the health facility storeroom, good dispensing practices, rational prescription and use of medicines, disposal of expired, damaged, or obsolete items and training and performance improvement. The authors further provide a link between the various elements of medical commodities and supply management system for some priority diseases in Ghana.

Chapter six of this book provides the state of Ghana's health regarding the use of health information for decision making. Health information provides the information support to the decision-making process at all levels of the health system. It provides an overview of structures in place to collect health related data at the community, health facility and onwards transmission of this data to national level.

In chapter seven of this book, the authors examined the pivotal role of leadership and governance in the health system of Ghana. In this chapter, the authors describe the structures and processes through which policies, both formal and informal are developed to achieve health-related goals, including legislation, regulation of implementation of policies and oversight. The authors also provides information on leadership and governance issues in the context of disease specific interventions and a detailed review of the implementation of specific policies in achieving their goals.

The final chapter of this book presents a cross cutting health issue on linkage between health and development. The author uses a theoretical framework to marry these two important constructs; health and development. The author further provides a longitudinal data to support the link between life expectancy and gross domestic product of a country and correlation between health and development indicators.

This book "State of the Nation's Health" is the first of its kind in Ghana and presents a holistic review of the health situation of the country and the outlook in future given the present status quo. Embedded in each chapter are innovative recommendations on ways

to improve the health system to deliver quality health care for residents in Ghana and beyond. It was developed by a team of academics and practitioners from the University of Ghana, Ghana Health Service and Ministry of Health and their agencies. It is the vision of the authors that this collaboration will narrow the gap between academia and policy makers and help in the translation of research findings to practice.

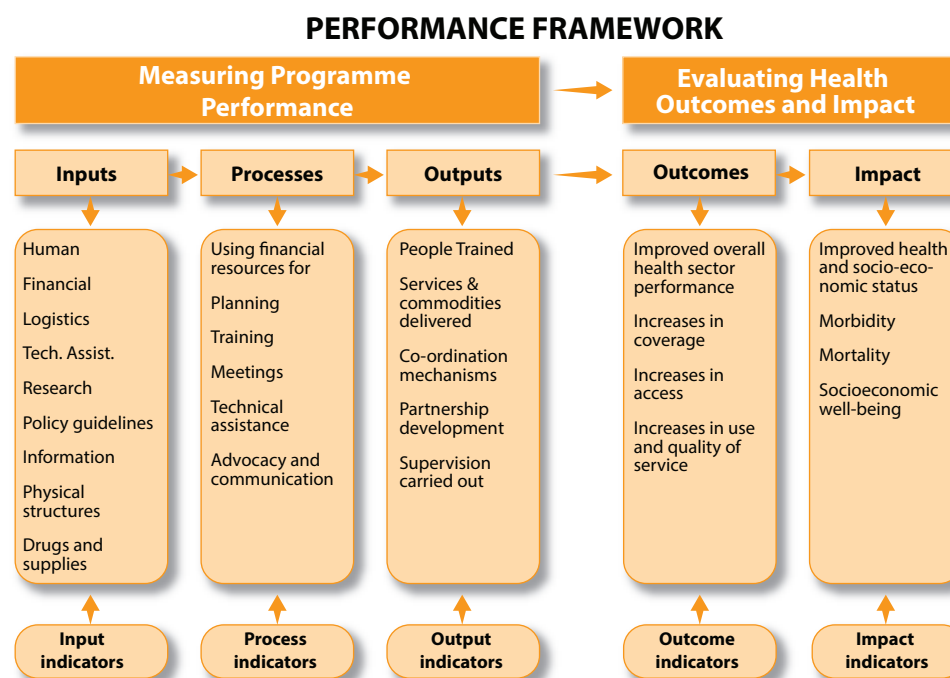
# CHAPTER 2

## Health Service Delivery and Outcome

### 2.1 Introduction

Service provision or delivery is the act of providing services to clients in the health system. It is an immediate output of the various inputs in health delivery. These inputs into the health system are health workforce, procurement and supplies, and financing. The performance framework assumes that increased inputs will lead to improved service delivery and enhanced access to services and ultimately to improved health outcomes and impact (Figure 1). This has become necessary because of mounting pressure on health systems all over the world to deliver services equitably and efficiently since these attributes are critical for achieving improved health status. Decision-makers therefore have to accurately track health progress and performance, evaluate impact of interventions and investments, and ensure accountability at country and global levels. Information is therefore needed to track progress particularly on how the health system respond to increased inputs, and improved processes result in improved health status. The objective of this chapter is to provide information on the status of current health indicators (as well as past trends, as applicable) which are key characteristics of good service delivery in the Ghanaian health system.





**Figure 1: Performance Framework for improved service delivery**

[Source: PPME GHS]

## 2.2 Organisation of Health Service Delivery

Public and private health facilities provide health care in Ghana. The public health care services are mainly those facilities under Ghana Health Service, Teaching hospitals and those established by quasi-government institutions such as the police service, military and public universities. The private sector is made up of faith-based, private-for-profit, private-not-for-profit health institutions and the traditional health system. Health service in the public sector are organized in a three-tier health delivery system of primary, secondary and tertiary levels. The primary level include health facilities located at the district, sub-district and community. At the district level is a hospital which serves as the main referral facility for the health centres and clinics located at the sub-district level. A typical district with a population of 100,000 may have one hospital, 5 health centres and 10-15 Community-based Health Planning and Services (CHPS) zones.

At the regional level is the regional hospital, which is the referral level for secondary care and run by general practitioners and specialists. There are ten regional hospitals receiving referrals from districts and providing outreach support to districts in Ghana. Komfo Anokye Teaching Hospital, Korle-Bu Teaching Hospital, Cape Coast Teaching Hospital and Tamale Teaching Hospital are the current teaching hospitals providing tertiary care and training of doctors. The health sector has adopted an integrated approach to delivery of health services covering preventive and promotive services, clinical care and emergency services. As of 2013, over 75% of all health facilities belonged to the government followed by private

institutions (19%) and Christian Health Association of Ghana (CHAG) institutions (4.27%) [Table 1].

**Table 1:** Ownership of health facilities by organizational unit, Ghana. DHIMS2 2013

Organisation unit	CHAG	Government	NGO	Other faith-based	Private	Quasi-Government	Total
Ashanti	56	423	1	0	273	7	760
Brong Ahafo	26	511	1	0	88	4	630
Central	16	391	1	2	65	11	486
Eastern	25	771	0	0	83	4	883
Greater Accra	6	255	0	1	332	20	614
Northern	30	403	3	0	26	2	464
Upper East	17	357	0	0	17	1	392
Upper West	17	270	0	2	7	0	296
Volta	19	358	1	0	46	1	425
Western	24	427	4	0	111	13	579
Ghana	236	4167	11	5	1048	63	5530
% of total	4.27	75.35	0.20	0.09	18.95	1.14	100.00

The primary, secondary and tertiary health facilities provide different services and also form the hierarchy of referral system in health service delivery in Ghana (Table 2). It is worth noting that these services listed on table 2 are not exhaustive and there is variability in service provision at some of the lower facilities, despite the goal that all ought to be able to provide basic medical and surgical emergency health care of all forms.

**Table 2:** Service Provided by Primary Secondary and Tertiary Health Facilities in Ghana

Sub-district	District	Regional (Secondary)	Teaching Hospital (Tertiary)
Immunization	General medicine	Internal medicine	Comprehensive obstetric care
Child welfare	Basic surgeries	General surgery	Specialised surgeries
Antenatal	EMONC	Obstetrics and Gynaecology	Cancer care
Basic laboratory Services	Laboratory services	Dental services	Genito-urinary care
Medical service	ARTS Services	ENT Services	Plastic and reconstructive surgeries
	Eyes Services	Diabetic care	Dermatological services
	X-ray	ART Services	Neurology/neurosurgery
		Specialized eye care	ART Services
		X-ray	ENT Services
		Diet Therapy	Specialised eye care
		Physiotherapy	Training of specialised Doctors
			Diagnostic & Therapeutic Radiology
			Diet therapy
			Physiotherapy
			Training of all category Medical doctors and Specialists

Source: GHS

The performance of the health system is often measured using indicators at various levels of service delivery including the impact of health interventions in reducing mortality. Some of the impact indicators include Life Expectancy<sup>1</sup>, Maternal Mortality Rate (MMR)<sup>2</sup>, Under-5 Mortality Rate (U5MR)<sup>3</sup>, Infant Mortality Rate (IMR)<sup>4</sup>, Neonatal Mortality Rate (NMR)<sup>5</sup>, as well as burden of specific diseases.

Table 3 shows the trend of life expectancy at birth in Ghana from 1980 to 2013. There has been a gradual increase from 52.3 in 1980 to 61.1 as at 2013, an increase of 16.8 percent. According to the World Health Organization (WHO), the life expectancy of Ghanaians in 2016 is 62.5 years. The increase in life expectancy over the years is due to reductions in fertility, infant and maternal mortality, improved nutrition, reduction in infectious and parasitic diseases, as well as improvement in health care, education, and income.

**Table 3:** Trend of Life Expectancy at birth, Ghana, 1980-2013

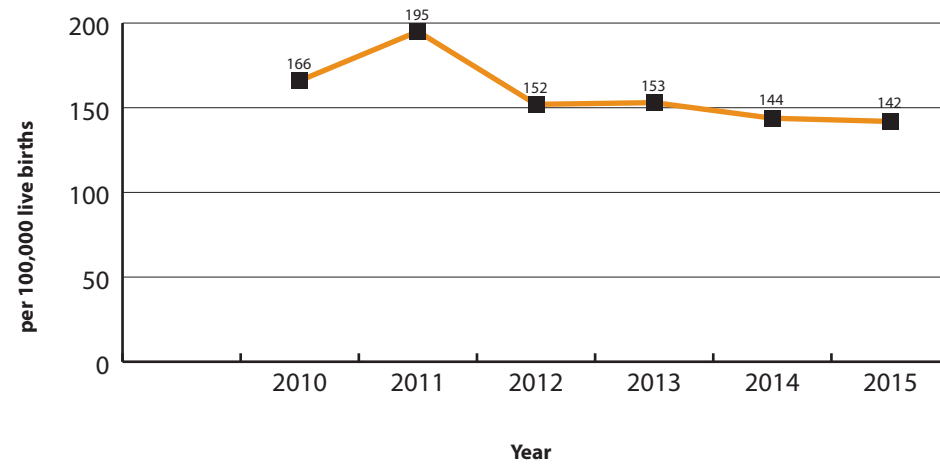
Year	Life expectancy at birth in years
1980	52.3
1985	54.1
1990	56.8
1995	57.5
2000	57.0
2005	58.7
2010	60.6
2011	60.8
2012	61.0
2013	61.1

Source: UNDP Human Development Report, Ghana 2014

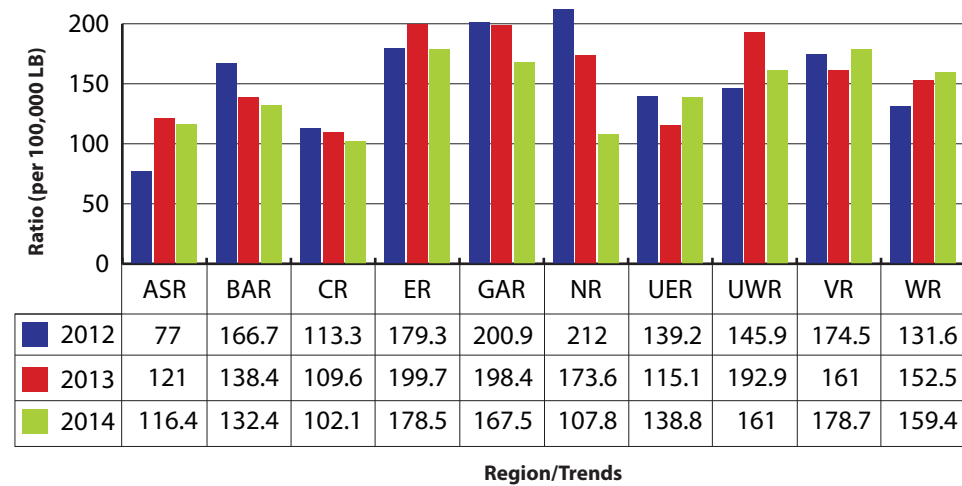
Between 1990 and 2005, maternal mortality rate (by survey) reduced from 740 per 100,000 live births to 503 per 100,000 live births, and then to 451 per 100,000 live births in 2008. Estimates from the World Health Organization state that maternal mortality in Ghana reduced from 634 per 100,000 live births in 1990 to 319 per 100,000 live births in 2015. Maternity deaths recorded in health facilities (Institutional Maternal Mortality Rate, IMMR)<sup>6</sup>

- 1 **Life expectancy at birth:** Average number of years that a newborn is expected to live if current mortality rates continue to apply
- 2 **Maternal Mortality Rate:** is the annual number of female deaths per 100,000 live births from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes).
- 3 **Under five mortality rate:** is the probability (expressed as a rate per 1,000 live births) of a child born in a specified year dying before reaching the age of five if subject to current age-specific mortality rates
- 4 **Infant Mortality Rate (IMR):** Number of infants dying between birth and exactly age 1, expressed per 1,000 live births in a given period.
- 5 **Neonatal Mortality Rate:** Number of deaths during the first 28 completed days of life per 1 000 live births in a given year or period
- 6 **Institutional Maternal Mortality Rate:** is the annual number of female deaths that occur in health facilities in Ghana per 100,000 live births from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes).

has fluctuated over the years but decreased from 166 per 100,000 live births in 2010 to 143.8 live births in 2014. IMMR in 2015 was 141.9/100,000 live births (Figure 2). With the exception of Western, Volta and Upper East regions, all other regions have shown some reduction of IMMR from 2013 to 2014 (Figure 3).



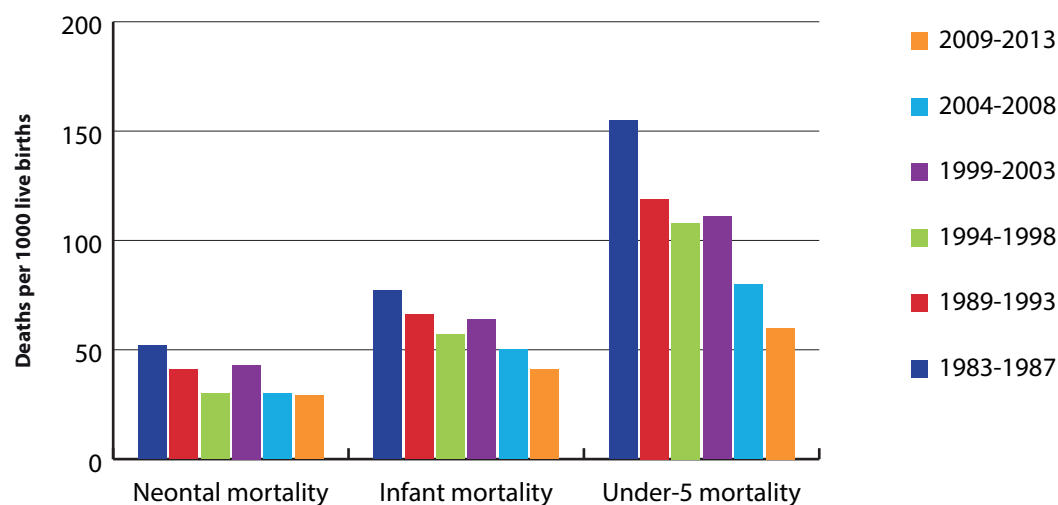
**Figure 2: Trend of Institutional Maternal Mortality Ratio 2010 -2015 [draft GHS Annual report 2015]**



**Figure 3: Trend in Institutional Maternal Mortality Ratio by Region 2010-2014 [GHS Annual Report 2015]**

## 2.3 Early Childhood Mortality

The infant mortality rate has declined from 77 per 1,000 live births in 1988 to 41 per 1000 live births in 2014. Similarly, the under-5 mortality rate has decreased from 155 per 1,000 live births in 1988 to 60 per 1000 live births in 2014. Neonatal mortality rate has also decreased from 52 per 1000 live births to 29 per 1000 live births over the same period [Figure 4].



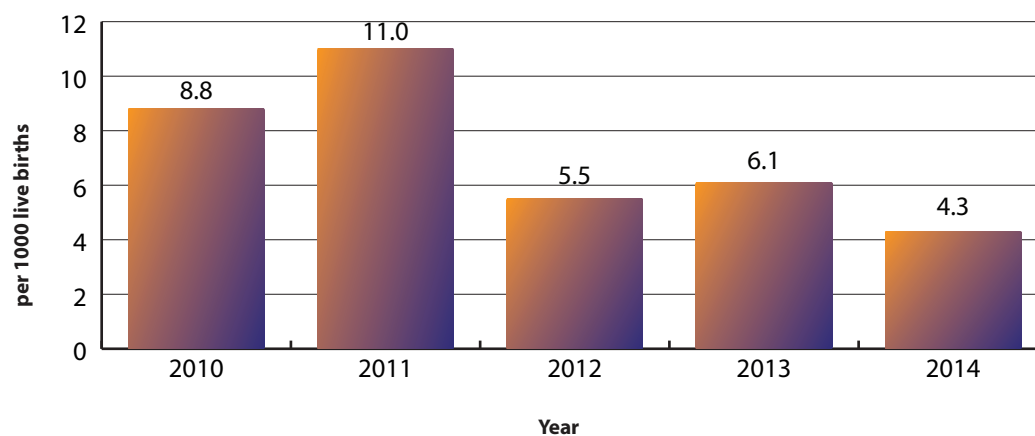
**Figure 4: Trends in Early Childhood Mortality Rates, Ghana, DHS 1988-2014**

### 2.3.1 Stillbirth Rate<sup>7</sup>

The national stillbirth rate (based on health facility data) was 1.8% for 2014 with the highest in Northern Region (NR) (2.1%) and the lowest in Eastern Region (ER) (0.6%). There has been minimal change over years from 2% in 2010 to 1.8% in 2014.

### 2.3.2 Neonatal Mortality Rate (NMR)<sup>8</sup>

NMR has decreased from 8.8 per 1000 live births in 2010 to 4.3 per 1000 live births in 2014 [Figure 5].



**Figure 5: Trend in Institutional Neonatal Mortality Rate FHD-GHS 2010-2014**

- <sup>7</sup> **Stillbirth:** Baby born with no signs of life at or after 28 weeks' gestation.
- <sup>8</sup> **Neonatal Mortality Rate:** Number of deaths during the first 28 completed days of life per 1 000 live births in a given year or period.

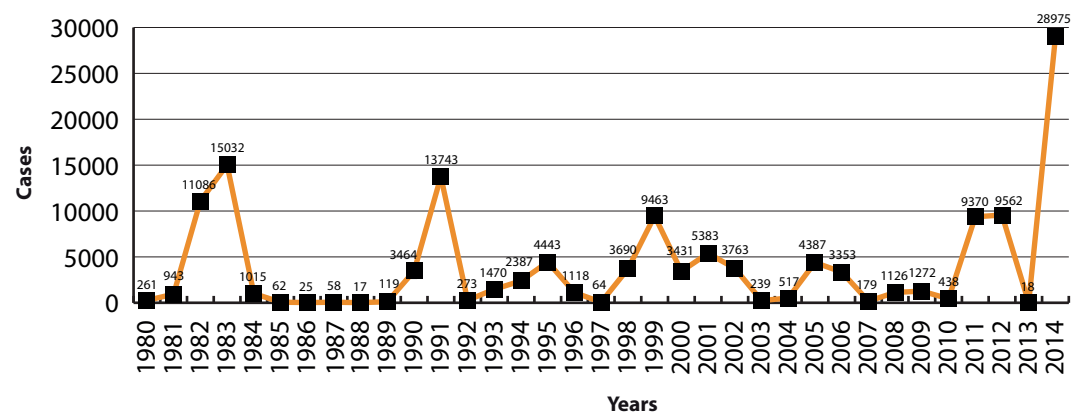


## 2.4 Status of Priority Disease Conditions

These diseases have been prioritized based on their endemicity, prevalence, number of outpatients visits in various health facility with that condition, periodic outbreaks of the disease and fatality in Ghana.

### 2.4.1 Cholera

The first outbreak of cholera in Ghana occurred in 1980. Following this, Ghana continue to record annual cases of cholera with the highest number of cases recorded in 1983 where over 15,000 people were infected with the disease. Another outbreak occurred in 1991 with almost 14,000 cases and since then the disease has been endemic in the country with periodic epidemics (Figure 6).



**Figure 6: Annual Trend of Cholera cases, Ghana, 1980-2014, Annual Report GHS, 2015**

The last cholera epidemic recorded over 28,975 cases in 2014 with 243 deaths with cases reported in 130 out of 216 districts (60%) in the 10 regions of Ghana. Greater Accra recorded the highest number of cases followed by Central region with the lowest number of cases reported in the Upper West and Northern regions. The overall Case Fatality Rate (CFR) nationally was 0.84% (Table 5).

**Table 5: Reported Cholera Cases and Deaths, Ghana 2014**

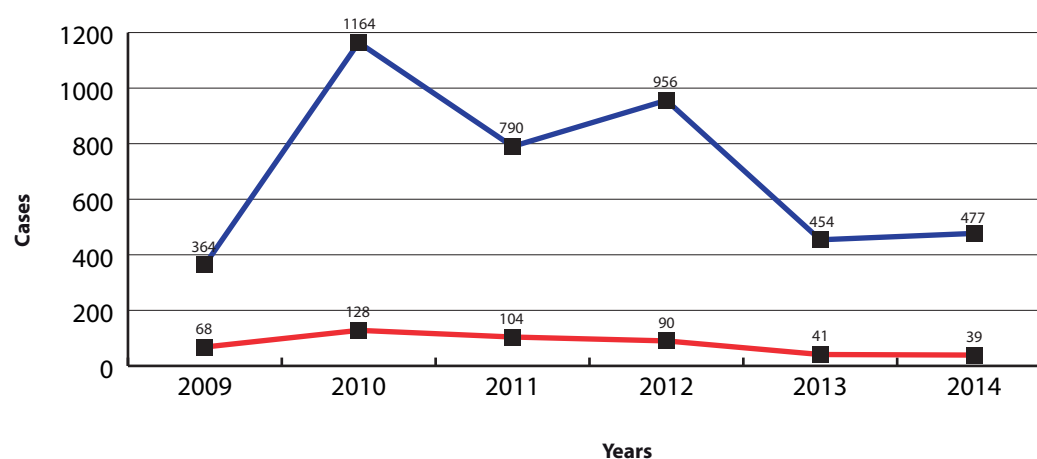
Region	Cases	Deaths	CFR (%)	No. of Districts reporting
Ashanti	287	3	1.05	27
Brong-Ahafo	1056	26	2.46	16
Central	3846	60	1.56	16
Eastern	1875	6	0.32	19
Greater Accra	20219	121	0.60	16
Northern	282	2	0.71	5
Upper East	294	9	3.06	10

Region	Cases	Deaths	CFR (%)	No. of Districts reporting
Upper West	36	1	2.78	3
Volta	651	8	1.23	7
Western	429	7	1.63	11
Total (Ghana)	28,975	243	0.84	130

Source: Annual Report GHS 2015

## 2.4.2 Cerebrospinal Meningitis

Cerebrospinal Meningitis (CSM) is also endemic in Ghana and yearly epidemics have occurred especially in the northern savannah belt of the country. Since 1980, about 400-1500 cases have been reported each year with a major epidemic in 1997 which affected over 19,000 people (Figure 7). With the introduction of a new vaccine for CSM, it appears the disease incidence has reduced considerably but it remains a potential threat, especially in northern parts of the country.



**Figure 7: Annual Trend of Meningitis Cases and Death, Ghana 2009 - 2014**

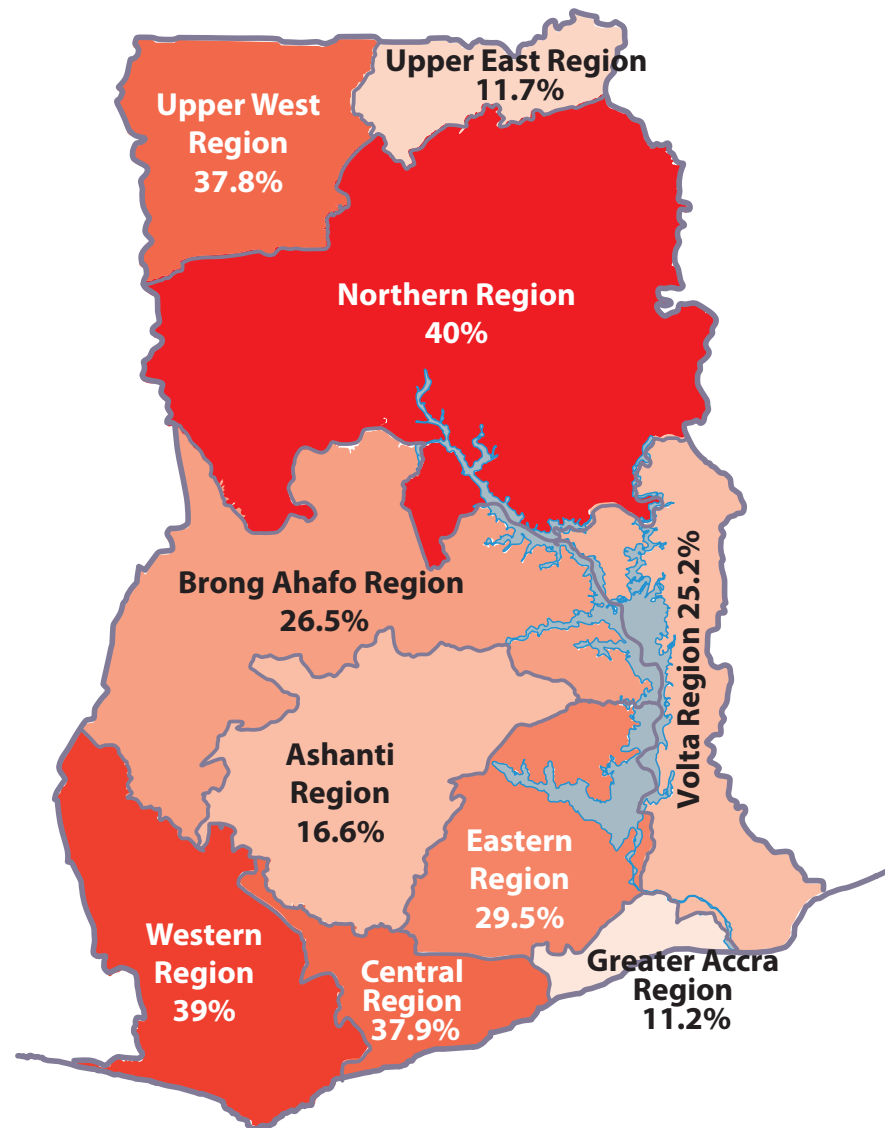
In the last quarter of 2015 to early 2016, there was an outbreak of pneumococcal meningitis in nine of the ten regions in Ghana. In all 543 cases were recorded with 91 deaths leading to a case fatality rate<sup>9</sup> of 16.7 percent (Table 6). Only the Central Region did not record any cases.

<sup>9</sup> **Case Fatality Rate:** The proportion of people who die from a specified disease among all individuals diagnosed with the disease over a certain period of time.

**Table 6:** Distribution of 2015/2016 Pneumococcal Meningitis Outbreak in Ghana

Region	Number of Cases	Number of Deaths	Case Fatality Rate (%)
Brong Ahafo	359	52	14.5
Northern	62	15	24.2
Upper East	47	2	4.2
Upper West	44	9	20.4
Ashanti	18	8	44.4
Volta	7	1	14.3
Eastern	4	3	75.0
Western	2	1	50.0
National	543	91	16.7

### 2.4.3 Malaria



**Figure 8:** Survey Results DHS 2014: Prevalence of Malaria in Children 6-59months

The 2014 Ghana Demographic and Health Survey showed that Northern region has the highest prevalence of malaria of 40% followed by Western region (39%) with Greater Accra region having the lowest prevalence of 11.2% among children 6-59 months (Figure 8). Table 7 provides information on key malaria indicators for 2014. The overall malaria prevalence rate was 26.7% in 2014 with under 5 case fatality ratio of 0.51% which is a decrease from 0.6% in 2013.

**Table 7:** Malaria indicators, 2014. [Source: Annual Report, GHS 2015]

INDICATOR	VALUE IN 2014
Parasitemia prevalence: among those aged 6–59 months with malaria infection (by microscopy)	26.7%
Under five Case fatality rate	0.51%
All-cause under 5 mortality rate	60/1000 live birth
Confirmed malaria cases (microscopy and RDT) per 1000 population	138
Percentage of pregnant women on intermittent preventive treatment (at least two doses of SP)	67.5%
Percentage of households with at least one insecticide treated nets (LLINs)	68.3%
Percentage of children under 5 years old who slept under an insecticide-treated net the previous night	58.8%
Percentage of pregnant women who slept under an insecticide-treated net the previous night	54.6%
Percentage of structures in targeted districts sprayed by indoor residual spraying in the last 12 months	90.5%
Percentage of reported uncomplicated malaria cases (both suspected and confirmed) treated with ACT at health facilities	74.3%

#### 2.4.4 National Tuberculosis Control Programme

The national tuberculosis (TB) prevalence survey was completed in 2014. The results of the survey revealed a national prevalence rate of 290 per 100,000 population (Bonsu et al., 2014). Detailed analysis also revealed a bacteriological prevalence of 356 per 100,000 population and smear positive rate of 105 per 100,000 population. The proportion of childhood TB cases is expected to be 10% of reported cases.

Ghana has also made progress in the proportion of TB patients completing TB treatment and declared cured (successful treatment outcome) and those who cannot be traced for a period of two months or more after initiation of treatment (Lost to Follow Up<sup>10</sup>). Trend of successful treatment outcomes has progressed upwards annually and currently at 86.5% which is above the WHO recommended global target of 85%. The Lost to Follow Up rate is 3%. Regions have maintained high treatment success outcome in recent times. All regions except Eastern Region achieved and exceeded the 85% global treatment success target in 2014. All the Teaching Hospitals could not make this target largely due to the large numbers of critically ill patients referred for treatment.

<sup>10</sup> **Loss to Follow Up Rate:** A proportion of patients whose treatment is interrupted for 2 consecutive months or more after initiation of treatment to the number of patients who were initiated treatment within the same period.

## 2.4.5 HIV/AIDS

Health facilities in Ghana test pregnant women for HIV as part of the Prevention of Mother to Child Transmission (PMTCT) of HIV strategy. In 2014, 601,726 pregnant women tested to know their HIV sero-status. Of the number that tested, 12,583 were HIV positive, which is 2% of those who tested within the reporting period. Also, 8,299 HIV positive pregnant women who were due to receive ARVs were given ARVs to prevent mother to child transmission of HIV (Table 8).



**Table 8:** Trend of pregnant women tested and put on ART

	2010	2011	2012	2013	2014
No pregnant women tested	520,000	627,180	548,933	492,622	601,726
# positive	10,984	15,783	11,145	9,508	12,583
% positive	2.1	2.5	2	2	2
# pregnant women on ART for PMTCT	5,845 (53%)	8,057 (51%)	7,781 (70%)	7,266 (76%)	8,299 (66%)

Source: NACP Annual Report 2014

HIV testing and counselling services (HTC) is another HIV prevention and control strategy adopted by the National AIDS/STIs Control Programme (NACP). At the end of 2014, 798,763 people received HTC services. Out of the number that tested to know their HIV status in the period under review, a total of 43,694 were HIV positive, indicating a period prevalence of 5.5%.

Ghana has also been implementing the early infant diagnosis services (EID)<sup>11</sup> for babies who are exposed to HIV across the country. In 2014, 2,878 HIV exposed babies were screened for EID. Of the number screened, 8% tested positive for HIV. From table 8, it is clear that gaps exist in EID services because 12, 583 women tested positive to HIV but only 2, 878 babies were screened for EID indicating that about 77% of babies who were exposed to HIV were not screened. According to the EID policy babies who test positive to HIV are put on ARV therapy<sup>12</sup>.

During the year under review, a total of 14, 994 people (comprising 4,179 males and 10,815 females) were put on ART. A total of 83, 712 persons (comprising 4, 581 children and 79, 131 adults) are currently alive and are on ART at the end of 2014.

#### 2.4.6 Neglected Tropical Diseases (NTDs)

Ghana is burdened with a number of neglected tropical diseases (NTDs). Notable among them are: Lymphatic Filariasis (elephantiasis), Onchocerciasis (river blindness), Trachoma, Schistosomiasis (Bilharzia), Soil transmitted helminthiasis (worm), Buruli ulcer, Yaws, Leprosy, Guinea worm, Human African Trypanosomiasis (sleeping sickness), and Cutaneous Leishmaniasis. The Government of Ghana through the Ghana Health Service has developed a five year strategic plan (2013 -2017) also known as the master plan to guide programmes and activities to address the morbidity and mortality associated with NTDs. The NTD Programme manages five (5) of the NTDs for which the main strategy of intervention is annual/or bi-annual mass drug administration (MDA) complemented by morbidity control (clinical management of complications) and public education. These five NTDs are Lymphatic Filariasis (elephantiasis), Onchocerciasis, Trachoma, Schistosomiasis, and Soil transmitted helminthiasis.

Lymphatic Filariasis is endemic in 8 regions and in 98 of the 216 districts in Ghana. Only Ashanti and Volta regions are not endemic for Lymphatic Filariasis. The Neglected Tropical Disease Program (NTDP) has completed between 7-13 rounds of Mass Drug Administration (MDA) in all endemic districts and transmission has been demonstrated to have been broken in 76 endemic districts. MDA was started in 2001 in some selected endemic areas but this reached national coverage in 2006. By 2014, 69 districts had stopped MDA after passing the transmission assessment survey while 29 others had persistent microfilaraemia (mf) prevalence ( $\geq 1\%$ ). LF is targeted for elimination by 2020. Twenty two districts are now known to be hotspots for Lymphatic filariasis (Table 9).

<sup>11</sup> **Early infant diagnosis:** Testing of infants to determine their HIV status following possible exposure to HIV during pregnancy, delivery and postpartum through breastfeeding.

<sup>12</sup> **Antiretroviral therapy:** The use of a combination of three or more ARV drugs for treating HIV infection.

**Table 9:** Hotspots for LF, 2015. [Source: NTDP 2015]

Region	District
Western Region	Ellembele, Nzema East, Ahanta West
Brong Ahafo	Sunyani Mun, Sunyani West, techiman Mun, Techiman North
Northern Region	Bole, Sawla Tuna Kalba, West Gonja, N Gonja
Upper West	Wa West, Wa East, Lawra, Nandam, Jirapa, Lambusie Karni
Upper East	Builsa South, Builsa North, Kassena Nankana Mun, Kassena Nankana West, Nabdam

In Ghana, onchocerciasis has an estimated at-risk population of 4.7 million in 3115 communities in 85 endemic districts from nine out of the ten regions. Greater Accra Region is the only region that is not endemic for Onchocerciasis. The programme is pursuing the onchocerciasis elimination strategy and therefore undertakes treatment in all endemic districts and those that have also been identified through a recent mapping exercise.

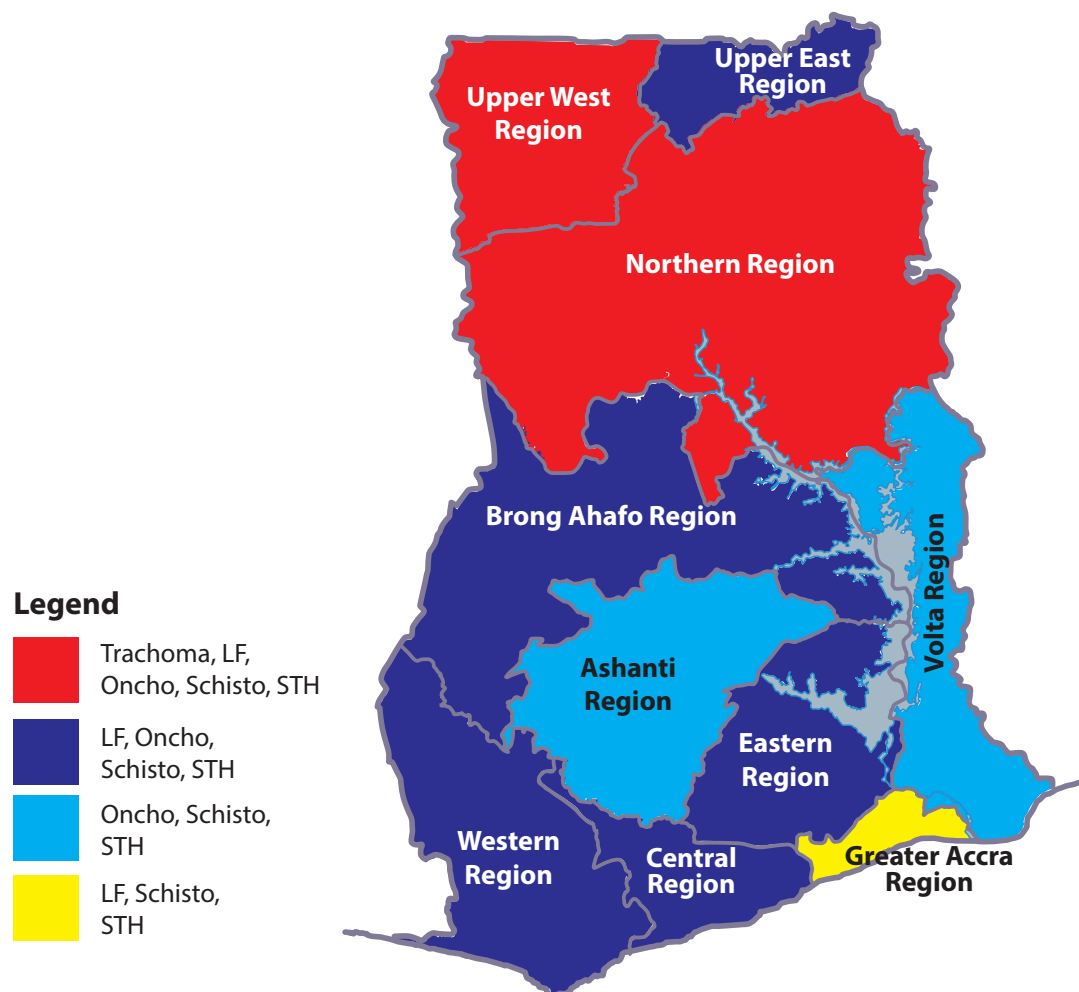
As at July 2015, the prevalence rate of Onchocerca parasites in communities that received biannual mass distribution of Ivermectin (Mectizan) were Tofoe (8.0%), Pewodie (13.6%), Achanga (3.9%), Gyankobaa (2.9%), Asuboi (2.5%), Honuta Gbogame (2.8%), and Yaala No.1 (4.1%). The prevalence in communities that received annual Mectizan were Ntome (7.7%), Pantooso (9.2%), and Woraso (7.9%). Ghana therefore needs to scale up efforts in onchocerciasis prevention and control.

Trachoma is endemic in two regions (Upper West and Northern) in Ghana. The SAFE (Surgery, Antibiotics, Facial Washing and Environmental Improvement) strategy is the main strategy employed for the elimination of Trachoma. Pre validation survey is currently underway in the Upper West and Northern regions as one of the pre-requisites to declaring the Country free of Trachoma.

Schistosomiasis has been mapped in Ghana and an estimated 6,618,064 school-aged children have been identified as being at risk of schistosomiasis. Nationwide mapping of prevalence of schistosomiasis was done in 2008. The mapping showed that 48 districts had high prevalence (>50 %), 31 districts had moderate prevalence (10-50%) and 31 districts had low prevalence (0-10%). This disease is targeted for control. The main strategy is mass drug administration for the school-age and high risk adult populations every year.

The major Soil-transmitted Helminths (STH) in Ghana are *Ascaris lumbricoides*, *Trichuris trichuria*, *Necator americanus*/*Acylostoma duodenale* and *Strongyloides stercoralis*. The prevalence studies carried out in 2007 and 2010 recorded STH prevalence from 10% to above 50% in 2007 and STH prevalence 0 to 16% in 2010 among school-aged children. The endemicity of Soil Transmitted Helminthiasis (STH) determined during the mapping exercise in 2015 showed low prevalence (< 0.3%) in most of the districts in Ghana, except that for *S. haematobium* which was about 3%. Figure 9 shows the mapping and distribution of NTDs in Ghana.





**Figure 9: Map showing the distribution of NTD**

Source: GHS, 2007

## 2.4.7 Non-communication Diseases (NCDs)

In Ghana, major NCDs include cardiovascular diseases (CVDs), endocrine disorders, chiefly diabetes, haemoglobinopathies including sickle cell disorders, cancers, chronic respiratory diseases particularly asthma, and injuries. An estimated 86,200 NCD deaths occur each year in Ghana with 55.5% occurring in persons under age 70 years in 2011. An estimated 50,000 NCD deaths occur in males and 36,000 deaths occur in females. The age standardized NCD death rate is 817 per 100,000. In 2008, NCDs accounted for an estimated 34% deaths and 31% of disease burden in Ghana. CVDs are the leading cause of NCD-deaths with an estimated 35,000 deaths or 15% of the total deaths. NCDs cause an estimated 2.32 million disability-adjusted life years (DALYs) representing 10,500 DALYs lost per 100,000 populations. Table 10 shows increasing trend of all the key NCDs from 2011-2014.



**Table 10:** Trend of some NCDs at OPD, 2011-2014. Annual Report, GHS 2015

Disease	2011	2012	2013	2014
Asthma	87613	105343	117647	102101
Cardiac Diseases	30062	43037	51424	48472
Hypertension	799028	964724	936954	830620
Diabetes Mellitus	189672	232535	220098	214357
Sickle Cell Disease	29764	33785	37690	43801

## 2.4.8 Road Traffic Accidents (RTAs)

In 2008 there were 44,496 cases of RTAs seen at OPDs countrywide; the number increased to 83,638 in 2009. Out of the lot, 3496 were admitted in 2008 and 5203 were admitted in 2009 and 2010. The number of RTA cases seen at OPD increased to 105,966 in 2015. The reported fatalities from RTAs from the Ghana Road Traffic Commission ranged from 1346 in 2010 to 2058 in 2014. Greater Accra usually records the highest number of cases with the lowest from Northern, Upper East and Upper West regions. Ashanti region has the highest number of fatalities.

Data from Ghana Burden of Disease (BOD) and Trend Analysis survey, (Health Metrix Network et al, June 2006) showed that in 2004, death from RTA was 1.7% of all deaths in Ghana, ranking ninth of all health conditions. When expressed over the population, the mortality rates of RTAs ranged from 5 per 100,000 in 1994 to 10 per 100,000 population in 2004. Over speeding, over loading and disregard for road signs or regulations are important human RTA causing factors in Ghana.



## 2.5 Top 10 Causes of Out- Patient Department (OPD) cases and Deaths

Malaria continues to top the list accounting for 35% of OPD cases and 7.78% of deaths in 2015. Hypertension features prominently accounting for about 4% of OPD cases and 4.6% of deaths. Other Non -communicable Diseases (NCDs) such as cardiovascular accidents and congestive cardiac failure are major causes of death in Ghana. Table 11 provides information on the top 10 OPD cases as well as top 10 causes of death in 2015.

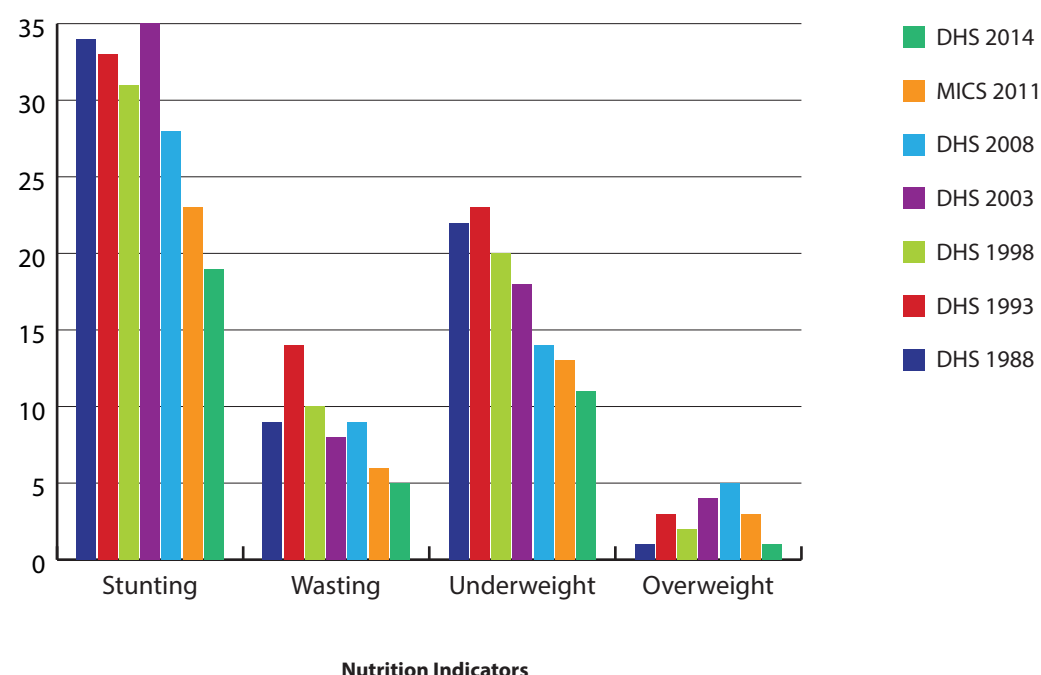
**Table 11: Top 10 OPD cases and Top 10 causes of death 2015, [Source DHIMS2, March 2016]**

TOP OPD CONDITIONS AND DEATHS						
#	2015			2015		
	Disease	Number of OPD Cases	% of Total	Disease	Number of Deaths	% of Total
1	Malaria	7316615	35.04	Septicaemia	1435	19.54
2	Upper Respiratory Tract Infections	3379534	16.19	Cerebrovascular Accident	1418	19.31
3	Diarrhoea Diseases	1573569	7.54	Pneumonia	956	13.02
4	Rheumatism & Other Joint Pains	1474615	7.06	Anaemia	818	11.14
5	Skin Diseases	1335465	6.40	HIV/AIDS	750	10.21
6	Anaemia	993135	4.76	Malaria	571	7.78
7	Intestinal Worms	855677	4.10	Congestive Cardiac Failure	552	7.52
8	Hypertension	829655	3.97	Hypertension	340	4.63
9	Acute Urinary Tract Infection	603607	2.89	Asphyxia	283	3.85
10	Acute Eye Infection	535487	2.56	Liver Disease	220	3.00
	TOTAL	20878266	100		7343	100

## 2.6 Nutritional Status

The trend of some major nutrition indicators in Ghana from 1988 to 2014 is shown in Figure 10.





**Figure 10: Trend of some Nutrition Indicators in Ghana, DHS 1988-2014; MICS 2011**

From figure 11, overall, 19 per cent of children under five are moderately stunted in Ghana, with 10 percent being severely stunted. The proportion of children under five who are stunted<sup>13</sup> decreased from 34 percent in 1988 to peak at 35 percent in 2003 before decreasing to 19 percent in 2014. By region, stunting ranges from 10 percent in Greater Accra to 33 percent in the Northern region.

Five percent of children under five are wasted<sup>14</sup> with 1 percent severely wasted. As per Figure 11, the proportion of children who are wasted has also decreased over the past 15 years from 14 percent in 1993 to 5 percent in 2014. Wasting is more common in the Upper East (9 percent), Northern (6 percent) and Central (8 percent) regions than elsewhere.

Overall, 11 percent of Ghanaian children are underweight, with 2 percent classified as severely underweight. The proportion of underweight<sup>15</sup> children decreased from 23 percent in 1988 and 1993 to 11 percent in 2014. The proportion of children who are underweight is greater in rural areas (13 percent) than urban areas (9 percent) and ranges from 6 percent in the Brong Ahafo region, 8 percent in Eastern region to 14 percent in Eastern and Upper West regions and 20 percent in the Northern region.

According to Ghana Demographic and Health Survey (GDHS) 2014, 66 percent of children 6-59 months are anaemic (Hemoglobin level, Hb< 11g/dl), with 27% mildly anaemic (Hb=10-

<sup>13</sup> **Under-five stunting:** Percentage of children under age 5 whose height is two standard deviations or more below the median height-for-age of the reference population.

<sup>14</sup> **Under-five wasting:** Percentage of children under age 5 whose weight is two standard deviations or more below the median weight-for-height of the reference population.

<sup>15</sup> **Under-five underweight:** Percentage of children under age 5 whose weight is less than two standard deviations below the median weight-for-age of the reference population.

10.9g/dl), 37 percent moderately anaemic (Hb=7-9.9g/dl) and 2 percent severely anaemic (Hb<7g/dl). The prevalence of anaemia among children has increased slightly over the past five years, from 76 percent in 2003 to 66 percent in 2014.

## 2.7 Health Service Coverage and Utilisation Indicators

### 2.7.1 Outpatients Department (OPD) Per Population

Outpatient Department visits per capita<sup>16</sup> has remained constant at 1.1 from 2012-2014. The highest OPD/capita is in Upper East region (1.8) with the lowest in Northern region (0.79).

### 2.7.2 Expanded Programme on Immunization (EPI)

Trends in immunization coverage show an increase in 2014 over previous years for Bacille Calmette Guerin (BCG), Pentavalent (diphtheria, pertussis, tetanus, haemophilus influenza type 2 & hepatitis B), oral polio (OPV), Rota vaccine (against diarrhoea), measles, yellow fever (YF) and tetanus (TT), (Table 12)

**Table 12: Trend of EPI performance 2011-2014. Annual Report GHS 2015.**

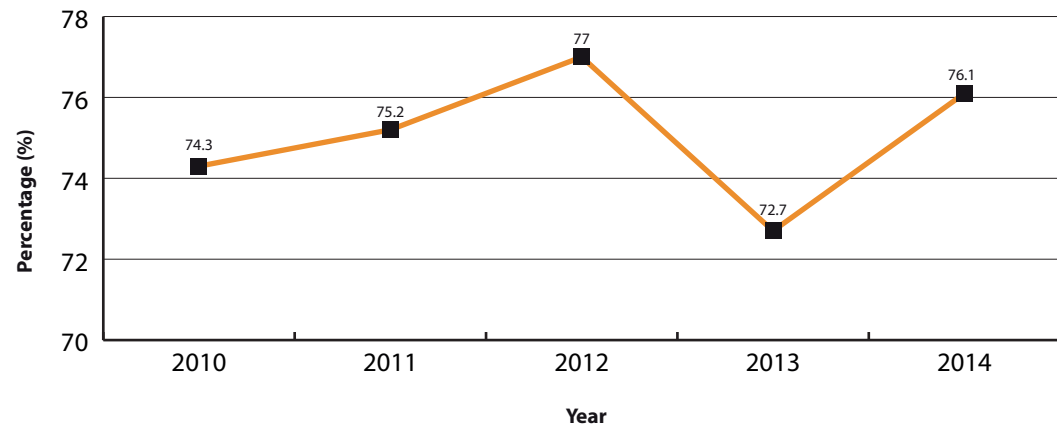
Antigen	2011		2012		2013		2014	
	No Vaccinated	% Coverage	No Vaccinated	% Coverage	No Vaccinated	% Coverage	No Vaccinated	% Coverage
BCG	1,071,098	105	1,082,408	104	1,047,710	98	1,122,420	103
Penta3	888,190	87	908,821	88	912,420	86	981,952	90
OPV3	884,615	87	906,363	87	915,233	86	983,977	90
PCV-13-1			667,237	64	936,906	88	1,014,709	93
PCV-13-2			524,458	51	893,076	84	977,288	90
PCV-13-3			419,715	40	897,154	84	989,147	91
Rota-1			613,983	59	926,423	87	1,009,329	92
Rota -2			483,105	47	882,815	83	971,357	89
Measles-1	894,795	88	919,825	89	898,695	84	960,406	88
Measles-2			523,891	51	539,284	51	695,076	64
YF	888,854	87	910,272	88	893,362	84	952,384	87
TT1	339,304	33	347,457	33	347,119	33	336,673	31
TT2+	773,092	76	763,182	74	754,985	71	679,344	62

The coverage of all EPI antigens has been consistently high in Ghana, reflecting success in Ghana's efforts to offer widespread vaccinations to children under five years.

<sup>16</sup> **Outpatients per capita:** The number of outpatient visits to health facilities during one year relative to the total population of the same geographical area.

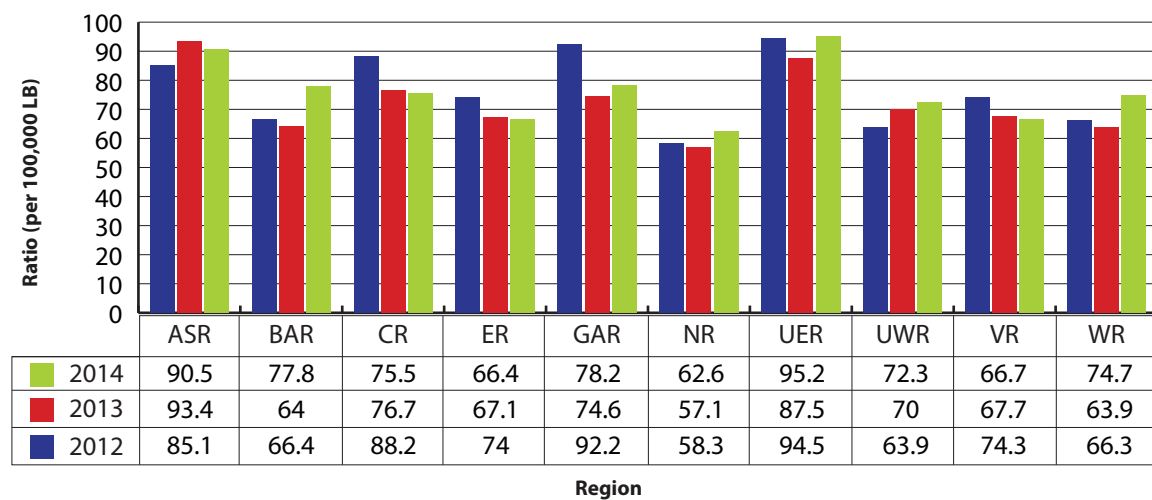
### 2.7.3 Antenatal Care (ANC) and Skilled Delivery

Trend in ANC 4+ has been fluctuating from 74.3% in 2010 to a high of 77 % in 2012 and 76.1% in 2014 (Figure 11). In 2014, the region with highest ANC4+ was UER with 85.2% while NR had the lowest of 62.6% (Figure 12).



**Figure 11: ANC 4+ Coverage in Ghana**

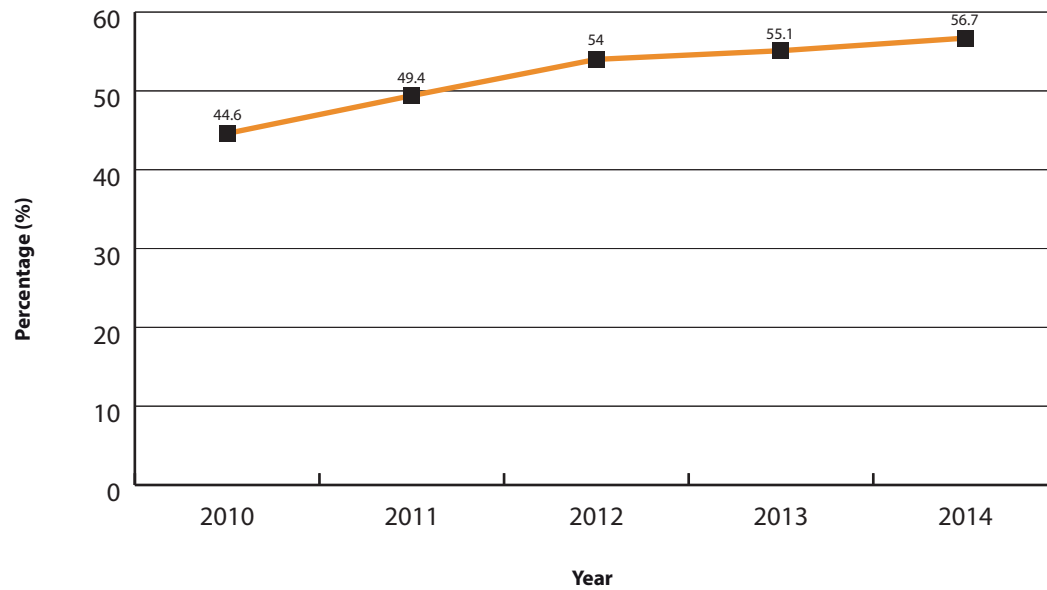
Source: Family Health Division of Ghana Health Service



**Figure 12: ANC 4+ Coverage across Regions in Ghana**

Source: Family Health Division of Ghana Health Service

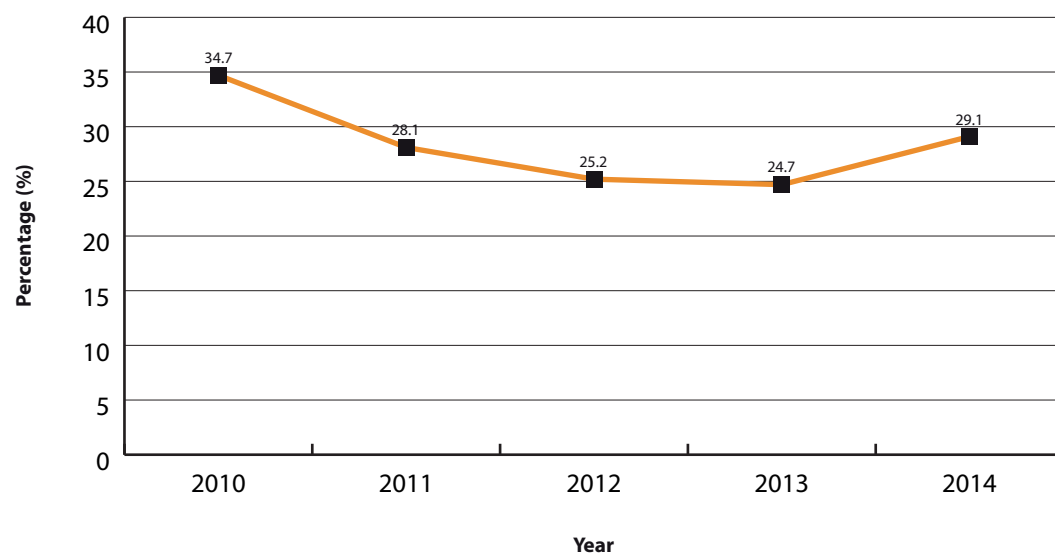
The trend of skilled delivery is shown in Figure 13 with an increase of 44.6% in 2010 to 56.7% in 2014. Postnatal care services are also high in Ghana. About 7 in 10 women (72 percent) receive a postnatal care (checkup) within 24 hours of delivery, 8 in 10 (81 percent) within the first two days and four percent 3-41 days after delivery.



**Figure 13: Trend of skilled delivery from 2010 to 2014**

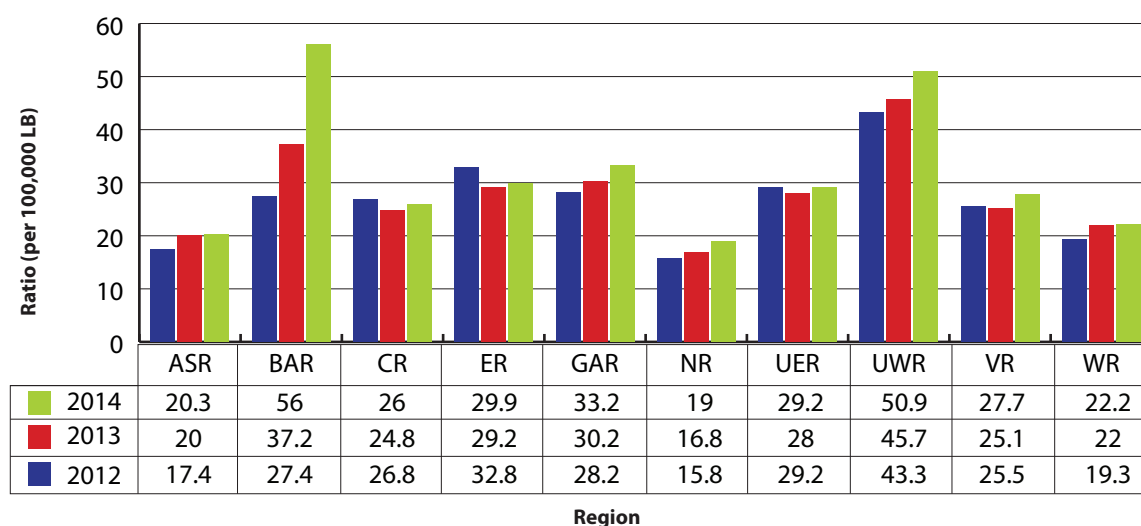
Source: Family Health Division of GHS

## 2.7.4 Family Planning Services and Fertility Rates



**Figure 14: Trend of Family Planning acceptor Rate FHD GHS 2012-2014**

Routine data from GHS show a gradual decrease in the proportion of the people counselled on family planning who agree to use a method for the first time (acceptor rate) in health facilities in Ghana. The acceptor rate decreased from 34.7% in 2010 to 24.7% in 2013 but there has been an increase to 29.1% in 2014 (Figure 14). Brong Ahafo Region has the highest family planning acceptor rate of 56% while northern region has the lowest at 19% [Figure 15].



**Figure 15: Trend in Family planning Acceptor Rate by Region 2012 - 2014**

Twenty-seven percent of currently married women use contraception while 22 percent use a modern method according to GDHS 2014. Use of modern methods has more than quadrupled in the past 25 years, rising from 5 percent in 1988 to 22 percent in 2014. Thirty percent of currently married women have an unmet need for family planning services, with 17 percent having an unmet need for spacing and 13 percent having an unmet need for limiting.

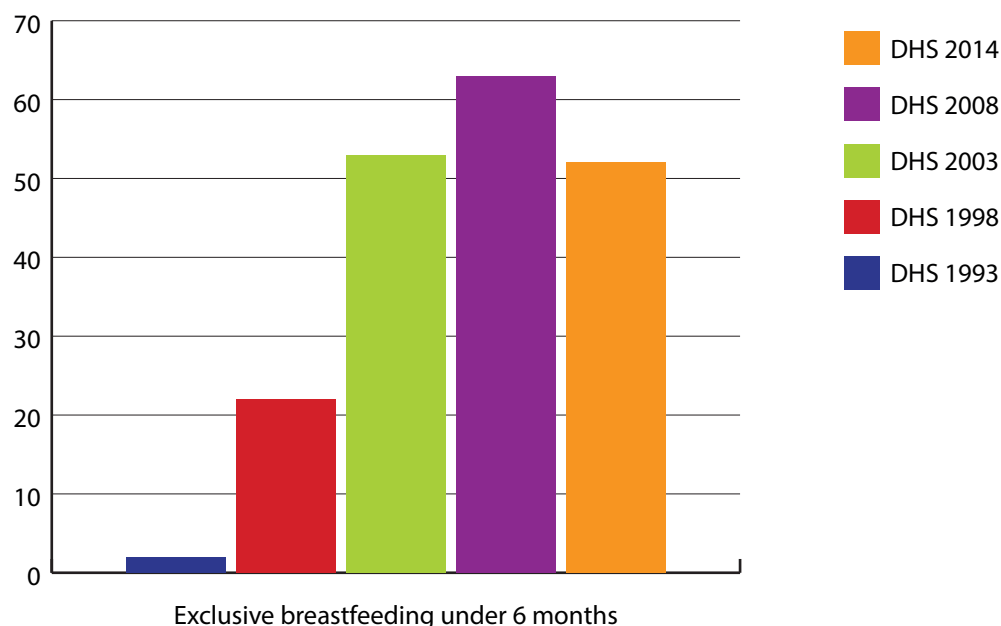
The total fertility rate<sup>17</sup> for Ghana is 4.2 children per woman. Childbearing peaks during age group 25-29 years and drops sharply after age 39 years (Table 13). Rural women have about 1.7 children more than urban women (5.1 children per woman compared with 3.4 children per woman).

**Table 13: Current fertility age-specific fertility rates for the three years preceding the survey, Ghana, DHS 2014**

Age group	Urban	Rural	Total
15-19	53	100	76
20-24	121	210	161
25-29	181	228	201
30-34	178	223	197
35-39	110	164	135
40-44	34	72	52
45-49	12	21	17
TFR (15-49)	3.4	5.1	4.2
GFR	120	171	143
CBR	28.2	33.1	30.6

<sup>17</sup> **Total Fertility Rate (TFR):** The number of children who would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates.

## 2.7.5 Breastfeeding



**Figure 16: Trend of some Nutrition Interventions in Ghana. Source: DHS 1993-2014**

Overall, 98 percent of children are still being breastfed at age 9-11 months and 50 percent at age 20-23 months. Although 99 percent of children under age 6 months are being breastfed, only about half (52 percent) are exclusively breastfed. Even though this is an improvement from the 22 percent in 1998, not much has changed comparing DHS 2003 with that of 2014, and there is actually a fall from the high of 63 percent in 2008 to 52 percent in 2014 (Figure 16). Of those aged 4-5 months, 36% are exclusively breastfed.

## 2.7.6 Emergency Obstetric and Newborn Care (EMONC)

The WHO EMONC tool classify health facilities as basic or comprehensive EMONC depending on the availability of emergency maternal, obstetric and neonatal care services. Basic EMONC health facilities are those that can administer parenteral antibiotics, uterotonic drugs (i.e. parenteral oxytocin), parenteral anticonvulsants for pre-eclampsia and eclampsia (i.e. magnesium sulphate), manual removal of the placenta, removal of retained products (e.g. manual vacuum aspiration) and can perform assisted vaginal delivery (e.g., vacuum extraction, forceps). In addition to these six, a comprehensive EMONC facility should be able to perform surgery (e.g. caesarean section) and blood transfusion.

According to EMONC assessment of health facilities in Ghana in 2011, only 13 of health facilities could provide basic EMONC services (leaving a gap of 472) and 76 could provide comprehensive EMONC services (leaving a gap of 45) . Analysis of the data by facility type revealed that of the 281 hospitals providing deliveries, 76 (27 percent) were comprehensive, seven (2 percent) were basic, 111 (40 percent) were partial, and 87 (31 percent) were non-



EmONC. Of the 509 health centres providing deliveries, two (0.4 percent) were basic, 113 (22 percent) were partial, and 394 (77.4 percent) were non-EmONC. Of the 136 health clinics providing deliveries, one (0.7 percent) was basic, 23 (17 percent) were partial, and 112 (82 percent) were non-EmONC. Of the 164 maternity homes providing deliveries, three (2 percent) were basic, 28 (17 percent) were partial, and 133 (81 percent) were non-EmONC.

Provision of parenteral oxytocic is one of the seven basic signal functions, and it had the highest coverage in Ghana: 97 percent of the facilities surveyed. Provision of parenteral antibiotics had the next highest coverage: 78 percent. Signal functions with lowest coverage were assisted vaginal delivery (13 percent of facilities — the reason why many facilities did not meet the basic standard), removal of retained products (29 percent of facilities), and manual removal of placenta (46 percent of facilities).

Met need for EmONC is assessed by measuring the number of obstetric complications treated by facilities and comparing the result with the expected number of pregnancy complications. Out of all the expected complications, only 38,437 (34 percent) were seen at health facilities nationally. By region, met need ranged from 7 percent in Northern to 59 percent in Eastern.

According to WHO, caesarean section rates for populations should range between 5 percent and 15 percent if obstetric coverage is adequate. The assessment found a population-based caesarean section rate of 7 percent nationally and showed a rate of 4 percent in EmONC facilities. The assessment also found that 27 percent of the deliveries in the private for-profit sector were resolved by caesarean section, compared with 20 percent in government health facilities and 19 percent in faith-based health facilities indicating high Caesarean sections in these facilities.

The direct obstetric case fatality rate (DOCFR)<sup>18</sup> indicates the ability of facilities to handle obstetric emergencies. The maximum acceptable rate is less than 1 percent. Nationally, the DOCFR was 1 percent in all facilities. By region, the range in all facilities was 1 percent to 2 percent. Nationally, a total of 840 identified maternal deaths were recorded in 2014. The most common direct obstetric causes of maternal death were severe preeclampsia and eclampsia — conditions that accounted for 23 percent of all direct causes of maternal deaths and 16 percent of all maternal deaths attributable to direct and indirect causes. The other leading direct causes of maternal deaths were postpartum haemorrhage (13 percent of all maternal deaths) and abortion complications (8 percent of all maternal deaths).

<sup>18</sup> **Direct obstetric case fatality:** The percent of women admitted to a hospital or an emergency obstetric care (EmOC) facility with major direct obstetric complications, or who develop such complications after admission, and before discharge. The eight direct obstetric complications are hypertensive diseases, abortion, sepsis or infections, obstructed labor, ectopic pregnancy, embolism, and anesthesia-related death.

### 2.7.7 Blood Transfusion service

Blood collection index<sup>19</sup> per 1000 population was 5.6 in 2014 and 5.3 in 2015 with a target of 10 by 2017. Percentage of Voluntary Non-Remunerated Blood Donations<sup>20</sup> was 30% in 2014 and 34% in 2015 with a target of 60% by 2017.

### 2.7.8 Clinical and Public Health Emergency Services, including ambulance service

Provision of clinical emergency services have been poor in the country. There were 214 functional ambulances in 2015 with a projection to 300 by 2017. The service response time is estimated to be 50 minutes but this may vary depending on location. Number of patients/casualties attended to was about 5000 in 2015.

Periodic outbreaks of pandemics and major epidemics have occurred globally over the years including Avian and Pandemic Influenzas, Cholera, and Ebola. A number of factors exist currently in the global world to increase the likelihood of severity and spread of pandemics especially in developing countries including, increasing globalization, poor sanitary and veterinary practices, ineffective surveillance systems for early detection, confirmation and response and already overburdened health systems struggling to deal with other endemic diseases.

In 2003, following concerns raised at the World Health Assembly for the overall lack of preparedness for an influenza pandemic, a National Working Group on Avian Influenza was formed in Ghana in September 2005 which produced a “National Preparedness and Response Plan for Avian and Pandemic Influenza”. Following the emergence of Influenza A (H1N1) in 2009, the Plan was further reviewed for the period 2009 – 2011 and later in 2013. In 2015, a new Integrated National Strategy for Public Health Events of International Concern (PHEIC) was developed based on the all-hazard approach of WHO, as well as on the U.S. government’s (USG) Global Health Security Agenda (GHSA) [Final Draft Integrated Strategic Plan for PHEIC 2015]. Recent outbreaks of cholera and streptococcal meningitis has once again revealed the weakness in national preparedness and response even though major strides have been chalked.

### 2.7.9 Integrated Management of Neonatal and Child Illness (IMNCI)

The Integrated Management of Child Illness (IMCI) policy integrate both preventive and curative interventions at both community and health sector to reduce mortality among children under five years. Ghana started the IMCI in 1998 in some pilot districts: Atwima

<sup>19</sup> **Blood Collection Index:** Blood collection ratio per 1000 population in a year.

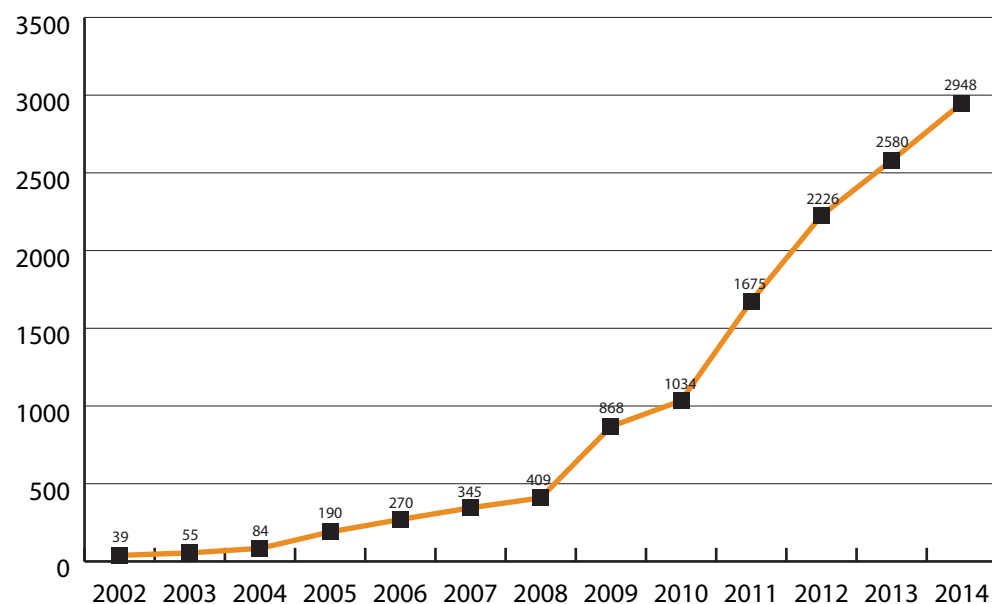
<sup>20</sup> **Voluntary Non-Remunerated Blood Donations:** Donating blood to health facility without expecting any form of reward or remuneration.

District in the Ashanti Region, Tolon Kumbungu in the Northern region and Manya Krobo in the Eastern region. It was changed to IMNCI in 2014 to provide care for sick babies from birth instead of from one week. The last adaptation to the modules was done in 2015 addressing the need to test all children with fever with Rapid Diagnostic Test (RDTs) before treatment. Antibiotics for various conditions were updated in 2014 according to the recommended WHO guidelines. Facilitators were oriented on the updated modules and GHS have been using them to train using a 6-day package instead of the 11-day package due to high cost. Implementation is nationwide but more active in regions where partner funding is available. Currently, UNICEF supports the Upper East and Northern regions and Systems for Health supports Western, Central, Greater Accra, Volta and Northern regions. Other regions are brought in from time to time when there are funds.

IMNCI has been part of pre-service training for physician assistants since 2003. Medical Schools treat the topic in tutorials. IMCI was incorporated in the curricula of nurses around 2005 and tutors were trained but teaching is only partly done.

### 2.7.10 Community Health Planning & Services (CHPS)

Community Health Officers (CHOs) work with community volunteers in CHPS zones to provide mostly promotive and preventive health services in their communities from CHPS compounds. There has been a gradual increase in the number of functional CHPS zones (according to GHS criteria) from 190 in 2005 to 2,948 in 2014 [Figure 17].



**Figure 17: Trend in implementation of Functional CHPS across Ghana 2002-2014** [source: Annual Report, GHS, 2015]

## 2.7.11 Adolescent Health Services

There has been an increase in adolescent health services over the years. However, following a major review of adolescent health services strategy (2009-2015) early in 2016, the following conclusions were made:

- Access to appropriate health information by adolescents and young people has not improved significantly over the period 2009-2015.
- Utilisation of health services by adolescents and young people has remained poor even though there is improvement overall.
- The political and legal environment has enhanced considerably but the same cannot be said of the social and cultural environment.
- Community participation in Adolescent health services has been weak; however, increasing numbers of adolescents and young people are getting more involved in health programme development and implementation.
- The management and coordination of Adolescent health services has improved considerably though more needs to be done at the decentralized levels. Funding for Adolescent health services, especially from donor partners, has increased considerably.
- There is gradual improvement in most of the adolescent indicators over the period. However, at current rate of impact it will be impossible to achieve envisaged targets set for the new Adolescent health policy.

## 2.8 Quality issues in service provision

Generally, we can distinguish between clinical quality and service quality. The former refers to activities of the healthcare process such as surgical skill, sufficient drugs, logistics and other factors that translate into better outcome. The latter on the other hand denote the multifactorial indicators of patients' experiences and satisfaction such as hospital comfort, support from providers, waiting time, appointment and visits and the physical environment of the facility. It is important for healthcare managers to constantly determine the factors associated with the satisfaction of patients with the quality of care provided so as to understand what is valued by the patient, how the quality of care is construed by the patient and to determine where, when and how service change and improvement can be made (Zideldin, 2006).

Nationwide, quality of care surveys are seldom done though individual health facilities periodically undertake patient/customer satisfaction surveys as part of their quality assurance system. Issues raised in most of these surveys relate to long waiting times, lackadaisical and disrespectful attitude of some hospital staff, unavailability of certain prescribed drugs, discrimination and favouritism when it comes to who should be attended to first at the OPD and consulting rooms and mistreatment during labour. About 35% of adults who visited Juaben Government Hospital in a study in 2010, for example, stated that their provider did not explain things clearly to them, and 68% complained of

unnecessary delays before being seen by a doctor. The situation may not be different from what pertains in most hospitals in the country.

## 2.9 Summary and Conclusion

There is much improvement in service delivery (especially for communicable diseases) in terms of coverage, quality and impact but there are major challenges and gaps that have to be addressed going forward.

1. There is no systematic programme in place to address the increasing burden of non-communicable diseases.
2. The provision of emergency services (both clinical and public health emergencies) is inadequate and sub-standard. With increasing rate of RTAs and NCDs (for clinical care) and globalization with its associated exposure to diseases of pandemic potential (for public health), these areas have to be addressed as quickly as possible.
3. Adolescent health and health for elders and other marginalized groups need focused attention.
4. Other health system challenges identified elsewhere in this document have to be addressed as they militate against sustained and effective delivery of quality health services in the country.
5. There is the need to establish systems for emergency clinical care and public health emergencies, including addressing inappropriate staff attitude, through preparedness and response planning and execution of these plans.
6. Treat NCD as national emergency and address appropriately.

# CHAPTER 3

## Financing the health sector

### 3.1 Introduction

Supporting adequate, sustainable, equitable and effective health financing to improve health outcomes is of relevance to any country. In order to achieve these goals, countries have implemented various systems and forms of health financing. Health financing refers to the “function of a health system concerned with the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health system” (WHO, 2005). The purpose of health financing is thus to make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health care”. The World Health Organization (WHO) proposes three main functions of health financing namely raising revenue, risk pooling and purchasing (Table 14).

**Table 14:** Functions of health financing

Function	Objectives
<b>Raising revenue</b>	Raise sufficient and sustainable revenues in an efficient and equitable manner to provide individuals with a basic package of essential services to improve health outcomes and provide financial protection and consumer satisfaction
<b>Risk pooling</b>	Manage revenue to equitably and efficiently create insurance pools
<b>Purchasing</b>	Ensure the purchase of health services in an allocative and technically efficient manner

Source: Gorret and Schieber 2006

It is important that countries focus on effectively implementing the three health financing functions in order to achieve the basic objectives of improving health outcomes, ensuring financial protection, and responding to consumers in an equitable, efficient, sustainability and sustainable manner. This chapter discusses health financing in Ghana following the three main functions of raising revenue, risk pooling and purchasing. First we provide an overview of development of health financing in Ghana followed by discussions of the health functions and issues of fiscal space for health since the country's elevation to lower middle income status in 2010. The financial outlook is also discussed and conclusion.

## 3.2 Major Developments and Reforms in Health Financing

Ghana has implemented a number of financing reforms. In the pre-independence era, health financing was mainly through out-of-pocket payments at point of service use. After independence in 1957, this system was abolished and government began to finance health care services in public facilities through taxes and public health services were free. However, private sector health services continued to be paid for by out-of-pocket fees at point of service use.

By the early 1970s the general tax revenue could no longer support the tax-based system and the government gradually introduced user fees (The Hospital Fees Act of 1971). In 1972 for example, very low out-of-pocket fees were introduced in the public sector to discourage frivolous use. At the same time, the economy of Ghana began to face major decline which affected the health sector leading to widespread shortages of essential medicines, supplies and equipment, and poor quality of care. The country had to succumb to World Bank and International Monetary Fund (IMF) structural adjustment program (SAP) policies and reforms.

Ghana's SAP began with the Economic Recovery Program (ERP) from 1983-1986 which called for the removal of subsidies. The notable health sector reforms under the SAP included the introduction of user fee charges, expansion and strengthening of district health services and reallocation of resources from the region to the districts. Other equally noticeable reforms were reduction of costs through the phasing out of institutional cost of feeding



in hospitals, reduction of non-technical staff, implementation of essential drug policy, improving drug management and enrolment of District Health Management Teams

In 1985, public sector user fees for health care were raised significantly as part of structural adjustment policies which became known as the 'cash and carry' system. The aim of the 1985 user fees was to recover at least 15% of recurrent expenditure for quality improvements. Although the financial aims were achieved, i.e. improvement in supply of essential medicines and other supplies, the system led to negative consequences in financial access to basic health services in the general population and particularly among the poor. To offset the adverse effects of the user fees, the government introduced an exemption policy for children, pregnant women, the elderly, and the extreme poor as well as partial exemptions for persons suffering from certain communicable diseases such as tuberculosis. In practice however, the exemption policy failed to work and many of those who should have been exempted were not due to poorly defined guidelines and mechanisms.

### 3.4 Health Insurance in Ghana

In the early 1990s various health insurance schemes evolved as ways of providing financial protection against high cost of health care arising from the introduction of the user fees. Community based mutual health organizations (MHO) were formed in some districts. The Nkoranza Community Health Insurance Scheme was the first to be established in 1992. By 2001, 57 district MHOs had been established in different parts of the country. Premiums on average were as low as GH¢1.20 per annum (US\$ 1) with payment terms distributed over a year.

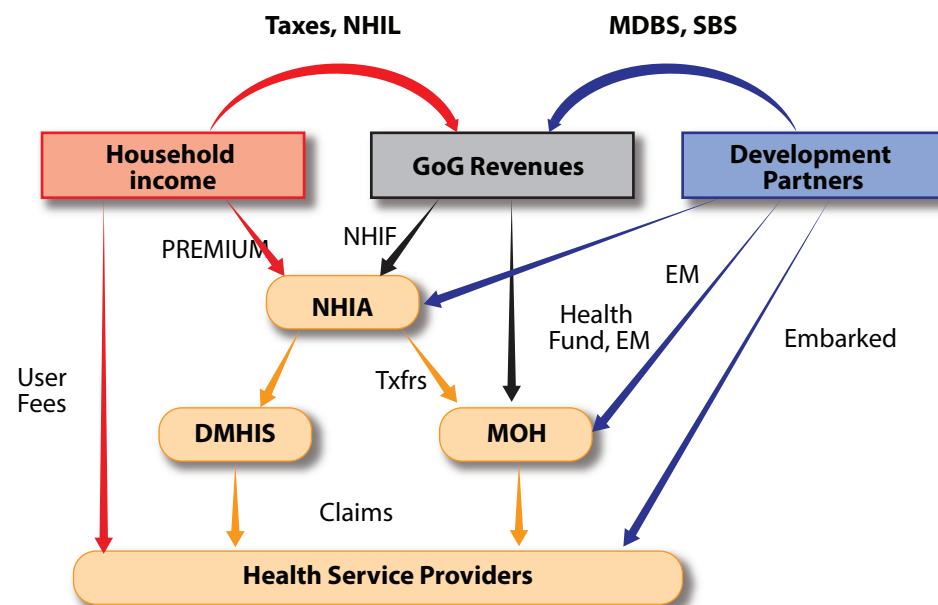
Based on the principles of the MHO, two pilot schemes were commissioned in the Eastern region by the government and the Social Security and National Insurance Trust (SSNIT) in preparation towards the establishment of a centralized health insurance scheme. The pilot schemes did not materialize due to lack of technical expertise and leadership challenges. Despite these challenges and amidst political pressure to fulfill a political campaign promise, the government in 2003 drafted the health insurance act (Act 650) to set up a national health insurance scheme (NHIS) in all the districts as a policy to minimize out of pocket health expenditure at point of service and to ensure equitable access to health care particularly among the poor.

The NHIS is financed by a national health insurance fund. The fund has three main sources: tax revenue of a 2.5% VAT which contributes to about 70% of the fund, 2.5% of contributions of Social Security and National Insurance Trust (SSNIT) contributors who are largely formal sector workers; and which contributes to about 20% of the fund; and income adjusted premiums which ranges from between GH¢7 to GH¢48 for non SSNIT contributors which contributes to about 5% or less to the fund. Funding for health care services, administration of the NHIS and premium exemptions for certain categories of people including the poor who are identified are financed by the National Health Insurance Fund (NHIF).



### 3.5 Structure of Health Financing in Ghana

Figure 19 shows an overview of health financing in Ghana. The revenue sources are in two folds: Households (out-of-pocket payments for health, taxes, and National Health Insurance Levy, NHIL), development partners (multi-donor budget support systems, sector budget support). These revenue sources go to the National Health Insurance Authority (NHIA) as the National Health Insurance Fund (NHIF). The fund is disbursed to health service providers upon request for payment of claims. In addition, some funds from development partners go to the ministry of health as earmarked funds for targeted programs such as the President's Malaria Initiative (PMI) and Global Fund for AIDS, tuberculosis and malaria. Funds are earmarked for the National Health Insurance Scheme (NHIS) from the budget, but the budget also supports the Ministry of Health, and some of the earmarked funding to NHIS is passed through to the Ministry of Health. Donor funds provide direct support to the government, the NHIS, and the Ministry of Health.



**Figure 18:** Overview of health financing in Ghana. Adapted from Enemark et al, 2005

### 3.6 Functions of Health Financing

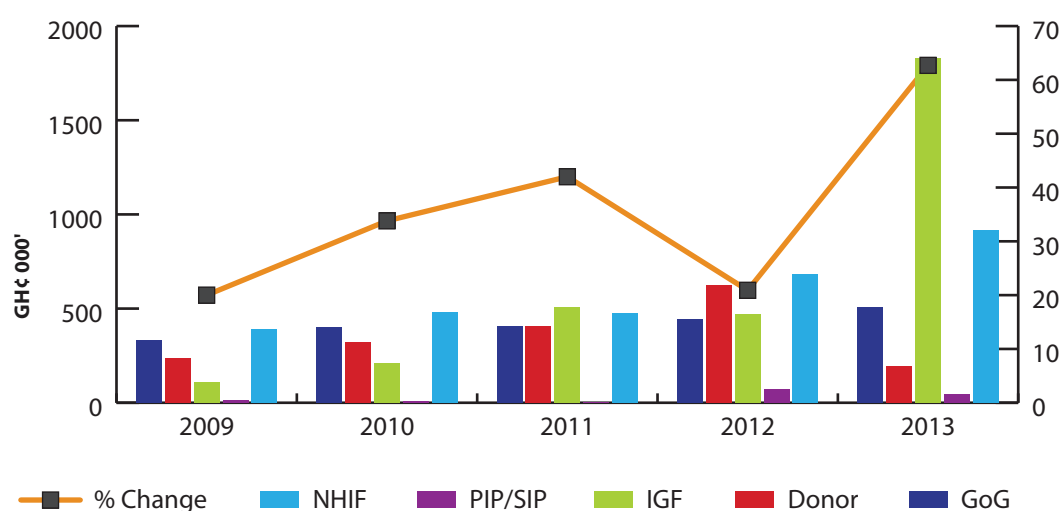
This section will discuss in detail the components of the functions of health financing namely raising revenue, risk pooling and purchasing.

#### 3.6.1 Function 1: Raising Revenue

It is important that the system is able to raise substantial revenue to support earmarked programs and activities, current and recurrent expenditure and investments. Revenues to

finance health care mainly comes from taxes, nontax revenues, donor contributions, and out-of-pocket payments by individuals. We analyze patterns of the health sector revenue and expenditure focusing on funding sources, distribution of revenue and expenditure, private funding for health, health expenditure as percentage to GDP etc. for the period 2000-2014.

Figure 19 shows the health sector financing sources and the percentage change (secondary axis) in inflows over the years. Since 2011 internally generated fund (IGF) or off-budget income has been the major contributor to the financial resource envelope of the health sector. IGF mainly accrues from out-of-pocket payment by individuals and health insurance claims from both public and private users of the health facility. In nominal terms, IGF increased from GHC 108,000 in 2009 to GHC 1,831,400 in 2013. IGF constitute about 35% revenue for sub-district and district health facilities and 25% for regional hospitals. GOG transfers to the sector also demonstrated an increase over the decade from GHC334, 400 in 2009 to GHC 508,980 in 2013. This increase could be due to the strong economic growth within the last decade and deepening commitment to health. Cumulatively, the percentage change in total inflows to the sector has risen to 62% in 2013. Also, the transition of Ghana from low income to lower middle income status has had implications on the inflow of funds from donor partners. The distribution of direct donor transfers to the health sector and pooled funds in the government treasury does not show a clear pattern. However, it is anticipated that the change in Ghana's status will have implications on donor funding for health. From the Figure 19, donor funds declined from GHC624, 060 in 2012 to GHC194, 460 in 2013.

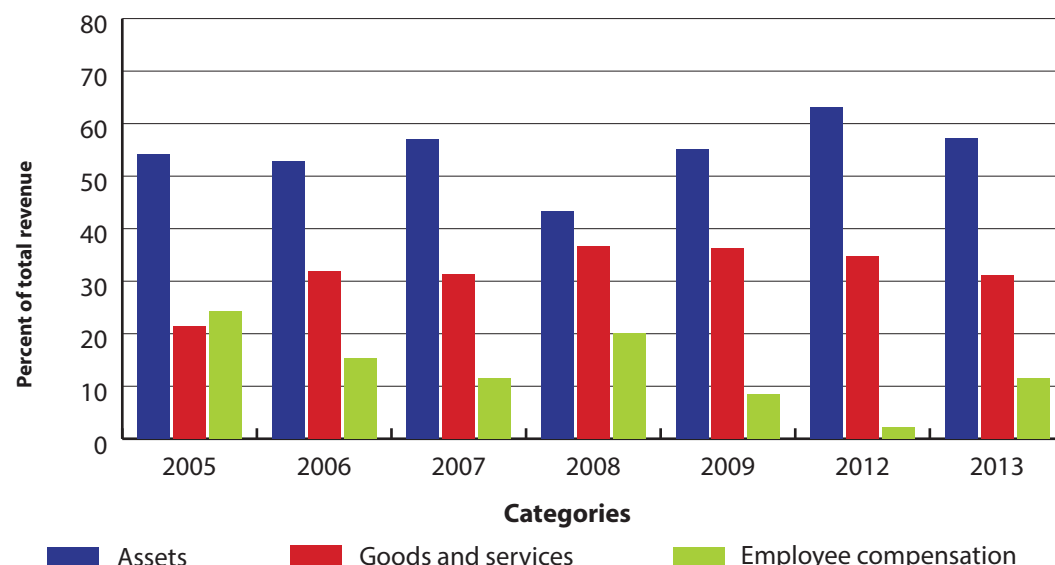


**Figure 19: Health Sector financial resource envelope (2009 - 2013)**

Source: Ministry of Health Programme of Work (POW) and holistic assessment of various years

The resources in the health sector as described in Figure 20 are expended under major categories. These categories in the past were known as personnel emoluments, administration, services and investments. Since 2010, this has been newly categorised as employee compensation, goods and services and assets. Figure 20 shows the sector's spending as follows; employee compensation accounted for more than 55% of the

sector's expenditure for majority of the years analyzed, followed by goods and services (around 32%) and assets (around 13%). Indeed this distribution pattern has implications for investments in health and progress towards achieving the sector's major targets. An improvements in the current allocation towards investments and assets will be beneficial to the sector's development in the future.

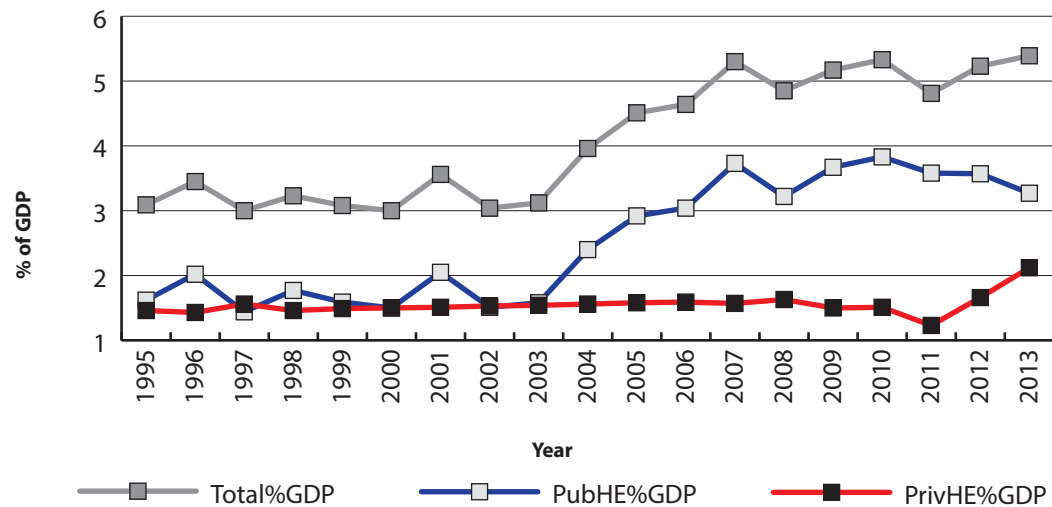


**Figure 20: Health sector revenue distribution for selected years**

Source: Ministry of Health Programme of Work (POW) and holistic assessment various years

Trends in expenditure on health relative to Gross Domestic Product (GDP)<sup>21</sup> is analysed in Figure 21 (1995 – 2013). Total health expenditure (THE) is the sum of private health expenditure (PrivHE) and public health expenditure (PubHE). Public health expenditure is government's contribution to health spending in general, including external resources from donors while private health expenditure represent individual and corporate contribution to health spending in the country. Between 2001 and 2013, government spending as a percentage of GDP rose steadily from 1.5% to about 3.3% while private spending remained stable around 1.6% over the same period. Government spending as percentage of GDP is below the threshold of 15% earmarked in the Abuja Declaration of 2000. Under the declaration, health outcomes are likely to improve when countries in sub-Saharan Africa (SSA) plan and spend more than 15% of share of GDP on health. This has not happened in Ghana however planned spending in the budget statements is about 11% of GDP on health whilst in reality this is not the case.

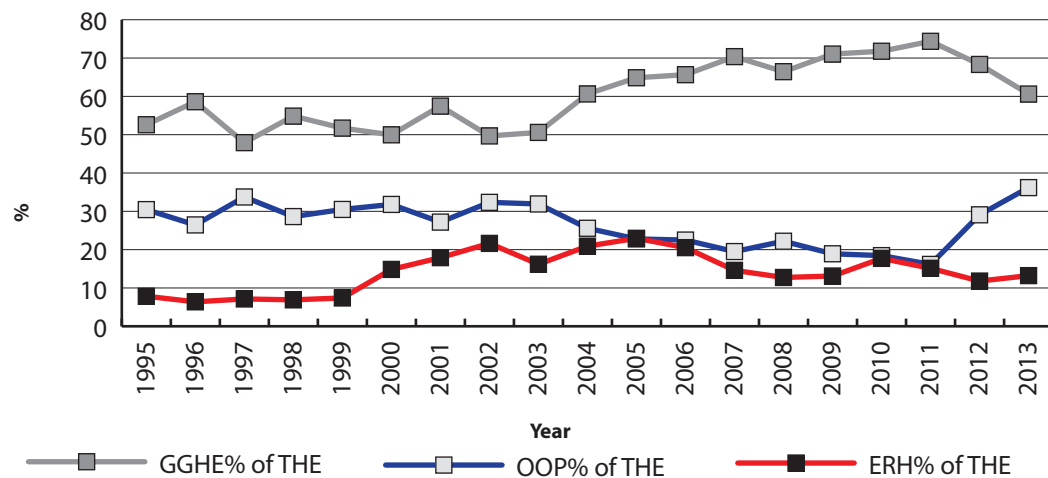
<sup>21</sup> **Gross Domestic Product:** The monetary value of all the finished goods and services produced within a country's borders in a specific time period.



**Figure 21: Health expenditure as percentage of GDP**

Source: World Development Indicators Online

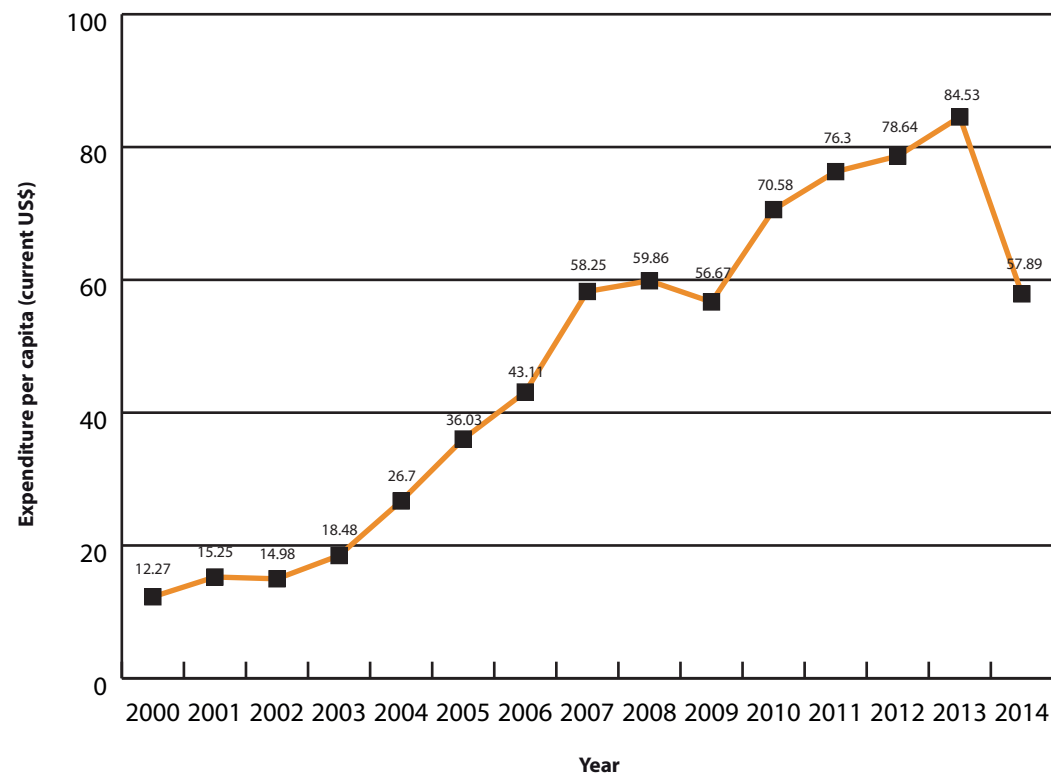
We further decomposed total health expenditure (THE) into general government health expenditure (GGHE), external resources for health (ERH) i.e. contributions from donors and household out-of-pocket expenditure (OOP). Figure 22 shows that overall, GGHE constitutes more than 50% of THE and ERH displays unstable pattern but gradually falling in 2010. Out of pocket expenditure were also high hovering around 30% of THE. This means households contribute significantly to their own health spending. The higher these contributions, the more households are likely to be impoverished or incur catastrophic health spending. Indeed household spending levels and trends are especially important because they have critical implications for financial protection and the fairness/equity of the system. As countries develop and expand health insurance coverage, private spending as a share of total health spending declines as government health spending increases.



**Figure 22: Decomposition of Total Health Expenditure (THE)**

Source: World Development Indicators online

Health expenditure per capita shows government spending on health per person. Over time, this has shown an increase following the increase in spending on health. The total health expenditure per capita increased gradually over the years. It hit a record high of \$84.53 in 2013 but declined to \$57.89 in 2014. The increase may be attributed to increase health care utilization over time. Introduction of the National Health Insurance Scheme (NHIS) may also be a contributing factor.



**Figure 23: Trend in health expenditure per capita (Current US\$)**

Source: The World Bank

### 3.6.2 Function 2: Risk Pooling

The aim of this function is to manage revenue to equitably and efficiently create insurance pools. The argument for insurance pools to be equitable is based on the view that society does not consider it to be fair that individuals should assume all the risk associated with their health care expenditure needs. The efficiency arguments arise because pooling can lead to major improvements in population health, increase productivity, and reduces uncertainty associated with health care expenditure. Analysis of risk pooling will include NHIS coverage, NHIS revenue and expenditure and health service utilization for specific disease conditions in the country.

Insurance coverage since the implementation of the scheme has seen marked improvement. Insurance coverage for 2014 was 39 percent (Table 15).

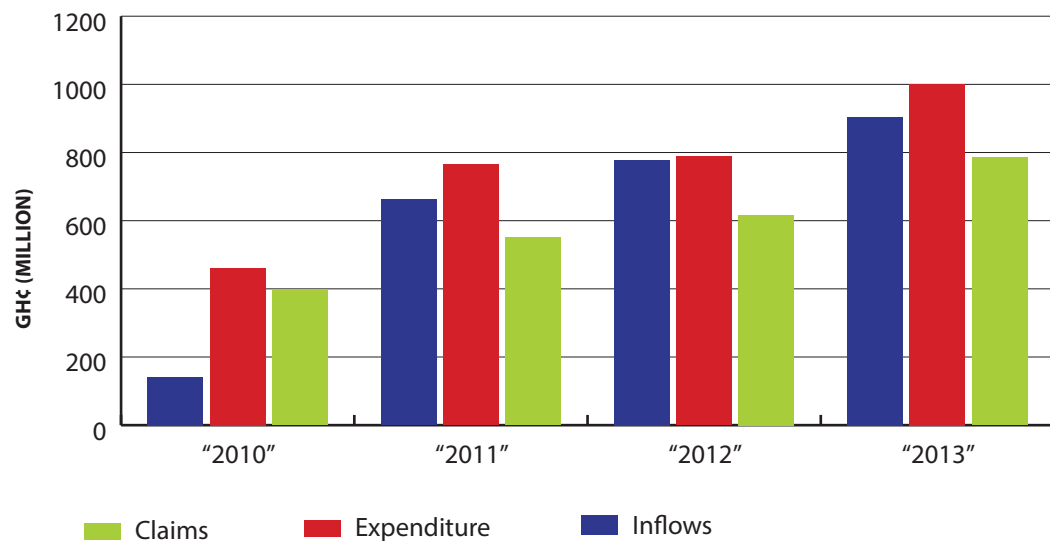
**Table 15:** Trends in enrolment and health insurance coverage

Year	Population	Enrolment	Coverage
2010	24658823	8163714	33.1
2011	25235268	8227823	32.6
2012	25824920	8885757	34.4
2013	26427760	10144527	38.4
2014	27043093	10,550,000	39.0

Source: NHIA annual reports and Ghana Statistical Service projected population estimates (various years)

One of the key challenges of the scheme is the long delays in the reimbursement of health facilities. Delays can be as long as 3-4 months. Additionally, long queues for the collection of electronic cards and general financial sustainability of the scheme are current issues of importance under discussion for overall improvement of the scheme.

The NHIS operation has seen an increase in the utilization of health care services. The scheme processes about 19 million claims annually, of which 60% are OPD and 40% are inpatient claims. This has led to increased spending on claims payment to providers. For example, payment of claims rose from GHC 397.77 million in 2010 to GHC 785.64 million in 2013 (Figure 24). Thus more than 75% of the scheme's inflows were spent on claims payment. Within the last five years, total expenditure of the scheme has surpassed income, thus putting the scheme in financial difficulties. Recent reports suggest that the scheme faces imminent insolvency if measures are not taken to inject capital into its operations. In addition, poor prompt payment to providers adds to the liquidity constraints and prevents effective performance of provider institutions.



**Figure 24:** NHIS income and expenditure (2010-2013)

Health services utilization (outpatients and in-patients) have seen remarkable improvements in the last decade, particularly after the introduction of the National Health Insurance Scheme in 2004. The overall increase is largely due to improvement in access to health care due to NHIS and ongoing nationwide expansion and improvement of healthcare and service infrastructure at various service delivery points. In addition, the deployment of community health officers into CHPS zones has greatly improved geographical accessibility in most of the regions contributing to the high OPD per capita. The trend of OPD per capita (total OPD attendance by population) revealed that on the whole, this has increased from 0.81 in 2009 to 1.14 in 2012. Health sector reports from MOH and GHS have also shown that more than 80% of all OPD attendants are insured clients rising from 55.8% in 2010 to 80% in 2012. The proportion of the outpatients seen by Community Health Officers under CHPS has moved from 4.2% in 2009 to 5.2% in 2011.

Using data from the district health information management systems (DHIMS), we present the distribution of top 10 disease conditions reported to public health facilities in Ghana for the periods 2012 to 2014 for children and adults. Table 16 reveals that for both adults and children, uncomplicated malaria remained the most reported case, although it showed a declining trend from 61% to 50% in adults and from 58% to 51% in children from 2012-2014. This was followed by upper respiratory tract infections (contributing to about 20% of reported cases) and diarrhea diseases (contributing to about 10% of reported cases).

**Table 16:** Distribution of top 10 communicable diseases among adults and children (%) 2012-2014

COMMUNICABLE DISEASES	ADULTS ≥ 12 YEARS			CHILDREN <12 YEARS		
	2012	2013	2014	2012	2013	2014
<b>Uncomplicated malaria</b>	61.1	58.8	50.0	58.9	56.7	51.1
<b>Severe malaria</b>	3.7	4.1	3.0	4.0	4.3	3.0
<b>Upper Respiratory Tract Infections</b>	18.9	19.2	23.1	21.0	21.3	24.6
<b>Diarrhea Diseases</b>	7.0	7.5	9.9	9.2	10.0	12.2
<b>Intestinal Worms</b>	4.2	4.8	6.8	3.8	4.4	5.4
<b>Typhoid Fever</b>	2.5	3.0	3.9	0.7	0.9	1.0
<b>Pneumonia</b>	1.3	1.3	1.6	1.4	1.4	1.3
<b>Septicemia</b>	0.2	0.3	0.6	0.4	0.5	0.9
<b>Chicken Pox</b>	0.5	0.5	0.6	0.5	0.4	0.4
<b>Suspected Cholera</b>	0.1	0.0	0.3	0.0	0.0	0.1
<b>HIV/AIDS Related conditions</b>	0.3	0.2	0.3	0.0	0.0	0.0
<b>Viral Hepatitis</b>	0.2	0.2	0.0	0.0	0.0	0.0

Source: Authors' computation from the district Health Management Information System (DHIMS) II

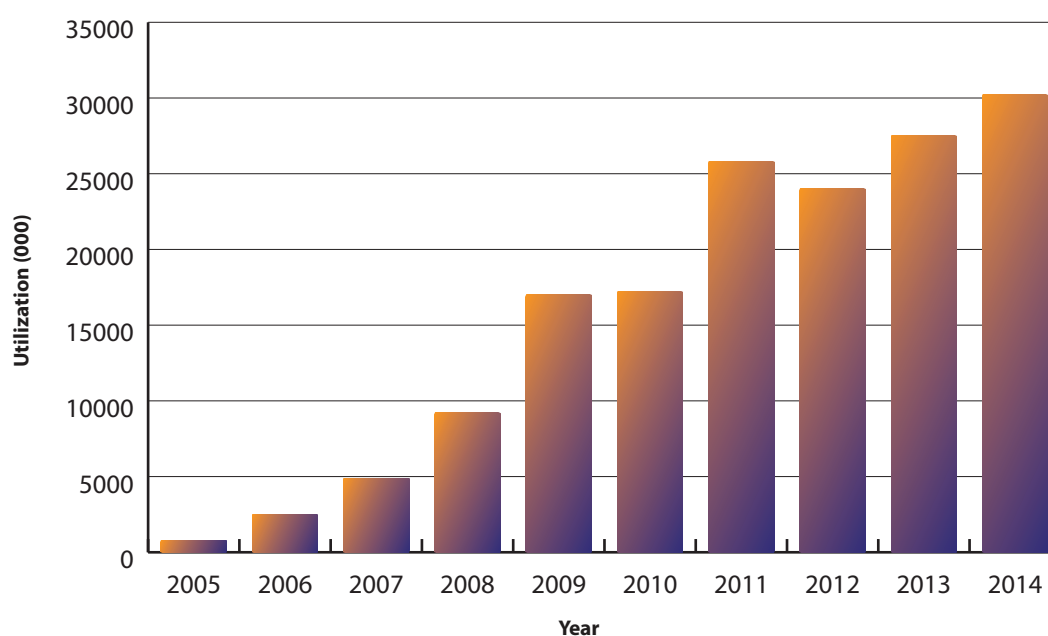
For non-communicable diseases, rheumatism and hypertension formed the highest number of cases reported among adults (more than 70% in combination) in public health facilities in Ghana while anemia was highest among children (more than 85%) as illustrated in table 17.

**Table 17:** Distribution of top 5 non communicable diseases among adults and children 2012-2014

NON COMMUNICABLE DISEASES	ADULTS ≥ 12 YEARS			CHILDREN <12 YEARS		
	2012	2013	2014	2012	2013	2014
<b>Rheumatism &amp; Other Joint Pains</b>	39.2	42.9	46.1	15.4	14.9	12.8
<b>Anemia</b>	16.0	17.7	18.4	83.4	83.8	85.9
<b>Hypertension</b>	35.0	30.7	27.1	0.2	0.5	0.5
<b>Diabetes Mellitus</b>	8.4	7.2	6.9	0.4	0.4	0.3
<b>Cardiac Diseases</b>	1.5	1.6	1.5	0.7	0.5	0.4

Source: Source: Authors' computation from the district Health Management Information System (DHIMS) II 2012-2014

Health service utilization among the insured have also increased significantly. At the end of 2014, over 30, 0000 insured clients utilized services at the various accredited facilities in the country (Figure 25).



**Figure 25:** Utilization of health services among the insured

Source: NHIS review committee on financial sustainability, draft report

### 3.6.3 Function 3: Purchasing

Purchasing, which is sometimes referred to as financing of the supply side, includes the numerous arrangements used by purchasers of health care services to pay medical care providers. The key issues in the purchasing function of health care financing are:



- a. The choice of benefit package to which beneficiaries would be entitled, including type of service and type of provider, and the route by which different services should be accessed;
- b. The choice of mechanism for paying providers or the route used to transfer resources from purchaser to provider.

These two issues are discussed in relation to Ghana's health financing mechanism-mainly the NHIS; benefit package and provider payment system.

Since the national health insurance authority is the main financing organization for health in Ghana, we discuss the purchasing function of health financing using the health insurance scheme as reference. Thus, the purchaser arrangements of the scheme are managed at the national level by the National Health Insurance Authority (NHIA) and peripherally by its regional and district branch offices. Services are provided through contractual arrangements with public and private providers, pharmacies and diagnostic services. The NHIs benefit package covers range of services including outpatient and inpatient care, some aspects of oral health, eye care, maternity care and emergencies. It excludes cosmetic services, HIV anti-retroviral medicines, orthopedics, and organ transplant among others. According to the report from the scheme, over 95% of disease conditions are covered under the scheme.



There are multiple provider payment methods in the Ghanaian health system. National Health Insurance provider payment methods are the most current in application. Health providers are paid by NHIS for variable costs of direct patient care using a combination of output-based provider payment systems including fee for- service (FFS) for medicines, diagnostic related groups (DRGs) for both inpatient and outpatient services, and capitated

rate also for services. Donor contributions also represent a substantial portion of payment for goods and services for the variable costs of direct patient care and they also use a variety of different provider payment systems.

The itemized fee schedule for medicines is based on a NHI medicines list (NHIML) that is periodically revised. Medicines can be dispensed by public and private provider facilities with an in house pharmacy/dispensary or by private community practice pharmacies accredited by the NHIA. Most community practice pharmacies, like other private self-financing services, are based in wealthier and peri-urban areas. Poorer rural communities rely on chemical sellers (lay people licensed by the Pharmacy Council to sell over the counter medicines). Some of these are also accredited by the NHIA. The NHIS payment mechanism for medicines has effectively increased the availability of drugs at health facilities, with fewer shortages. However, the price of drugs has increased dramatically and continues to increase. Pharmaceutical reimbursement costs represent about half of total NHIS claims reimbursed (variable costs for direct patient care). Prices for the same drug tend to vary around the country. The private sector tends to charge higher prices, but price differentials exist even within the public sector. As a result, current pricing and cost structures capture the inefficiencies of the market.

The core components of a Diagnostic Related Groupings (DRGs) payment system are a patient classification system and a payment rate setting mechanism that takes into account the intensity of resources used to treat patients in a given DRG category to give cost weights or prices to the DRG. Typically, Ghana's 'G-DRG' -DRG is not a pure DRG system in that, although it has the patient classification system, it does not have cost weights and severity levels. It was designed and applied nationwide for all levels of care from the lowest (Community Health Planning and Services (CHPS) compounds) to the highest (teaching hospitals), to pay all accredited providers – public, quasi-government, and private – for inpatient and outpatient services. The tariffs reflect preceding charges rather than a precise or economic costing; capital and equipment costs are not included. The tariffs are classified into three broad groups of diagnoses, procedures/ operations, and investigations. The calculated direct cost of the services for consumables and labor are uniform for related or similar diagnosis, procedures, and investigations irrespective of level of care. Indirect or overhead costs comprising labour, vehicle maintenance and fuel, equipment and building maintenance, housekeeping, utilities, and general administrative and office expenses are calculated, increasing from the lower to the higher level of care. The rationale is that facilities at higher levels of care consume larger amounts of overhead inputs because of their size and higher fragmentation of services.

The tariffs vary according to whether the facility is government, mission, or private to take into account the government subsidy, mainly for salaries but also some infrastructure, equipment, and overhead costs in the public and, to some extent, the private mission sector, as well as the zero subsidy in the private self-financing sector. The tariffs also vary by type of final service (inpatient or outpatient), type of intermediate service (laboratory investigations, imaging investigations, theatre, catering services), and specialty (obstetrics and gynecology, medicine, surgery, child health, eye, ENT, and dental). Since some district

hospitals have catering services and others do not, inpatient tariffs differ by district hospitals with catering services and those without.

Ghana introduced capitation payment for primary care in 2010 with the view to containing escalating claims expenditure. Under the system, health care providers receive a lump sum per capita payment, intended to cover a fixed 'basket' of services. Capitation rates are usually based on future expenditures determined through an assessment of predictable risks or events including demographic variables, previous diagnoses, self-reported health status and previous utilization. The pilot scheme was undertaken in the Ashanti Region due to its central location and heterogeneous infrastructure and culture, with one year mandate, after which it would be evaluated to inform roll out in the other regions of Ghana. The pilot was to enable testing of the overall effectiveness of the designed system in achieving the identified objectives, identify key features of implementation that would be essential for success in scale-up after the pilot.

The objectives of the system were to (i) improve cost containment, efficiency and effectiveness of health services through more rational resource use, (ii) share financial risk between the scheme, providers and subscribers, (iii) introduce competition for providers and choice for patients to increase the responsiveness of the health system, (iv) correct some imbalances created by the use of the Ghana Diagnostic Related Groupings payment system for outpatient care such as outpatient supplier-induced demand, (v) simplify claims processing and (vi) address difficulties in forecasting and budgeting.

Under capitation, the subscribers of the NHIS, after registration with the scheme, are asked to choose their service providers and have the flexibility to change the provider after a period of not less than six months. The capitation system is practiced alongside other provider payment mechanisms for other levels of care other than the primary level. The piloting of the capitation payment system in Ghana has been met with mixed reactions from practitioners, subscribers and other stakeholders in the health industry.

In summary, payment to providers for services and medicines remains retrospective. Providers file claims, which go through a vetting process in the NHIA district scheme offices or for the higher-level facilities such as teaching and regional hospitals in the computerized central claims processing office of the NHIA, before final payment. The claims processes of many provider and district scheme offices remain predominantly manual despite increasing computerization. There remain administrative capacity, human resource, technical, and other challenges that slow down the process and can reduce the final value of the reimbursements.

## 3.7 Health Sector Financial Resource Needs and Financing Gaps (2011-2014)

### 3.7.1 Fiscal space for health

Fiscal space can be defined as “the availability of budgetary room that allows a government to provide resources for a given desired purpose without any prejudice to the sustainability of a government’s financial position” (Heller, 2005). An assessment of fiscal space typically examines whether and how a government could feasibly increase its expenditure in the short to medium term in a way that is consistent with the country’s macroeconomic fundamentals.

### 3.7.2 Estimated Additional Fiscal Space for Health in Ghana from Economic Growth, 2010–15 (See World Bank report page 125)

A simple and straight forward analysis of gaps in health financing will be to analyze overall health expenditures against health revenue. To perform an analysis of the funding gap in the health sector will involve an analysis of the sector’s needs in relation to resource availability and/resource expectation. The five-year POW between 2011 and 2013 focused on the needs of the health sector in a strategic plan called The Health Sector Medium Term Development Plan (HSMTDP). The Ministry of Health (MOH) in collaboration with the World Bank estimated the funding gap of the health sector in the country under some scenarios. The scenarios depended on assumptions about expectations of resource flow to finance the objectives of the sector. The three different scenarios considered were as follows

**Scenario one (status quo):** This scenario assumed that insufficient funding is received or political will and expertise are insufficient to make the numerous strategic shifts outlined in the HSMTDP. It was also assumed under this scenario that all pipeline projects are done at the current pace of progress. This scenario was called the “status quo”.

**Scenario two (conservative):** This scenario assumed that the health sector received a moderate amount of funding for the HSMTDP and priority elements of the plan are implemented. Priority areas under consideration were MDG-related services and community based non-MDG services as well as a limited number of new ambulances and most of the required new or renovated health facilities. The scenario also assumed that coverage of essential services is expanded to reach 75-80% of the stated 2013 targets. This scenario was called the “conservative HSMTDP”.

**Scenario three (ambitious):** The third and final scenario assumes that more generous funds are devoted to the health sector and this will be sufficient to implement the full development plan. This include all prioritized capital investments and full expansion of

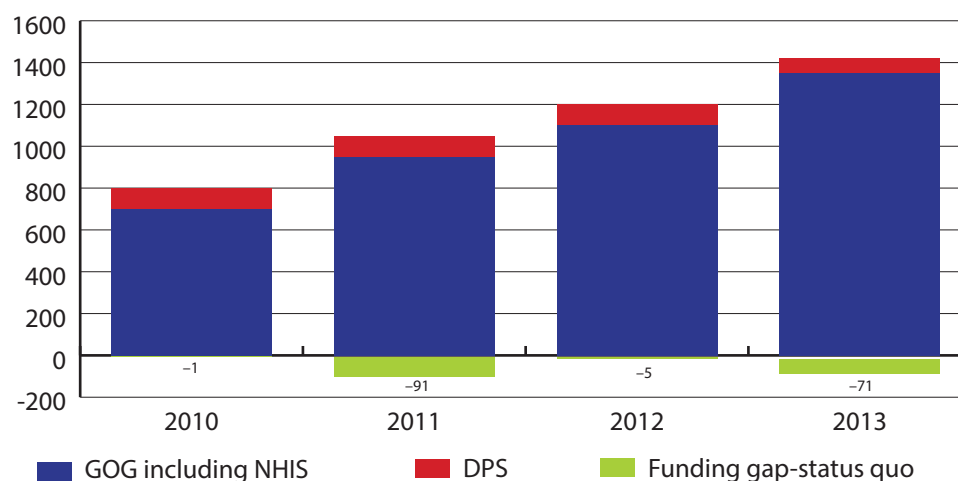
MDG and non MDG health services to meet the 2013 targets at 90-100%. This scenario is called the “ambitious HSMTDP”.

The cost estimates suggest that public health spending will rise from US\$ 869 Million to US\$ 1.42 Billion in 2013, representing an average annual increase of 18%. Thus, between 2010 and 2013, nearly US\$ 546 million (786 million GHC) additional funds should become available to the public health sector. Using the Abuja declaration benchmark (i.e. government allocates 15% of budget to health spending), public health spending in 2013 would be slightly higher, at US\$1.46 billion (2.10 billion GHC). In addition a total amount of \$5.9 billion (GHC8.5 billion) will be needed to implement the full HSMTDP. The status quo scenario will require \$4.4 billion while the more conservative scenario will require \$5 billion.

The funding gaps under the various scenarios are presented in the following figures under the assumption of *progressive financing and Abuja financing*. It must be emphasized that the estimates were best estimates as of 2010 and likely to change when assumptions are removed or the global financial situation changes.

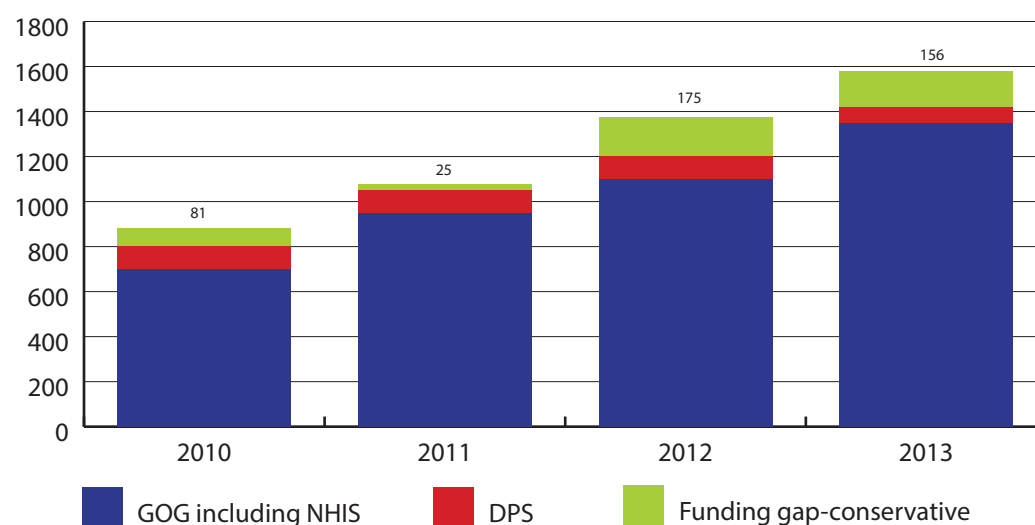
### 3.7.3 Funding gap under progressive financing

The progressive health financing assumes that government increases its expenditure by an additional percentage point each year between 2011 and 2013. In this case health expenditure was expected to increase from 12.5% in 2011, to 13.5% in 2012 and 14.5% in 2013. The total funding gap required to implement the full HSMTDP under the “ambitious scenario” was projected to be about \$1.3 billion (Figure 26). The conservative scenario showed a total funding gap of about \$387 million (Figure 27). There was no expected funding gap for the “status quo scenario” (Figure 28).



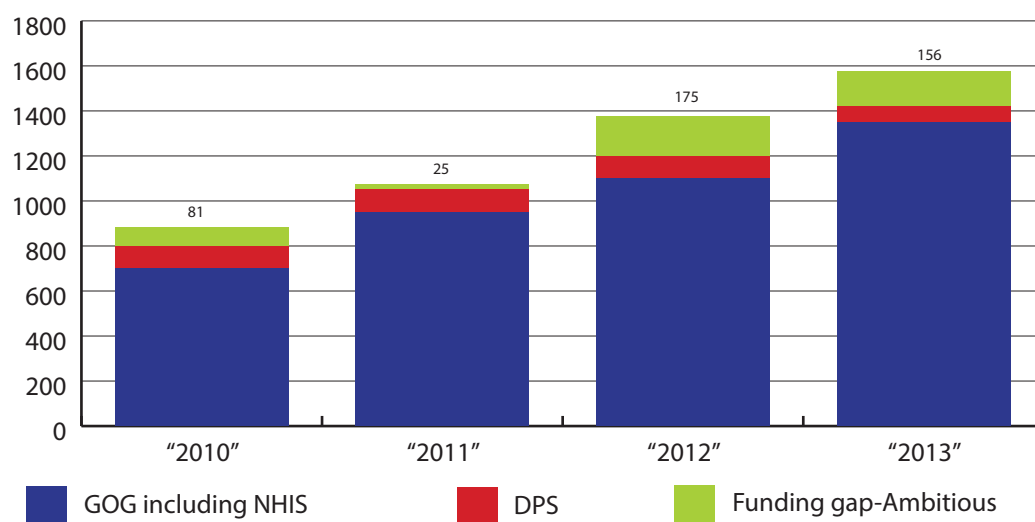
**Figure 26: Progressive financing-funding gap under status quo scenario**

Source: Ghana Health Sector Medium Term Development Plan 2010-2013 (Costing exercise report)



**Figure 27: Progressive financing-funding gap under conservative scenario**

Source: Ghana Health Sector Medium Term Development Plan 2010-2013 (Costing exercise report)

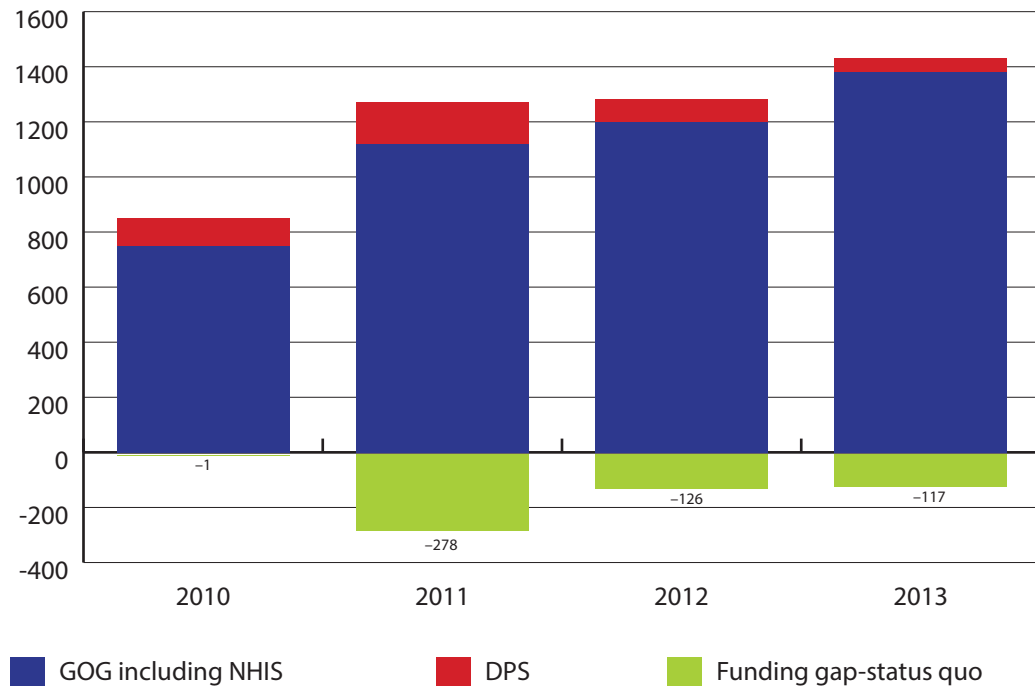


**Figure 28: Progressive financing-funding gap under ambitious scenario**

Source: Ghana Health Sector Medium Term Development Plan 2010-2013 (Costing exercise report)

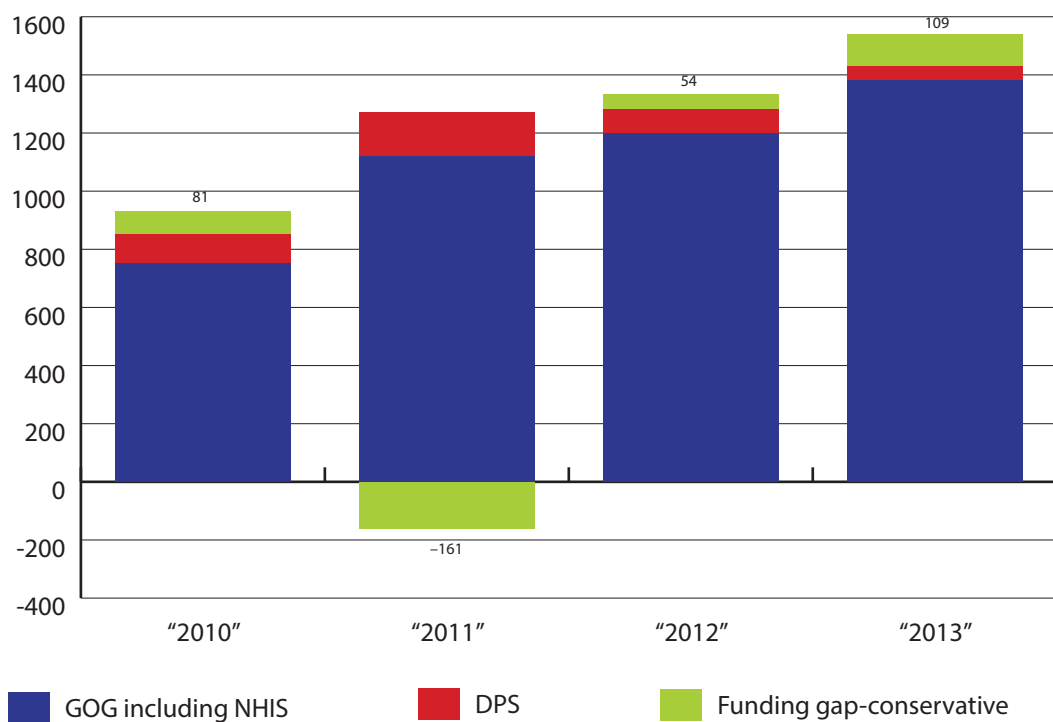
### 3.7.4 Funding gap under Abuja declaration

The funding gap under the Abuja Declaration assumes that government is able to increase expenditure to the 15% of total government expenditure target starting from 2011. This was seen as a more optimistic financing scenario given that the share of the health sector in government spending (excluding resources from developing partners) was slightly above 11% in 2010. The total funding gap under the "ambitious scenario" was \$980 million (Figure 28) while that of the conservative scenario" was about \$83 million (Figure 30).



**Figure 29: Abuja financing-funding gap under status quo scenario**

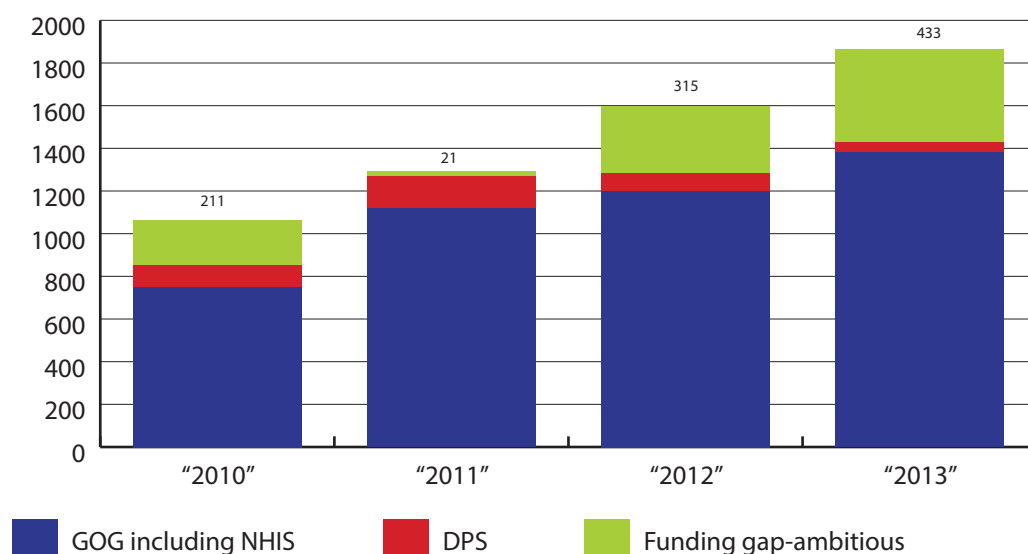
Source: Ghana Health Sector Medium Term Development Plan 2010-2013 (Costing exercise report)



**Figure 30: Abuja financing-funding gap under conservative scenario**

Source: Ghana Health Sector Medium Term Development Plan 2010-2013 (Costing exercise report)



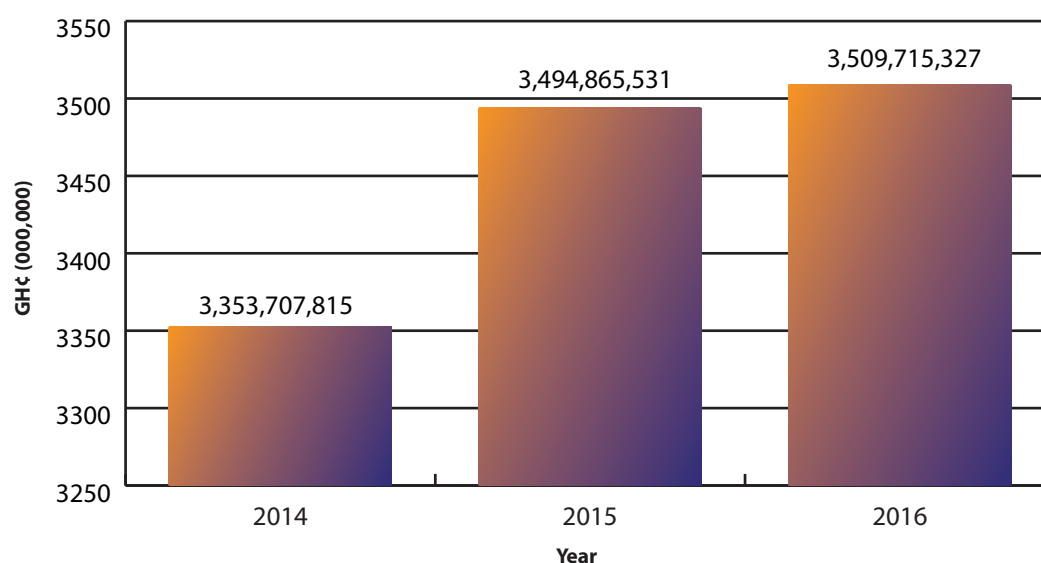


**Figure 31: Abuja financing-funding gap under ambitious scenario**

Source: Ghana Health Sector Medium Term Development Plan 2010-2013 (Costing exercise report)

### 3.7.5 Funding needs of the health sector (2014-2016)

The revised Mid-Term Expenditure Framework (MTEF) of the Ministry of Health sought to highlight the comprehensive plans and target from 2014 to 2016. The cost estimates show that the health sector will require a total budget of about GHC3, 353 million which is expected to rise to about GHC3, 495 million and about GHC3, 510 million in 2015 and 2016, respectively. These statistics are depicted in Figure 32 below.



**Figure 32: Estimated funding needs of the health sector (2014-2016)**

Source: Ministry of Health, MTEF (2014-2016) Program based budget estimates



Table 18 shows the various budget programs of the health sector and how much resources were estimated to achieve the set targets for the various programs. It shows that health service delivery is of priority as it received significant proportion of the budget in 2014 and a similar pattern was projected for 2015 and 2016. Human resource for health development was projected to reduce marginally from 2014 to 2016.

**Table 18:** Summary of health sector expenditure estimates by budget program

Budget Program	2014	2015	2016
	Budget (GH¢)	Indicative (GH¢)	Indicative (GH¢)
BP1 Management and Administration	806,788,625	806,902,921	814,856,511
BP2. Health Service Delivery	1,963,752,734	2,139,135,672	2,144,655,872
BP3. Tertiary and Specialized Health Service	335,000,358	334,033,765	335,348,483
BP4. Human Resources for Health Dev't and Management	183,354,909	149,835,966	149,395,069
BP5. Health Sector Regulation	64,811,189	64,957,207	65,459,301
<b>Total Expenditure</b>	<b>3,353,707,815</b>	<b>3,494,865,531</b>	<b>3,509,715,327</b>

Source: Ministry of Health, MTEF (2014-2016) Program based budget estimates

A breakdown of the health service delivery program into sub-programs shows that a large proportion of the budget is expected to be spent on institutional-based services. This is also projected to increase marginally in 2015 and in 2016. Another substantial budget sub-program is the regional and district health services. The budget for this sub-program was projected to increase sharply in 2015 and a further marginal increase in 2016.

**Table 19:** Health service delivery summary of expenditure by budget sub programs

Expenditure by Budget Sub-Program (BSP)	2014	2015	2016
	Budget (GH¢)	Indicative (GH¢)	Indicative (GH¢)
BSP1 Strategy Formulation and Operational Coordination	47,820,083	48,054,103	48,405,411
BSP2 Population-Based Services	52,212,523	52,713,310	52,734,649
BSP3 Institutional-Based Services	1,166,940,870	1,199,905,070	1,207,986,027
BSP4 Regional and District Health Services	696,779,257	838,463,190	835,529,785
<b>Total Expenditure</b>	<b>1,936,752,734</b>	<b>2,139,135,672</b>	<b>2,144,655,872</b>

Source: Ministry of Health, MTEF (2014-2016) Program based budget estimates

## 3.8 Financial outlook

This section discusses expectations and prospects for improvements in financing for the health sector.

### 3.8.1 Government spending on health

Government of Ghana budgetary allocation and spending on the health sector has received marginal increment over the years. This is a common trend in many African countries. In response to improving government spending particularly to meet the Millennium Development Goals (MDGs), African Union countries met in Abuja and pledged to increase government funding for health to at least 15% of their Gross Domestic Product (GDP) and urged donor countries to scale up support. This is known as the Abuja declaration. A review ten years on (i.e. in 2011) revealed that 26 countries, including Ghana have increased the proportion of total government expenditures allocated to health but not enough to meet the 15% bench mark. In Ghana, government expenditure for health has hovered around 3.3% against what has usually been budgeted for (around 11% between 2012 and 2014). A staggered 3% annual increment over four years may be an option instead of higher budgeted figures that are unattainable.

In line with the Abuja declaration, donor countries were entreated to fulfil a target of 0.7% of their Gross National Income (GNI) as official development assistance (ODA) to developing countries. In the current global financial crises, it appears health partners are unable to meet this target while some have reduced their support to countries. Our analysis for Ghana revealed that over time, donor support remained unstable. In addition, the country's transition to lower middle income status in 2010 has had some fiscal implications with funding from health partners declining. This decline was particularly from 2011 to 2012 and further in 2013. It is necessary that alternative financing sources are identified to bridge the gap created by this decline. For instance, government should employ improved and innovative taxation mechanisms and compliance, strengthen excise taxes on goods and services with high demand such as telecommunication and entertainment.

### 3.8.2 Health service utilization

Since 2004, household utilization of health services has increased as a result of the implementation of Ghana's National Health Insurance Scheme. Increases in utilization also imply increases in household spending on health even though insurance is meant to minimize financial barriers to the use of health services. Various studies have reported that the insured pay out of pocket for some services despite the comprehensive benefit package. These spending by the insured can sometimes be large enough to send households into impoverishment or to incur catastrophic health expenditure.

It must be emphasized that even though utilization has increased, enrolment into the scheme remains below 40% of the total population since the NHIS implementation 11 years

on. The 2013 enrolment stood at 38.4%. Innovative strategies to improve enrolment are necessary if high coverage is desired particularly for the poor. It is important that the rich and those within the formal sector are encouraged to enroll to improve enrolment. This could be done by aligning benefits package to premium amounts paid especially by the rich. Some studies have shown that reasons for low enrolment among those in the higher socioeconomic status are quality of care. If quality of care is improved among this group, enrolment is likely to increase. If this becomes feasible, enrolment is likely to increase and the scheme will be able to pull enough resources to reimburse facilities and remain sustainable. In addition, delays in obtaining biometric ID cards needs to be improved.

### 3.8.3 The NHIS expenditure

The NHIS is a major resource pool for financing health in the country. In 2013, the national health insurance levy (NHIL) formed a larger share of the health sector budget relative to government of Ghana's (GOG). The scheme currently employs different provider payment mechanisms-G-DRG for services, direct payment for medicines and capitation. With these systems running concurrently, inefficiencies are likely to increase and it is expected that soon, the scheme will have to make a decision to operate with a single payment system. Further, the current delays in reimbursements to providers, should it continue, will facilitate the refusal of providers to offer services to the insured as witnessed in 2014 when Christian Health Association of Ghana (CHAG) and private providers refused to offer services to NHIS clients. The credibility of the scheme could be compromised and the poor will be the most affected as they may pay out-of-pocket for health care.

## 3.9 Summary and Conclusion

The direction of financing in the health sector has remained the same over the years- donor-dependent for program implementation and NHIS for provider reimbursements. Given Ghana's lower middle income status, donor funds will continue to decline and therefore alternative sources of funding for health care should be identified and employed. Funds allocated to health as a proportion of GDP should be increased to meet Abuja declaration target. Data from NHIA on reimbursements for major diseases in the country will be a useful resource for planning and be made publicly available.

# CHAPTER 4

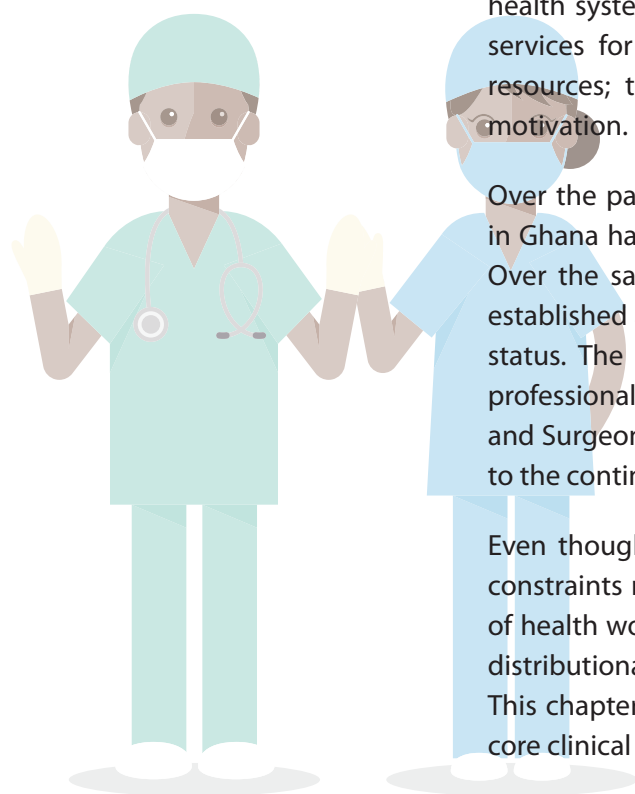
## Human resources for health

### 4.1 Introduction

Human Resources for Health (HRH) is a critical component of a functional health system. The health sector's ability to deliver the needed healthcare services for optimum health outcomes depends largely on the human resources; their right numbers, professional competence, skills-mix and motivation.

Over the past 15 years, the health workforce (all cadres of health workers) in Ghana has increased dramatically from 28,662 in 1999, to 94,696 in 2015. Over the same period, several new pre-service training institutions were established across the country, and existing ones were upgraded to tertiary status. The past 15 years also saw the establishment of two continuous professional development colleges, namely the Ghana College of Physicians and Surgeons and the Ghana College of Nurses and Midwives to contribute to the continuous professional development of workforce.

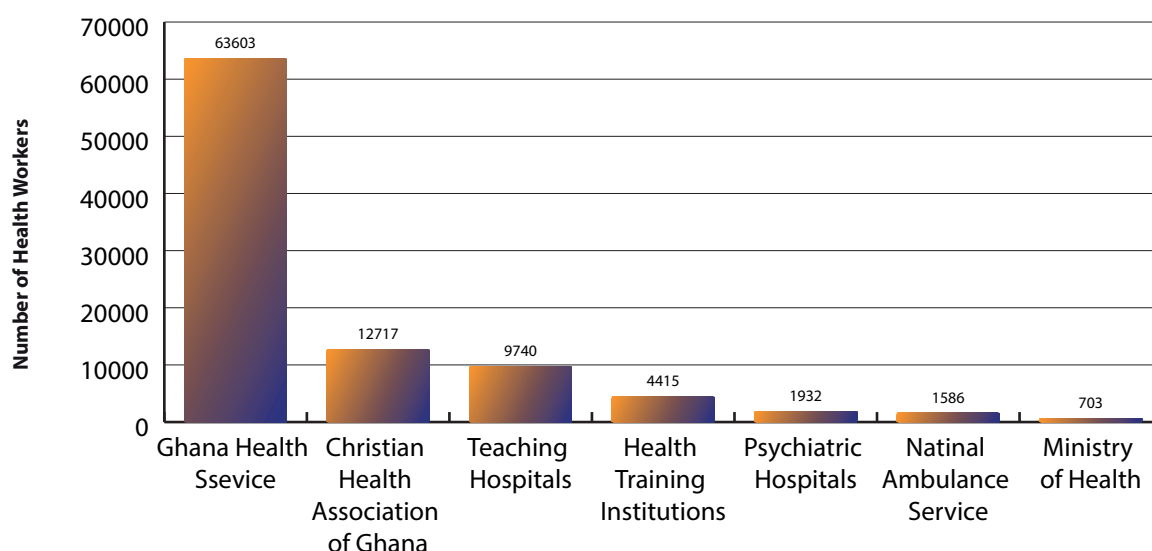
Even though the present HRH numbers are encouraging, there are some constraints regarding production, distribution, management and retention of health workforce in the health sector. For example, there is considerable distributional inequalities within and across the ten regions of the country. This chapter presents HRH situation in Ghana, with particular emphasis on core clinical staff.



## 4.2 Human Resources for Health Situation in Ghana

The data presented in this report relate to Public Sector Health workers only. The data were obtained from the Integrated Personnel Payroll Data (IPPD), 2011-2015. Data from the private sector, mission and other quasi-governmental health institutions were not readily available. It is however, estimated that about 10% of health workers are engaged in the private sector (Africa Health Workforce Observatory, 2010; MoH, 2012).

Workers of the public health sector mainly comprises of the Ministry of Health and six of its agencies' namely, the Ghana Health Service (GHS), Christian Health Association of Ghana (CHAG), Teaching Hospitals, Health Training Institutions, Psychiatric Institutions and the National Ambulance Service. Data from the Integrated Personnel and Payroll Database (IPPD) shows that as at December 2015, there were 94,696 public sector health workers in Ghana. The Ghana Health Service, the largest of all the agencies, has workforce of 63,603, representing about two-thirds (67%) of the entire public sector health workers, followed by the CHAG with a total of 12,717 (13%) staff. Figure 33 show the distribution of public sector health staff by agency.



**Figure 33: Distribution of Public Sector Health Workers by Agency**

### 4.2.1 Distribution of Health workers by Occupational Category/Cadre

For the purposes of this report, the various occupational categories in the health sector have been grouped into clinical staff and non-clinical support staff. The clinical staff represents approximately 65% of the entire health staff, and it includes Medical practitioners, Nursing

and associated professional, Midwives, and Pharmacist among others (Table 20). Non-clinical staff includes administration staff, accountants, drivers and technical officers etc.

**Table 20:** Distribution of Health Workforce by Cadre, 2015

Occupational Categories/Cadres	Number	% HW	HW/1,000 Population
Generalist Medical Practitioners	2,438	2.57	0.09
Specialist Medical Practitioners	726	0.77	0.03
Medical/Physician Assistants	1,729	1.83	0.06
Nursing Associate Professional	32,077	33.87	1.15
Nursing Professionals	19,093	20.16	0.68
Midwifery Professionals	5,582	5.89	0.20
Dental Assistants and Therapists	533	0.56	0.02
Pharmacist	666	0.70	0.02
Pharmaceutical Technicians and Assistants	877	0.93	0.03
Environmental, Occupational and Hygiene Workers	115	0.12	0.00
Physiotherapist and Physiotherapy Assistant	279	0.29	0.01
Optometrists and Opticians	131	0.14	0.00
Medical Imaging & Therapeutic Equipment Operators	1,439	1.52	0.05
Medical and Pathology Laboratory Technicians	849	0.90	0.03
Medical and Dental Prosthetic Technicians	111	0.12	0.00
Community Health Workers	3,451	3.64	0.12
Health Management Workers/Skilled Administrative Staff	215	0.23	0.01
Other Health Support Staff	24,385	25.75	0.87
<b>Total</b>	<b>94,696</b>	<b>100</b>	<b>3.39</b>

Source: IPPD December, 2015

### 4.2.2 Distribution of Clinical Staff

The distribution of clinical health professional staff in Ghana is grossly uneven across the country, and skewed in favour of the Greater Accra and Ashanti regions. Table 21 show the numbers of selected categories of clinical staff and their percentage distribution across the regions. Presently, there are about 3,164 doctors in the country, but Greater Accra and Ashanti regions alone have 2,228, representing 70.4% of all doctors. Similarly, the same two regions have 54.6% of the 666 public sector pharmacists; 44.5% of nurses (professional and enrolled); and 40.4% of all midwives in the country. On the contrary, the Upper East and Upper West regions appear to be worse off with fewer clinical staff compared with the other regions (Table 21).

**Table 21:** Distribution of Clinical Staff in Ghana by Region, 2015

Region	Medical Officer	% of Total	Nurse	% of Total	Midwife	% of Total	Pharmacist	% of Total
Ashanti	760	24.0	6,200	19.1	1,281	23	160	24.0
Brong Ahafo	166	5.3	2,513	7.3	483	8.7	45	6.8
Central	136	4.3	3,005	8.6	383	6.9	34	5.1
Eastern	183	5.8	2,580	8.7	600	10.8	64	9.6
Greater Accra	1,468	46.4	6,524	25.4	973	17.4	204	30.6
Northern	154	4.9	4,222	9.5	408	7.3	45	6.8
Upper East	46	1.5	1,904	6.3	311	5.6	15	2.3
Upper West	25	0.8	1,331	2.6	219	3.9	11	1.7
Volta	130	4.1	2,086	6.8	465	8.3	41	6.2
Western	96	3.0	2,760	5.8	459	8.2	47	7.1
<b>Total</b>	<b>3,164</b>	<b>100</b>	<b>33,125</b>	<b>100</b>	<b>5,582</b>	<b>100</b>	<b>666</b>	<b>100</b>

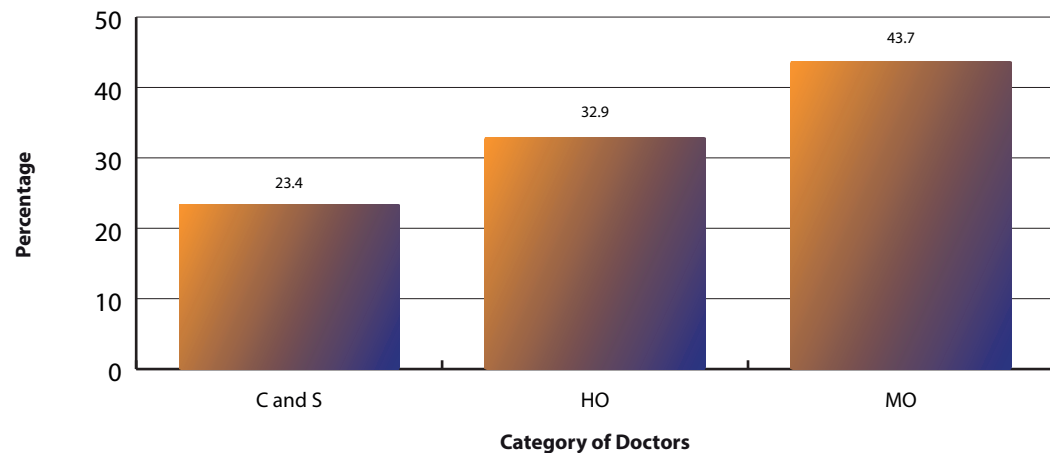
Source: IPPD December, 2015

## 4.2.3 Medical Doctor Situation in Ghana, 2015

### 4.2.3.1 Distribution of Types of Doctors

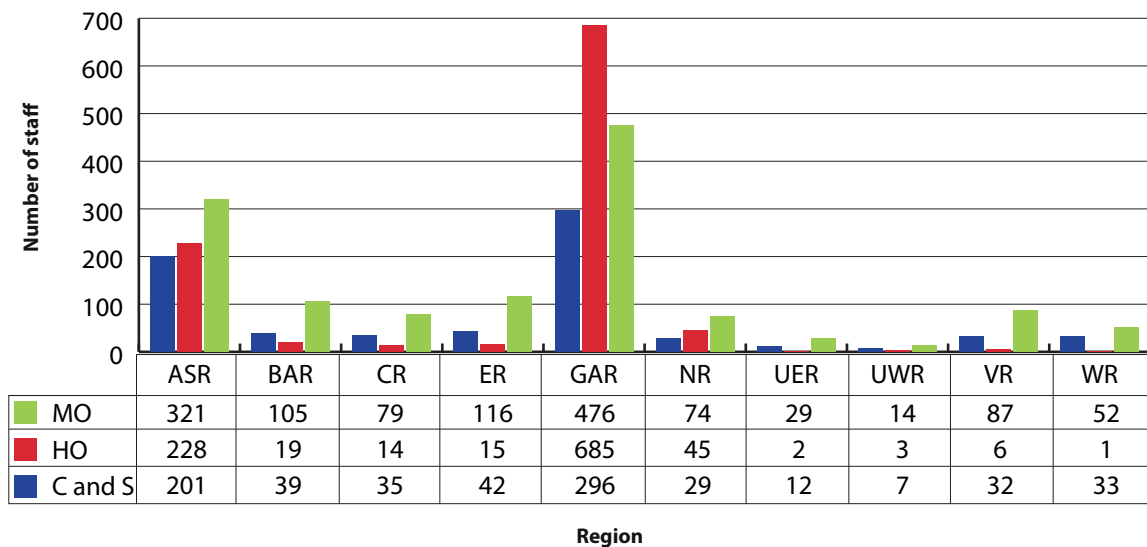
The Public Health sector at present has 28 Consultants, 698 Specialists, 1,018 Medical Officers, and 1,353 House Officers. The corresponding percentages for these statistics are illustrated in Figure 34. The distribution of types of doctors indicates Consultants and Specialist doctors is almost one-quarter (23.4%) of the entire doctor workforce, while Medical Officers (MO) and House Officers (HO) provide the bulk of service delivery in our Public Health facilities with the ratio of MO to HO being 1:1. In Ghana most of the consultants and specialists are based in the teaching hospitals, especially the two larger ones in Accra and Kumasi, with a few in regional and some district hospitals. There is therefore the need for a discussion on distribution of consultants and specialists in Ghana. It should be possible to provide all district hospitals with minimum requirements for the posting of some consultants and specialists such as gynaecologists and ophthalmologists, while regional hospitals could be upgraded to provide more specialised services such as radiotherapy and chemotherapy, cardiothoracic and genitourinary services. This will reduce the catastrophic expenses and other inconveniences associated with referrals from all over the country to the cities.

The majority of doctors in the Public Health sector are located in the Greater Accra and Ashanti regions. However, the Upper West and Upper East regions have the lowest numbers of doctors (Figure 35).



**Figure 34: Distribution of Types of Doctors in Ghana, 2015**

**KEY:** C and S – Consultants and Specialists HO – Medical House Officer MO – Medical Officer



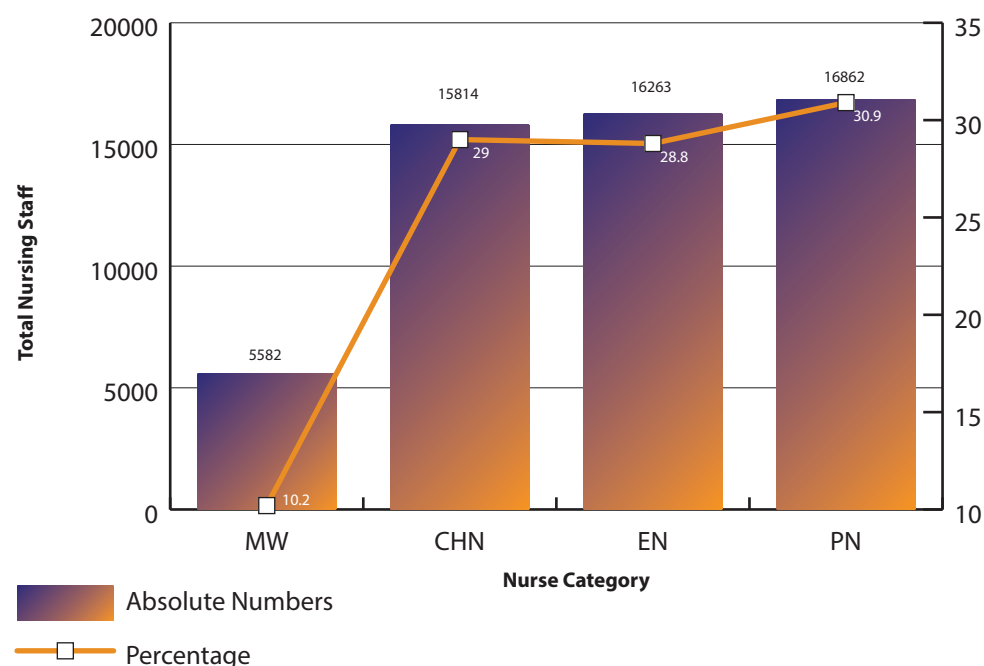
**Figure 35: Distribution of Doctor Categories by Region in Ghana, 2015**

**KEY:** C and S – Consultants and Specialists HO – Medical House Officer MO – Medical Officer

#### 4.2.3.4 Nursing Staff Situation in Ghana

The distribution of nursing staff across the country in 2015 is depicted in Figure 36. Overall, Professional Nurses constitute 31% of the health workforce in the nursing field, Enrolled Nurses and Community Health Nurses combined make up 59% of nursing staff while Midwives form the remaining 10% of nursing staff in the country.



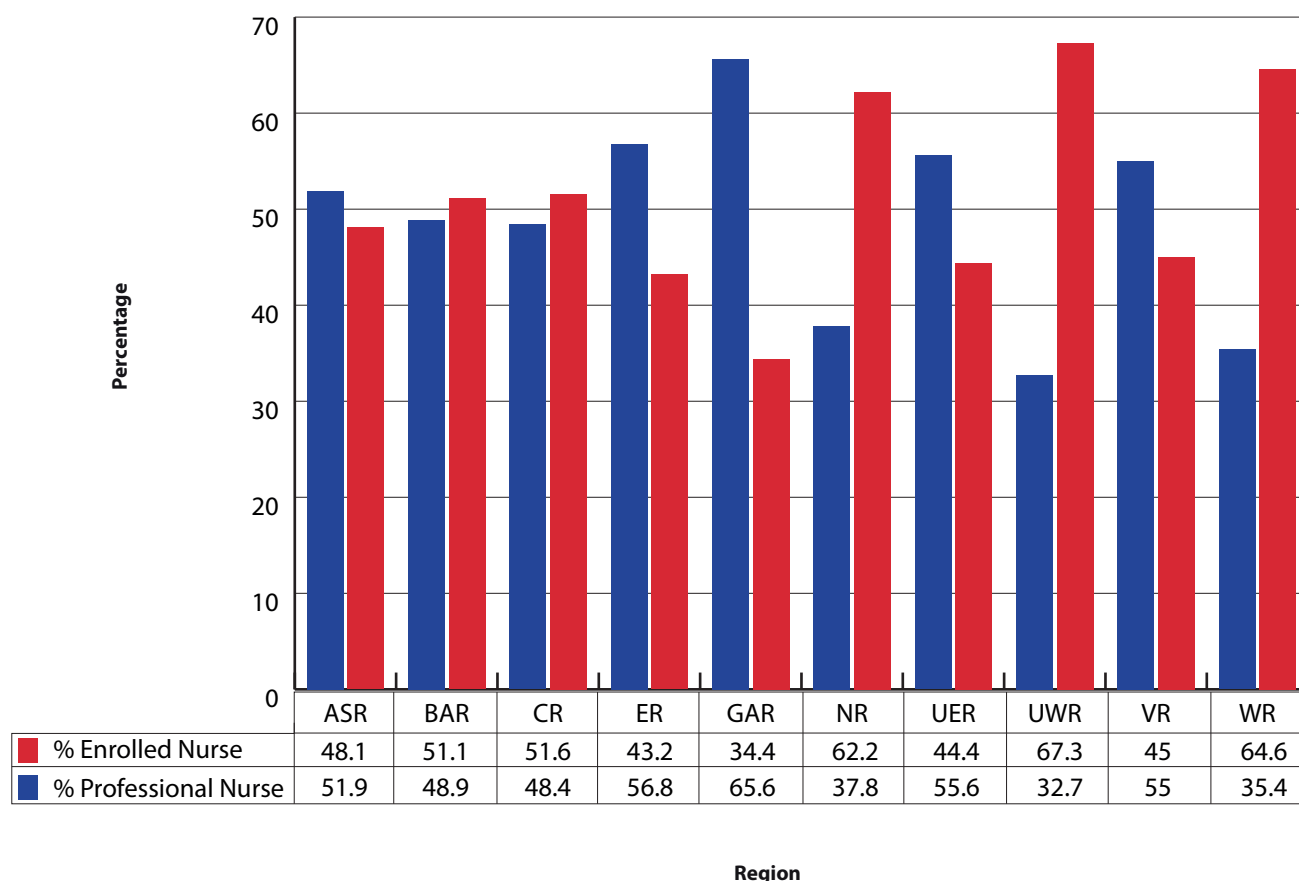


**Figure 36: Distribution of Nursing Staff across the Country, 2015**

**KEY:** MW – Midwives, EN – Enrolled Nurses, CHN – Community Health Nurses, PN – Professional Nurses

#### 4.2.3.5 Skills-mix of Clinical Nurses by Region

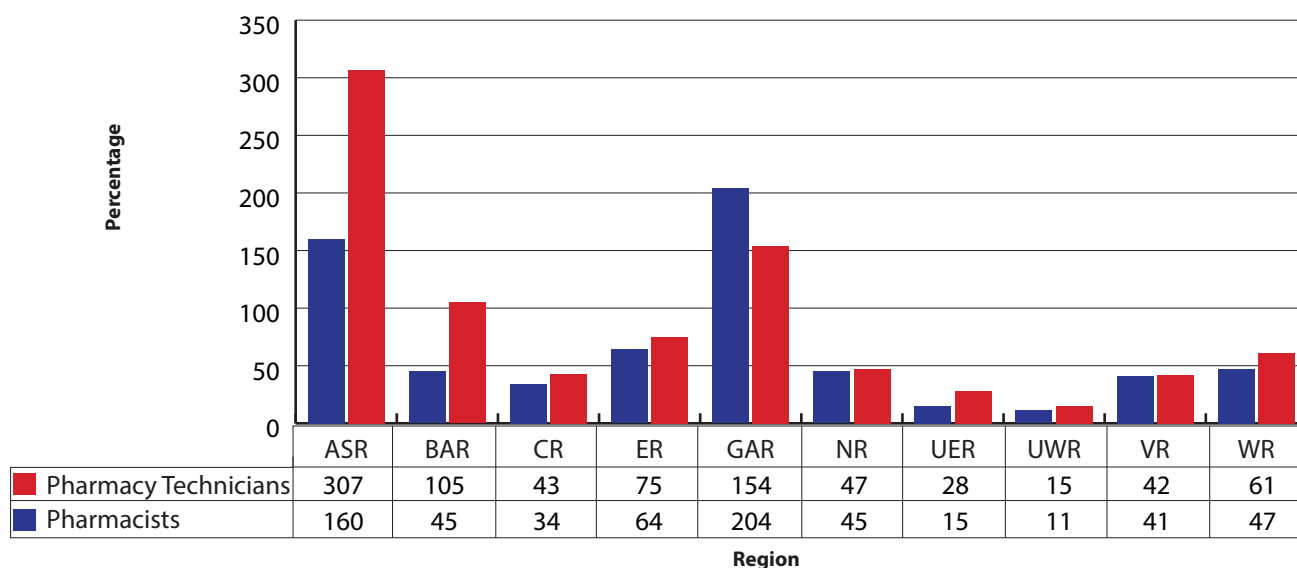
Figure 37 shows the skills mix of professional versus enrolled nurses. Nationally, about 51% of clinical nurses are professionals (PN) as opposed to 49% who were enrolled nurses (EN). This national proportion of PN to EN is below the World Health Organization (WHO) recommended skills mix of professional nurses to enrolled nurses of 6:4 (i.e. 60 professional nurses and 40% enrolled nurses), (WHO, 2009). Generally, the regional distribution of PN to EN nurses' skill mix appear to be akin to the national figures. Apart from the Greater Accra region that meets the recommended skills mix with about 66% professional nurses to 34% enrolled nurses, all the nine other regions fall short of skills mix norm. Northern, Western and Upper West regions have less than 40% of their nurses being professionals (Figure 37). This observed discrepancy in proportion of professional to enrolled nurses in Ghana is worrying as the lack of appropriate skill mix may affect the quality of health services.



**Figure 37: Proportion of Professional Nurse to Enrolled Nurse by Region, 2015**

#### 4.2.4 Distribution of Pharmacy Staff

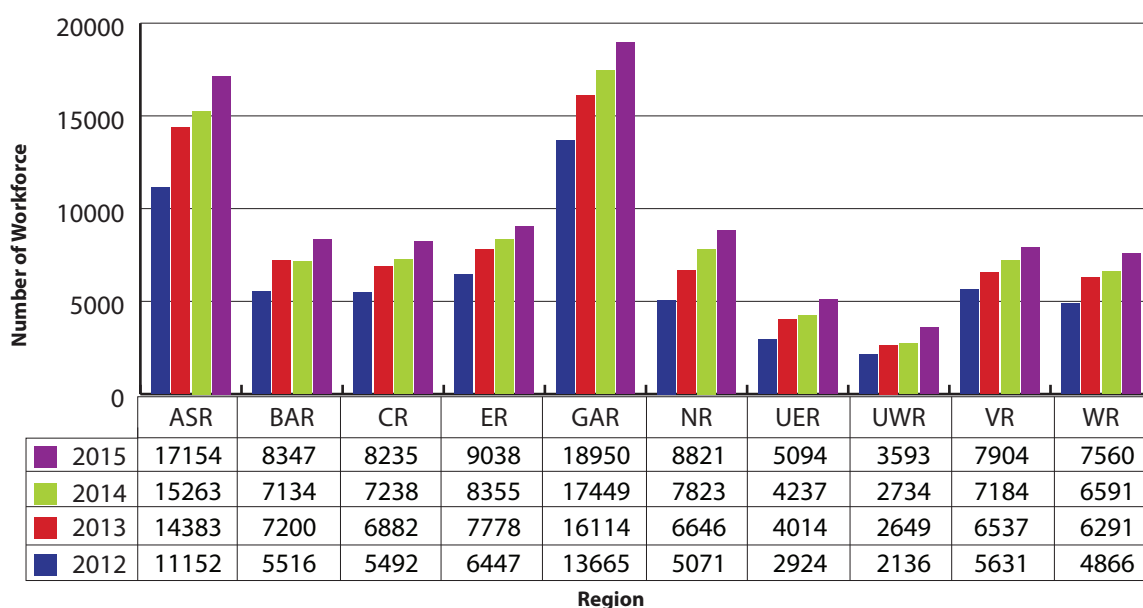
Presently, a total of 1,543 health workers, representing 1.63% of the health sector workforce are pharmacy staff, comprising 666 (43%) Pharmacists and 877 (57%) Pharmacy Technicians (Figure 38). Regional data indicates that the largest concentration (54.1%) of pharmacists (and pharmacy technicians) are located in the Ashanti and Greater Accra regions. Brong Ahafo, Eastern, Western, Northern and Volta regions reported total pharmacy staff ranging between 83 to 150 people. The least numbers of pharmacists and pharmacy technicians are found in Upper West (26), Upper East (43) and Central Region (77). The afore-mentioned statistics show that the most densely populated regions in Ghana (Ashanti and Greater Accra) also have majority of pharmacists and pharmacy technicians in the country. A potential explanation for this disparity might be that these two regions also house the two largest teaching hospitals in Ghana (i.e. Komfo Anokye Hospital and Korle-Bu Teaching Hospital) and these institutions recruit a sizeable chunk of health care professionals in the country.



**Figure 38: Distribution of Pharmacists and Pharmacy Technicians by Region, 2015**

## 4.4 Trends in Distribution of Human Resources for Health in Ghana, 2012-2015

The distribution of human resources for health (HRH) in Ghana appears to follow a similar pattern. Trend analysis of IPPD data shows that the number of health workers in the country has increased rapidly over the last four years from 56,283 in 2011 to 94,696 in 2015. Figure 39 shows the trend of HRH distribution from 2012 to 2015 by region.



**Figure 39: Distribution of Health Workforce in Ghana by Region, 2012-2015**

Table 22 presents detailed analysis of workforce distribution by region from 2011 to 2015; yearly absolute increases and yearly percentage increases between 2012 and 2015. The increase in health workforce spans across all the ten regions over the four-year period. The overall percentage increase in health workers between 2011 and 2015 ranges from 51% in the Eastern region to 101.4% in the Northern region, with a national average of 68.3% (Table 22, Panel 3). IPPD data show an increase of HRH across selected cadre of staff. The increase is particularly skewed towards professional health staff. Generally, the percentage increase in clinical nursing staff (professional and enrolled nurses) was relatively higher than the other categories (see Appendixes 2 - 7). In addition, the increases were greater in the three northern regions compared with regions in the middle belt and southern Ghana. It is also evident that there was greater increase in health workers in 2013 compared with the other years, while 2014 recorded the least growth. During 2014, the staff strength in Brong Ahafo region dwindled by 66 personnel (Table 22, Panel 2).

The greater increase during the period 2012-2015 has actually improved the staffing situation in the three northern regions, thus narrowing the HRH distributional inequities between the north and south Ghana. The improvement in nursing and allied professional could be attributed to the increase in the number of health training institutions in the country over the last few years.

**Table 22:** Trend Analysis of Health Workers Distribution by Region, 2011-2015

Year	Ashanti	Brong Ahafo	Central	Eastern	Greater Accra	Northern	Upper East	Upper West	Volta	Western	Total
<b>Panel 1: Total Health workers by Region and Year</b>											
2011	9,976	5,005	4,793	5,985	11,910	4,380	2,602	1,893	5,399	4,340	56,283
2012	11,152	5,516	5,492	6,447	13,665	5,071	2,924	2,136	5,631	4,866	62,900
2013	14,383	7,200	6,882	7,778	16,114	6,646	4,014	2,649	6,537	6,291	78,494
2014	15,263	7,134	7,238	8,355	17,449	7,823	4,237	2,734	7,184	6,591	84,008
2015	17,154	8,347	8,235	9,038	18,950	8,821	5,094	3,593	7,904	7,560	94,696
<b>Panel 2: Absolute Increase</b>											
2012	1,176	511	699	462	1,755	691	322	243	232	526	6,617
2013	3,231	1,684	1,390	1,331	2,449	1,575	1,090	513	906	1,425	15,594
2014	880	-66	356	577	1,335	1,177	223	85	647	300	5,514
2015	1,891	1,213	997	683	1,501	998	857	859	720	969	10,688
Total	7,178	3,342	3,442	3,053	7,040	4,441	2,492	1,700	2,505	3,220	38,413
<b>Panel 3: Percentage Increase (Over 2011 Health workers)</b>											
2012	11.79	10.21	14.58	7.72	14.74	15.78	12.38	12.84	4.30	12.12	11.76
2013	32.39	33.65	29.00	22.24	20.56	35.96	41.89	27.10	16.78	32.83	27.71
2014	8.82	-1.32	7.43	9.64	11.21	26.87	8.57	4.49	11.98	6.91	9.80
2015	18.96	24.24	20.80	11.41	12.60	22.79	32.94	45.38	13.34	22.33	18.99
Total	71.95	66.77	71.81	51.01	59.11	101.39	95.77	89.80	46.40	74.19	68.25

Source: IPPD December 2011-December 2015

## 4.4 Health worker population ratios

Tables 23, 24 and 25 present trends in doctor-population ratios, nurse-population ratio and pharmacist-population ratio.

**Table 23:** Trend Analysis of Doctor to population ratio by region, 2012-2015

Year	AR	BAR	CR	ER	GAR	NR	UER	UWR	WR	VR	National
2012	1:9,715	1:15,705	1:22,505	1:19,748	1:3,526	1:19,163	1:39,697	1:40,502	1:24,728	1:27,775	1:10,431
2013	1:10,503	1:17,547	1:23,892	1:19,065	1:3,178	1:22,894	1:33,896	1:53,064	1:23,277	1:28,653	1:10,170
2014	1:9,812	1:17,455	1:21,823	1:16,733	1:2,744	1:23,759	1:31,363	1:36,048	1:20,510	1:23,814	1:9,037
2015	1:7,186	1:15,598	1:18,860	1:15,964	1:3,182	1:18,574	1:24,149	1:30,856	1:18,228	1:27,326	1:8,832

**Key:**  
AR – Ashanti Region      BAR – Brong Ahafo Region      CR – Central Region      ER – Eastern Region  
GAR – Greater Accra Region      NR – Northern Region      UER – Upper East Region      UWR – Upper West Region  
VR – Volta Region      WR – Western Region

**Table 24:** Trend Analysis of Nurse population ratio by region, 2012-2015

Year	AR	BAR	CR	ER	GAR	NR	UER	UWR	WR	VR	National
<b>2012</b>	1:1,667	1:2,360	1:1,764	1:1,712	1:1,004	1:1,636	1:1,309	1:1,418	1:2,049	1:2,016	1:1,574
<b>2013</b>	1:1,289	1:1,814	1:1,333	1:1,480	1:922	1:1,158	1:987	1:1,112	1:1,744	1:1,415	1:1,264
<b>2014</b>	1:1,029	1:1,443	1:998	1:1,248	1:782	1:788	1:806	1:912	1:1,388	1:1,118	1:1,003
<b>2015</b>	1:881	1:1,030	1:854	1:1,132	1:716	1:678	1:583	1:580	1:1,136	1:950	1:884

**Key:**  
AR – Ashanti Region      BAR – Brong Ahafo Region      CR – Central Region      ER – Eastern Region  
GAR – Greater Accra Region      NR – Northern Region      UER – Upper East Region      UWR – Upper West Region  
VR – Volta Region      WR – Western Region

**Table 25:** Trend Analysis of Pharmacist population ratio by region, 2012-2015

Year	AR	BAR	CR	ER	GAR	NR	UER	UWR	WR	VR	National
<b>2012</b>	1:40,016	1:71,133	1:111,452	1:68,623	1:22,673	1:90,529	1:66,988	1:52,075	1:92,729	1:65,053	1:48,929
<b>2013</b>	1:36,466	1:65,109	1:100,544	1:53,895	1:23,252	1:71,092	1:72,312	1:49,526	1:103,688	1:64,653	1:46,331
<b>2014</b>	1:33,237	1:57,524	1:82,928	1:51,097	1:22,320	1:63,178	1:57,773	1:50,467	1:73,067	1:54,721	1:41,960
<b>2015</b>	1:34,135	1:57,539	1:75,441	1:45,648	1:22,899	1:63,566	1:74,058	1:70,127	1:57,795	1:55,815	1:41,958

**Key:**  
AR – Ashanti Region      BAR – Brong Ahafo Region      CR – Central Region      ER – Eastern Region  
GAR – Greater Accra Region      NR – Northern Region      UER – Upper East Region      UWR – Upper West Region  
VR – Volta Region      WR – Western Region

At present, the doctor population ratio has improved from 1:10,431 in 2012 to 1:8,840 people (Table 23). There are however, wide disparities across regions, with Greater Accra and Ashanti regions having relatively higher doctor to population of 3,182 and 7,186 people respectively. The Upper West region has the lower doctor population ratio of 1:30856 persons. Trend data show that the doctor population ratio has been improving since 2013

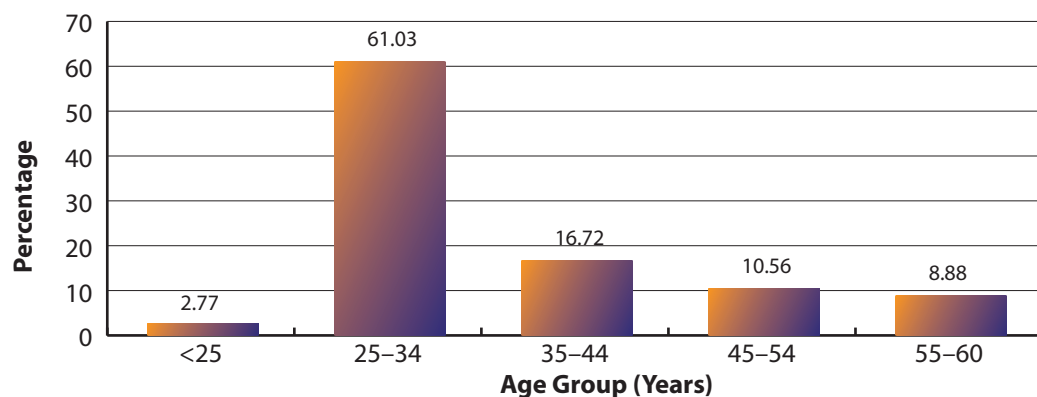
in all regions, but the Volta region has seemingly not experienced much improvement (Table 23).

A trend similar to doctor population ratio is observed with the nurse population ratio (Table 23). Currently, the nurse population ratio for Ghana is 1:884 persons, which is above the WHO recommended standard of 1:1,000 persons. Even though the nurse population ratio has improved nationally across board, there is imbalance in equity and skill mix across the regions. The distribution of midwifery professionals across the country appears to be slightly uniform compared with the other clinical staff (doctors, nurses and pharmacists), although Greater Accra and Ashanti regions still have the highest number of staff.

Presented in Table 25 is a trend analysis of pharmacist population ratios from 2012-2015. Currently the pharmacist population ratio is 1:41,958, with wide regional variations ranging from highest of 1:22,899 in Greater Accra region, to the lowest of 1:75,441 in Central region. Eight out of the ten regions have pharmacist population ratios below the national ratio; and in particular, Northern, Upper East, Upper West and Central regions have very low pharmacist population ratios. The inequitable distribution of pharmacists, coupled with the limited number of pharmacists in the country can affect quality of care.

## 4.5 Age Distribution of Health Workers

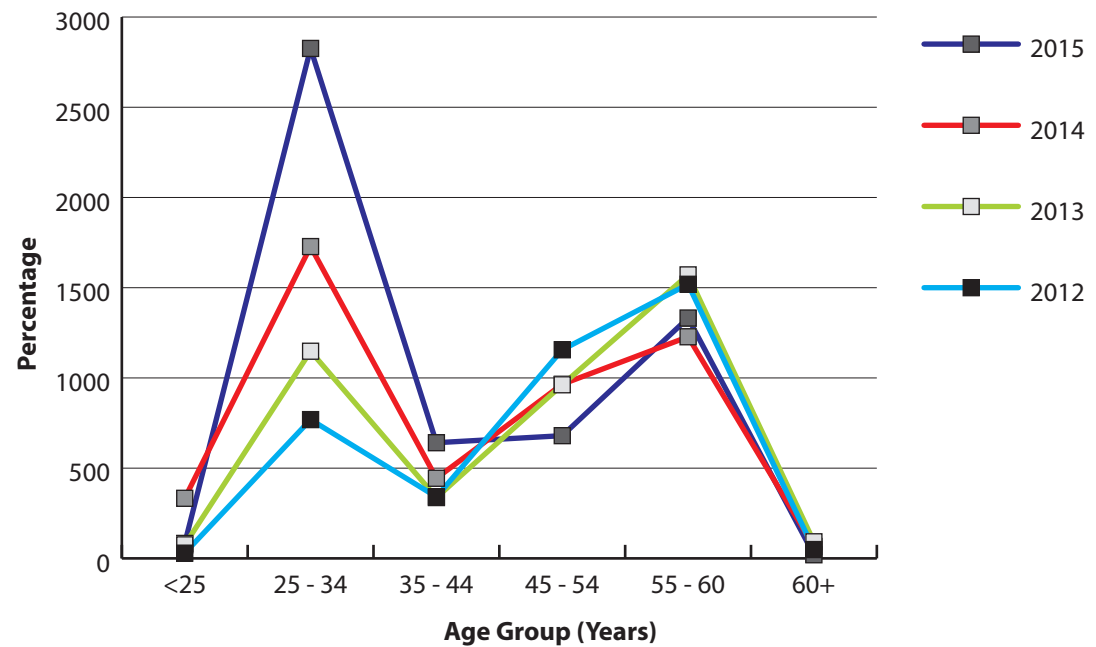
Figure 40 presents the distribution of public sector health workers by age groups. Ghana has a relatively youthful health workers. Presently, nearly two-thirds (63.8%) of the public sector health workers are aged 18-34 years. On the contrary, those aged 55-60 years constitute about 9% percent of the entire health workers, suggesting that within the next 5 years, these staff would have retired from active service. The present age structure of the health workers has short term and long term implications, and thus may require careful human resource planning in terms of mentorship and succession planning. The younger cohort may have to be trained and nurtured by the more senior staff to build their capacity to assume health sector leadership and deliver the requisite services without compromising quality.



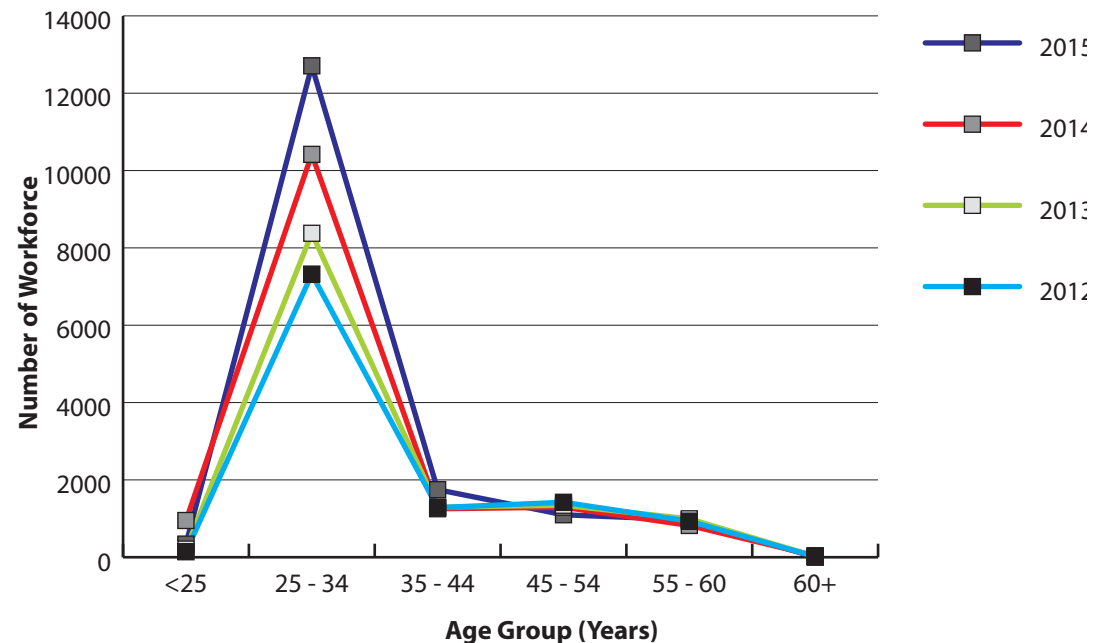
**Figure 40: Distribution of Health Public Sector Workers by Age**

### 4.5.1 Cadre-specific age analysis

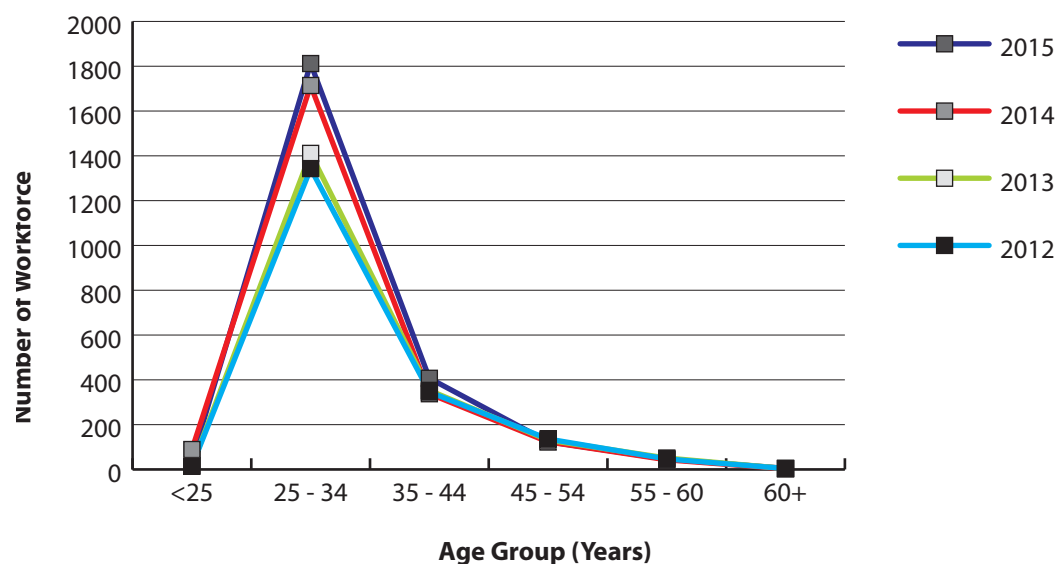
Figures 42–45 show cadre-specific age analysis from 2012–2015. Figure 41 shows that more midwives would be retiring in the next five years than other professional nurses. Apart from pharmacists and midwives, majority of doctors and professional nurses are below age 40 years. (Figures 42 – 45).



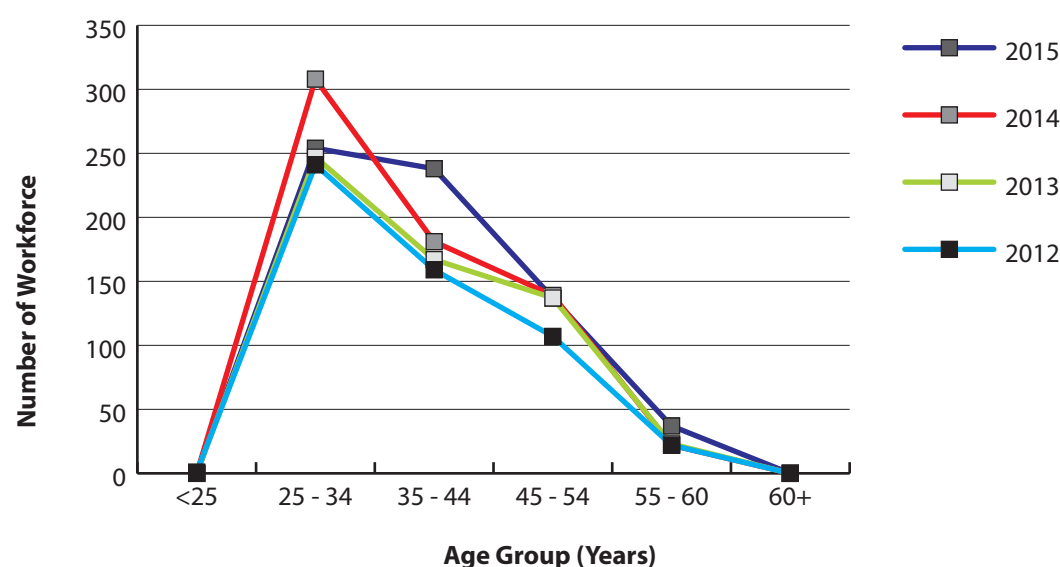
**Figure 41: Age Distribution of Public Sector Midwives in Ghana, 2012-2015**



**Figure 42: Age Distribution of Professional Nurses in Ghana, 2012-2015**



**Figure 43: Age Distribution of Public Sector Doctors in Ghana, 2012-2015**



**Figure 44: Age Distribution of Public Sector Pharmacists in Ghana, 2012-2015**

## 4.6 Health Workforce Management

In the health sector, the training and practice of skilled health professionals are regulated by different statutory regulatory bodies specified in the Health Professions Regulatory Bodies Act, in 2013 (Act 857). These regulatory bodies include the Medical and Dental Council, Pharmacy Council, Nursing and Midwifery Council, and Allied Health Professions Council. These regulatory bodies were established with clear mandates to accredit the respective training institutions that produce the relevant cadres according to laid down criteria. Each Agency responsible for ensuring that eligible members of their profession whether



trained locally or abroad are accredited and registered before they are allowed to practice in Ghana. Each of the Regulatory bodies is headed by a Registrar, who is responsible for the day to day administration of institution.

All the Regulatory bodies have a Governing Council whose members are appointed by the President of Ghana for a fixed term. The Governing Council has an oversight responsibility for the operations of their specific regulatory body. Additionally, all the regulatory bodies have the power to punish professional misconduct of their members.

The Medical and Dental Council (MDC) is the statutory body originally established by the Medical and Dental Council Decree (1972) NRCD 91, and amended by Act 857 of 2013. It is responsible for securing the public interest the highest level of training and practice of medicine and dentistry in Ghana. The MDC regulates the practice of medical doctors, dentists and physician assistants. Practitioners renew their license annually after accruing the required continuous professional development credit points.

The Pharmacy Council (PC) is a statutory regulatory body established by an Act of Parliament, The Pharmacy Act, (Act 489) 1994, and amended by Act 857 of 2013. The PC is responsible for securing the public interest the highest level of training and practice of pharmacy in Ghana. It regulates the practice of pharmacists and pharmacy technicians. Practitioners need to attend at least one continuous professional development workshop to be able to renew their license annually.

The Nursing and Midwifery Council (NMC) regulates the practice of nurses, midwives and nurse assistants. When one is duly registered he or she is issued with a Professional Identification Numbers (PIN). Nurse Assistants are also issued with Auxiliary Identification Number (AIN) after registration. The PIN /AIN is renewed every twelve calendar months. Any Nurse Assistant, Nurse or Midwife whose PIN or AIN expires is required to apply through the Council's Regional Offices. **The PIN or AIN will be renewed upon satisfying the requirements for renewals.** Nurse assistants are healthcare providers who have undergone a two- year post-secondary school training in Health Assistant Clinical or Community Health Nursing programmes. They provide healthcare to patients or clients under the supervision of a registered nurse or midwife.

The Allied Health Professions Council is the body established by an Act of Parliament (Act 857, 2013) to regulate the training and practice of all Allied Health Professions in Ghana. One of the Council's mandate is to grant Professional Accreditation for all Allied Health Programmes. Part One of the Health Professions Regulatory Bodies Act 857 of 2013 describes the details of Allied Health Professions Council.

## 4.7 Recruitment in the Ghana Health Service

Recruitment in the Ghana health service is currently decentralized to the regional level. For the professionals in the health service, one must have completed the stipulated course,

undertaken attachment or housemanship as may apply and be duly registered with the appropriate regulatory body before one can apply for appointment.

Prospective applicants fill the Public Service Commission form II and submit it at the regional office of the region where they intend to work. Interviews are conducted at the regional levels but the collation is done at the national level.

#### 4.7.1 Promotion

Heads of Budget Management Units of the GHS normally initiate the promotion process by compiling names of staff due for promotion for a given year. The compiled list is verified with data held at the regional office as well as the headquarters. Promotion in the public sector is not automatic. For employees to be eligible, they must have work continuously for a stipulated number of years (see Table 26); must show satisfactory performance for the time period in addition to taking part in a stipulated number of in-service training programme of importance to the employee's job.

Furthermore the employee should not be under investigation for any major offence against him/ her. Finally, for those with regulatory bodies, they must have the requisite professional license and must be of good standing according to the requirements of the professional body the individual belongs.

Staff fulfilling the requirements are promoted based on satisfactory performance in either a practical examination, written examinations or interviews. Promotion out of turn is also for staff who acquire additional relevant qualification after an approved course of study or those with exceptional performance

**Table 26:** Promotion Schedule for Public Sector Health Workers

Grade Level	Staff in Deprived Areas	Staff in Non-Deprived Areas
1st – 2nd	2 years	3 years
2nd – 3rd	4 years	5 years
3rd – 4 <sup>th</sup>	4 years	5 years
4th -5 <sup>th</sup>	4 years	5 years

Source: GHS, 2008

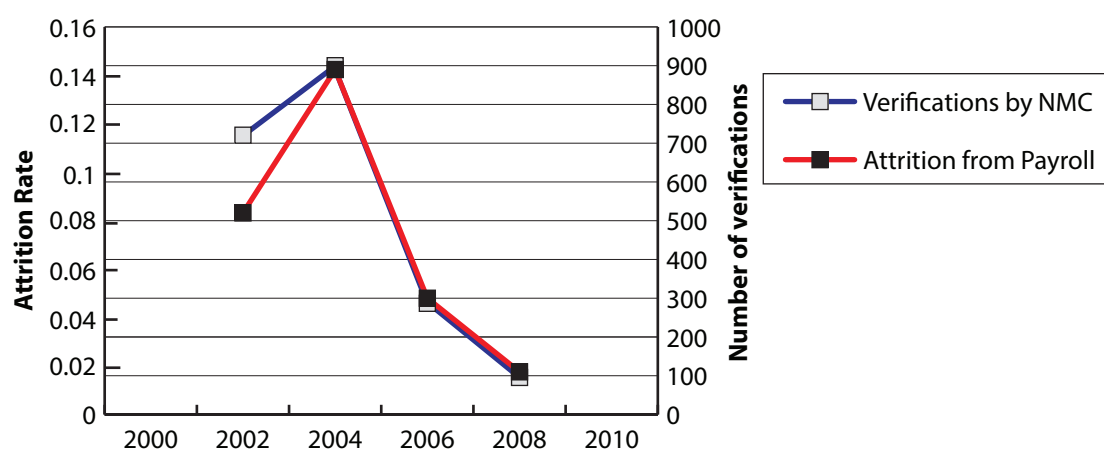
It is encouraging to note that staff in designated deprived areas are promoted a year earlier than their counterparts in non-deprived areas. This serves as incentive for taking posting to deprived areas.

#### 4.7.2 Retention and migration of health workers

Retention in the health service is assumed once he/she is permanently employed unless one retires at the stipulated age of 60 years or on medical grounds, or is involved in

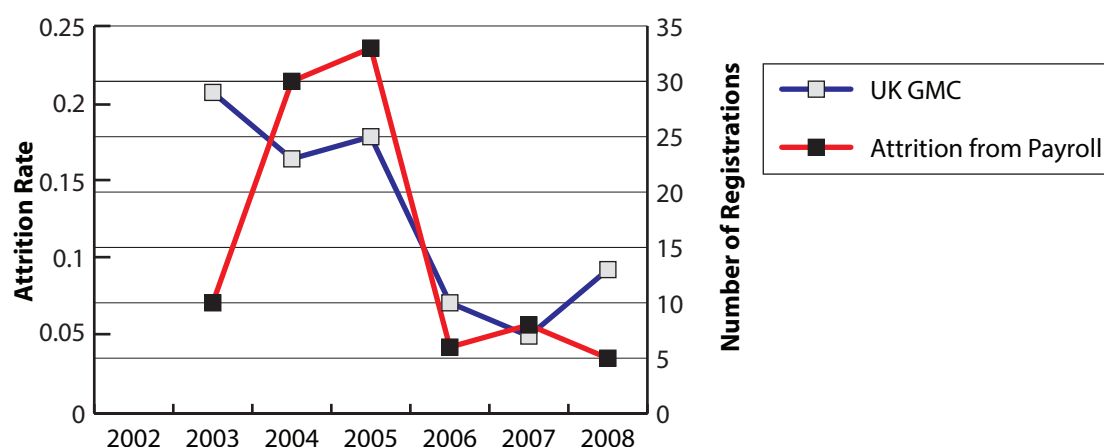
unprofessional conduct which necessitates termination of appointment. For temporary staff, the period of employment is usually six months subject to renewal. It is the responsibility of employees whose practice is regulated by statutory bodies to ensure that they have the requisite licensure to practice at all times.

Migration of health staff is another area of interest in human resource management. In an annual basis from 1991-2004, three to four percent of Ghana's physicians migrated (Bhargava & Docquier 2008). In 2006, the attrition rate of health workers after employment was 1.5% (Medical Doctors), 2.5% (General Nurses), 1.5% (Midwives), and 1.5% for Pharmacists, laboratory technicians/technologist and X-ray technologists. Records available show migration of health workers especially doctors and nurses from Ghana has slowed in recent years (Figures 46 & 47).



**Figure 45: Trends in the Migration and Attrition of Nurses from Ghana**

Source: Nursing and Midwifery Council, IPPD Database (cited in Antwi & Philip, 2011)



**Figure 46: Migration and Attrition of Physicians from Ghana**

Source: UK General Medical Council; IPPD Payroll Database (cited in Antwi & Philip, 2011)

### 4.7.3 Performance of Health Workers

Performance of the health workers is done mainly through the appraisal system. At the beginning of the year, individual workers set their own objectives for the year with the aid of their supervisors. The objectives are reviewed at midway of the year to see whether they are on course and at the end of the year to ascertain whether they have been achieved.

### 4.7.4 Compensations / remuneration/Retirement

This is determined by the single spine salary structure. An annual award scheme has also been instituted to award hard working staff at facility, district, regional and national levels. Generally staff retire at the compulsory retirement age of 60 years as applied to other government employees.

### 4.7.5 Posting and transfers

Posting in the public sectors is not without challenges as majority of staff prefer working in the well-endowed urban centers to the detriment of deprived rural areas. It is not clear what criteria is used to determine who gets posted to a deprived area and who goes to the well-endowed areas. For those who take up posting to deprived areas have challenges securing transfer from such places. As a result, posting to deprived areas is seen as a punishment and many do not take their postings.

Currently, posting are based on the staffing norms which stipulates vacancies available at a particular region or district. Laudable as this may be in ensuring equitable distribution of health professionals, it still does not solve the problem of staff who want to go on transfer especially if they are serving in deprived areas. The reason being that, it becomes their responsibility to look for a region that has the vacancy and is willing to take the said officer on board.

### 4.7.6 Staffing Norms

The quality of service delivered by the health sector among other things is largely determined by the number and mix of health workers of a particular cadre required to cope with the workload. Staffing norms help various health institutions to align their workforce to their workload. Since it establishes the minimum and maximum number of the various categories of health workforce, it prevents both under and over staffing.

Hitherto the distribution of health staff had been based on population and an outmoded staff norms developed by the Ministry of Health (MoH). At present, the MoH and its agencies since 2011, have been working tirelessly to develop a more empirical and evidence-based Staffing Norms based on the WHO's Workload Indicator of Staffing Needs (WISN). This revision was necessitated by the limitations of both the 1992 Facility Staffing Norms and

the WHO Population Ratio Staffing Norms, which do not consider local variations and workload characteristics among others (GHS, 2015). At present, new Staffing Norm has been developed to cover most clinical and some non-clinical (support) staff in Health Centers, District Hospitals, Regional Hospitals, and Teaching Hospitals. Work is ongoing and the expectation is that all cadre of health workers and facilities will be covered. It is therefore incumbent on human resource managers of the various health facilities to consult the technical manual of the country on staffing norms to know their staffing needs.

## 4.8 Issues of malpractices and how it has been addressed within the sector

Malpractice and disciplinary issues are handled according to codes of conduct of the Ghana Health Service and the professional regulatory bodies.

Some argue that in Ghana low performance, especially in the public health sector, is not necessarily related to inadequate number of staff, but negative attitude to work. These include absenteeism, shirking (malingering) and moonlighting/dual practice.

Absenteeism has been found to be a persistent behaviour among health workers in Ghana. Users often report that doctors do not always honour appointments, or that doctors report late for duties. Doctors on morning shift normally start work at 8 am but in the urban areas in Ghana they sometimes arrive as late as 1.00pm, just before the afternoon shift. Absenteeism among public sector doctors and nurses is mostly linked to locum work in the private sector, mainly available in the urban areas. Most commonly, locum work will be done before or after public sector working hours. However, it is frequent that the locum work starts at the same time when the public shift ends; or that the time between the end of public service and the start of locum work is too short for the health worker to move from the public to the private facility. In those cases, health workers will mostly be absent from their public job, since lateness is not tolerated and sanctioned in the private sector. Health workers at well-staffed public services may 'cover each other up', so that each in turn can take up locums that partially overlap with working hours. Alternatively, auxiliary or junior nurses will have to take over work ('the donkey worker') while the professional nurses are doing locum work.

Health worker behaviour is said to be shirking<sup>22</sup> when they talk or chat away, which is most frequent, or are on phone or sleep during working hours; or show their face at the service and then disappear. Users are often upset with health workers serving them slowly, because they were talking with colleagues or friends, or talking too long on the phone. However, some health workers on the other hand argue that the workload does not even allow them to have lunch or other legitimate breaks. Moonlighting refers to health workers having or engaging in another professional activity, alongside their main job as a health worker. Moonlighting is very frequent among health workers in Ghana. Normally this is

22 **Shirking:** refers to a situation where a worker avoids working hard while at work.

done after working hours, because doing it during working hours is 'illegal'. Moonlighting is most common in urban areas.

The range of professional activities and sectors in which health workers have a second job is vast and includes farming, owning and supervision of drug shops, owning and supervision of consumer goods shops, baking and selling of bread. Health professional with higher education such as doctors, pharmacists and nurses tend to be more involved in locum work than those lower education such as auxiliary nurses.

Health workers as well as users invariably report that moonlighting is practiced because of financial reasons. Doctors report that income from moonlighting complements their salary; nurses point out that their base salary is not sufficient and therefore have to engage in second jobs.

There are however, a number of difficulties associated with locum work. Most health workers point out that the combination of two jobs is exhausting, leading to decreasing efficiency and bad attitudes towards patients. For these reasons, some health workers scale down their primary public employment, to remain fit for the secondary professional private activity.

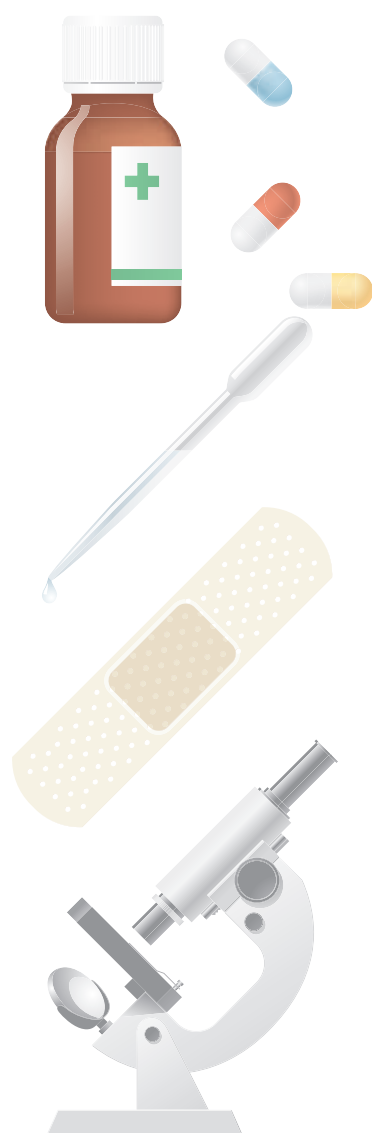
## 4.9 Summary

The analyses presented in this report indicate that there are marked imbalance in skills-mix and distribution of health workers in the country. This does not ensure quality health care for all. Thus moving forward, the Ministry of Health and the Ghana Health Service need to:

- Devise a distributional mechanism to ensure that health workers are fairly distributed across all the regions. The available staffing norms should be applied.
- Conduct a gap analysis to determine the actual HRH requirements for each region as well as per facility.
- Increase production of key professionals to ensure appropriate skill-mix for efficient service delivery.
- Measures must also be taken to minimize the incidence of absenteeism, malingering and moonlighting, especially in the urban areas.

# CHAPTER 5

## Health commodities and technology



### 5.1 Introduction

Medical products and devices, vaccines, infrastructure and equipment are some of the key drivers of an efficient healthcare delivery of any country including Ghana. Hence, availability of quality medical products and devices, vaccines with the needed health infrastructure, and equipment should be the focus of any country seeking the health of its citizens.

This chapter will therefore give an overview of the quality and availability of medical products and devices, vaccines, infrastructure and equipment in Ghana from the year 2000 to 2014 with particular emphasis on how it affects the management of the top ten (10) communicable and top five (5) non-communicable diseases in Ghana. The overview will be stratified by public and private health facilities.

Subsequently, the content of this report will serve as policy guideline for improvement in the quality and availability of medical products, vaccines, health infrastructure and equipment in combating the top ten (10) communicable and top five (5) non-communicable diseases in Ghana.



## 5.2 Availability of Quality Medical Products and Devices

The availability of quality and safe medical products and devices and vaccines in Ghana requires an effective procurement system for such products. However, effective procurement of medical products and devices can only be realized if an approved national list and technical specifications of medical products and devices are available. Although, there has been a recommendation for a national list of approved medical products and devices for procurement or reimbursement since 2010, this recommendation has still not been realized as at 2013. Fortunately, technical specifications of medical products and devices to support procurement or donations was developed in 2010. More importantly, different healthcare facilities in Ghana have national standards or recommended lists of medical products and devices for effective healthcare delivery since 2010. In Ghana, there have also been units within the Ministry of Health responsible for the implementation of health technology policy since 2010.

Availability of quality generic medicines in Ghana is also relevant for effective healthcare management. As a step towards regulating the use of medicine for various purposes, the WHO established the first Model List of Essential Medicines in 1977 to assist countries in formulating their own essential list of medicines. The Ghana National Drug Programme, as part of its mandate regularly develops and distributes an Essential Medicines List and Standard Treatment Guidelines to all public health institutions. The 6th Edition of the Ghana Standard Treatment Guidelines (STG) and Essential Medicines List (EML) of Ghana was launched in 2010. This list serves as a guide for the procurement and use of medicines in Ghana. Records available show that the median percentage availability of selected generic medicines in a sample of private health facilities increased from 18 % (2001-2008) to 44.6 % (2001-2009). On the contrary, the median percentage availability of selected generic medicines in a sample of public health facilities decreased from 45 % (2001-2008) to 17.9 % (2001-2009). The consumer price of generic medicines is critical for achieving quality but affordable healthcare in Ghana. The consumer price ratio<sup>23</sup> is the mean unit price of selected generics compared to median unit of international reference prices of the same product. The median consumer price ratio of selected generic medicines in selected private health facilities increased from 2.4 (2001-2008) to 3.8 (2001-2009). However, that of the public health facilities decreased from 3.8 (2001-2008) to 2.4 (2001-2009).

Monitoring access to medicines is linked to the governance and service delivery components of the health system. Essential medicines are intended to be available in adequate amounts and quality at the facility. A snapshot of access to medicines can be generated using indicators that provide information on availability of medicines. The World Health Organization and Health Action International developed a standardized methodology for facility based surveys on medicines availability, prices and affordability. The tracer medicines include availability of 14 essential medicines in public and private sector facilities in use worldwide. There are also regional specific drugs (WHO, 2010)

23 **Consumer price ratio:** ratio between median unit prices and the median international reference prices for that same product for the year preceding the survey.



The Ministry of Health set a target of 90% of tracer drugs availability in hospitals under health objective 5: strengthening institutional care including health service delivery. It attained achieved 86.4%, 94.1% and 85.7% in 2010, 2011 and 2012 respectively (WHO, 2013).

### 5.3 Medical Supplies for Malaria Prevention and Control

Malaria is one of the priority diseases in Ghana as it has consistently been the first among the top ten OPD conditions in health facilities. Insecticide-treated bed nets is one of the major ways of malaria prevention especially in children under 5 years and pregnant mothers. This is relevant since in 2012, malaria alone was responsible for 20 % of death in children under 5 years old. The percentage of children under 5 years of age sleeping under insecticide-treated bed nets in Ghana have increased gradually from 28 % (2005-2009) to 38 % (2005-2011) and further to 53 % (2007-2013). To increase household access and use of insecticide treated bednets, in the year 2012, Ghana completed her first nationwide door-to-door distribution campaign of insecticide treated net with a hang-up component. This campaign distributed more than 12.4 million long-lasting ITNs in all ten regions as a way of protecting people against mosquito bites. In 2014, a total of 1,373,800 pupils attending classes two and six in more than 14,000 primary schools received insecticide treated bednets and information on ITN use. In addition, over 1.1 million ITNs were distributed through ANC clinics and CWCs. However, the increased in children under 5 years of age sleeping under insecticide-treated bed nets have not resulted in a downward trend in malaria mortality in Ghana. Proportion of children under 5 years of age with fever being treated with antimalarial drugs in Ghana increased from 43 % (2005-2010) to 52 % (2005-2012) and then decreased to 39 % (2007-2013).



Availability of appropriate medicine for treating malaria is essential in preventing malaria-related mortality. Availability of Artemisinin-based Combination Therapy (ACTs) for

malaria in Ghana increased from 31 percent in 2009 to 83 percent in 2011. The availability of ACTs in public health facilities was 80.7 percent whilst that of private health sectors was 82.6 percent. The increase in availability was due to the introduction of the Affordable Medicines Facility for Malaria in Ghana by the Global Fund. This led to a reduction of ACTs from \$5.0 to \$0.5 for paediatric formulations and \$7.0 to \$0.75 for adult formulations. The increase in demand for antimalarial medications in Ghana also led to the influx of different types such medications. In that light the Laboratory Services Department (LSD) of Food and Drugs Authority (FDA) in conjunction with other stakeholders such as National Malaria Control Program (NMCP) and United States Pharmacopoeia Convention (USP) have conducted yearly post market surveillance of the quality of antimalarial drug on the Ghanaian market from 2008 to 2013. In 2008, the Food and Drugs Authority of Ghana participated in QAMSA (Quality of Antimalarial Medicines in Sub-Saharan Africa) project, which was organized by the World Health Organization in collaboration with regulatory agencies of the participating countries. All the samples were analyzed using GPHF-Minilab techniques and full monograph protocols at the Research Institute for Industrial Pharmacy, incorporating CENQAM, North-West University, Potchefstroom, South Africa, which is a laboratory prequalified by WHO and a WHO Collaborating Centre; however, samples of Sulfamethoxypyrazine/pyrimethamine (SPP) products were tested at the USP Laboratory, Rockville, USA. Ghana collected 175 samples, of which 99 were manufactured locally and the remaining 76 were imported. Out of the 99 locally manufactured samples 63 were not registered by the FDA. Eight percentage (8 %) of the sample failed the minilab testing. Fifty-six samples (32 %) were submitted for full monograph analysis; of which 27.3 % of Artemisinin-based combination therapy (ACT) failed and 56.2 % of Sulfadoxine/pyrimethamine (SP) also failed. The failure rates for registered and non-registered products were 52.2 % and 20.0 % respectively. Recommendations from the above survey have improved medicines regulation in Ghana. Subsequently, the National Malaria Control Programme in conjunction with the Food and Drugs Authority conducted another quality assessment of antimalarial drugs on the Ghana. Of note, full monograph analysis of 122 antimalarial medicines analyzed by the FDA indicated that 24 % (31 products) failed quality assessment parameters and led to the withdrawal of several products from the market. The continued quality assessment of antimalarial medicines on the market by FDA and with support from USP-DQI program and the attended regulatory actions by the FDA from 2008-2013 have led to significant availability of quality antimalarial medicines. This could probably be one of the reasons the mortality rate of malaria remained constant from 2010 to 2012. It would be interesting if the FDA could replicate the yearly quality assessment of antimalarial drugs on the market for other drugs used for the treatment and management of the other top 10 communicable and top 5 non-communicable diseases in Ghana. This has the potential of tremendously reducing the disease burden of Ghana and subsequently improving the health of the population. Oxytocin injection is normally used for uterus contraction to induce labor, strengthen labor contractions during childbirth, and control bleeding after childbirth.

## 5.4 Procurement and Supply Chain Management for Medical Product and Devices

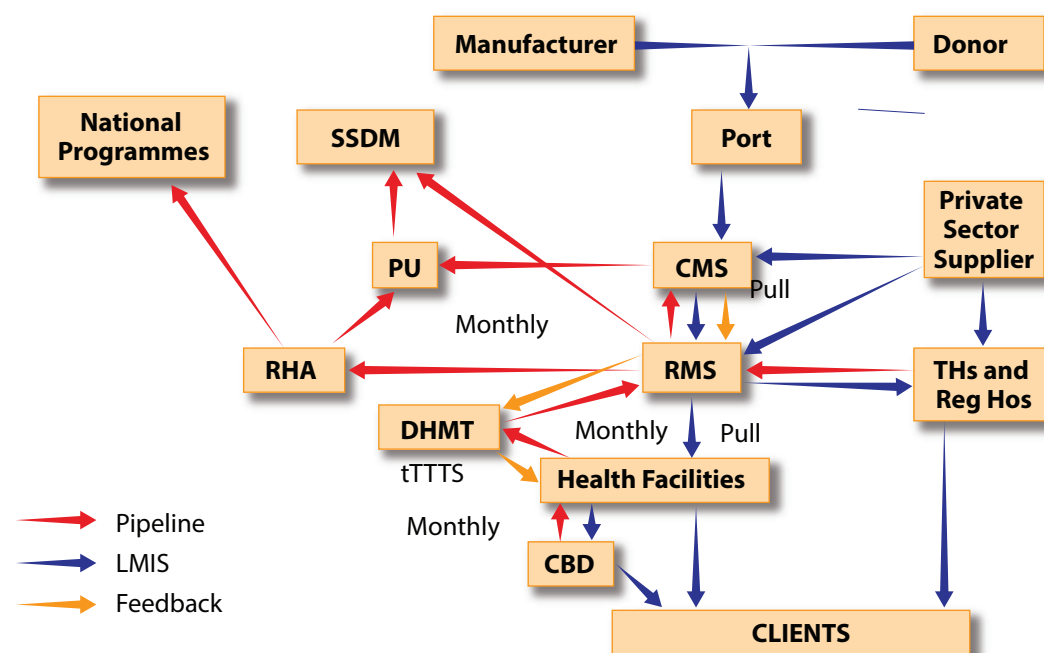
The public health sector in Ghana has a three-tiered system of managing health commodities. The Central Medical Stores (CMS), Regional Medical Stores (RMS) and the Service Delivery Points. The suppliers, CMS, RMS, SDP and the transportation system form the supply chain

In Ghana, the Public Procurement Law, Act 663 regulates the procurement of medical products and devices in the public health facilities. This is done through international competitive bidding (ICB) process and through local private suppliers. In order to qualify for ICB a manufacturer needs to first technically pre-qualify its products with the WHO to ensure it meets international product regulatory standards as well as obtaining product registration with the Ghana Food and Drugs Authority (FDA). A national procurement assessment is done followed by tender announcements for international and national competitive bidding, followed by a process of public bid opening. The Central Medical Stores (CMS), at the national level procures locally and internationally all medical products and device relevant to the public health system. Then Regional Medical Store (RMS) also procures from the CMS and local manufacturers and wholesalers. The Public Procurement Authority (PPA) is the body mandated to oversee all public procurements in Ghana, including that of the public health system. Procurement is decentralized in most sectors of the country but each level has threshold of amount to procure at a given time. The CMS reports medical product and devices information to the Stores, Supplies and Drug Management (SSDM) Directorate through the Procurement Unit (PU) at GHS headquarters and Regional Health Administration (RHA) at regional level (Figure 47).

The Central Medical Stores procures medicines for the entire country based on aggregated commodity utilization from the regional medical stores and teaching hospitals. The regional medical stores also supply medical products and devices to the public and sometimes, private health facilities in the region.

It is important to note that facilities are also able to procure medical products and devices from private manufacturers and wholesalers provided they do that in line with the public procurement act. While it is MoH policy for facilities to procure logistics and supplies through the public system, except in cases of unavailability, it has been observed in survey in Ghana that there are significant private sector purchases at all levels. In some regions and facilities, purchases from the private sector being in the majority.

Ghana also receive donations of medical products and devices from development partners and non-government organizations. A large number of vaccines and medical devices (e.g. disposables and condoms) are donated through UNICEF and USAID as well as ITNs through various NGOs. These donation can be to the Ministry or directly to health facilities.



**Figure 47: Ghana Reporting and Distribution System**

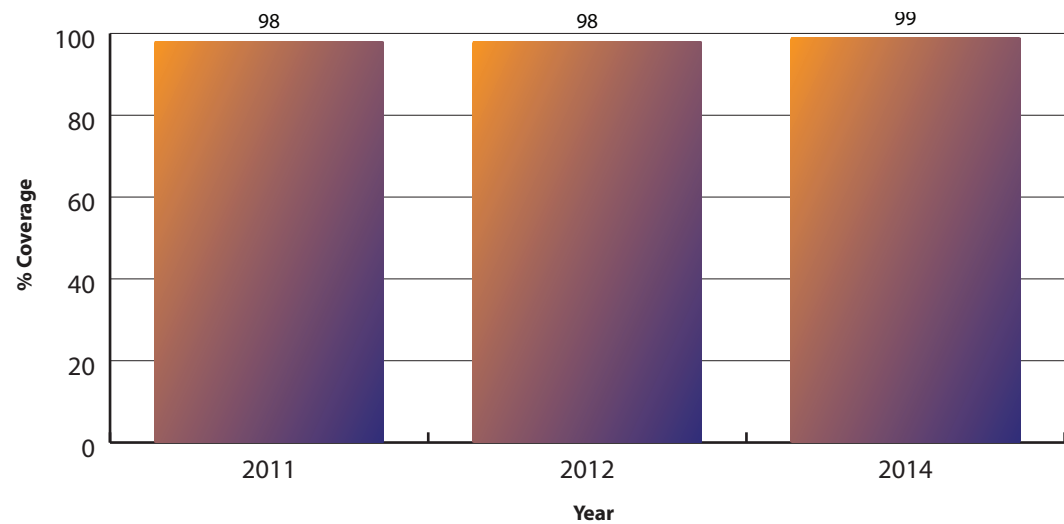
Source: GHS, 2009

One challenges in logistics and supplies management is shortages and stock-out of pharmaceutical products. A study on the availability of pharmaceutical products across the three countries (Uganda, Kenya and Ghana) found that Ghana had relatively less stock-out than the other two countries (Masters et al., 2014). Despite Ghana's better performance in the availability of pharmaceutical across health facilities, stock-out of ARV have been reported in recent times. These shortages have been attributed to inefficiencies in drug supply, poor coordination with port authorities, inadequate government funding and dependence on international aid. These shortages can negatively affect the HIV control in Ghana.

Ghana, like every other country in the World, also has a problem of ensuring supply chain security in the face of the growing threat from counterfeit and unregistered medical products and devices. For example, unregistered products are estimated to account for approximately 5% of the Ghana pharmaceutical market. The extent of counterfeit medicines present on the Ghana pharmaceutical market is hard to estimate as no local market surveillance studies on this issue have been performed. There is therefore the need to regularly conduct medical surveillance studies to estimate level of unregistered product. Stringent measures are required to regulate the influx of counterfeit and unregistered medical products and devices.

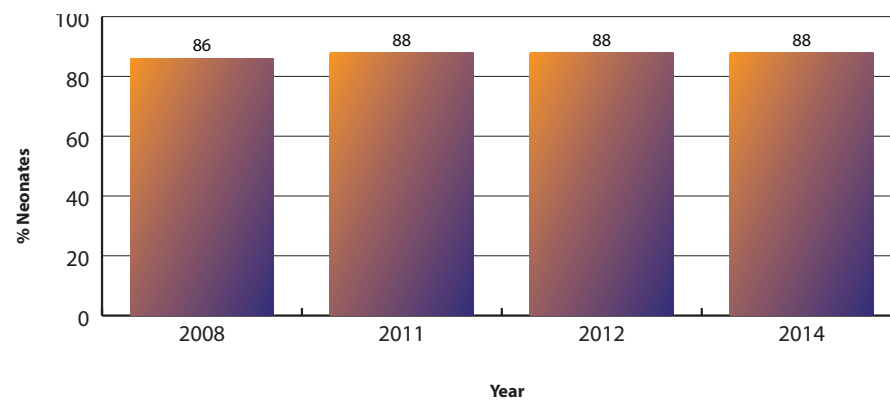
## 5.5 Quality Assurance for Vaccines

The quality assessment of vaccines used during various immunization campaigns in Ghana is important in reducing the burden of vaccine-preventable diseases. There is a national policy on immunization of children and pregnant women in Ghana. Under this national policy, each child is supposed to receive one dose of Baccille calmette Guerin (BCG) at birth, three doses of DPT-HepB+Hib, (at 6, 10 and 14 weeks), four doses of OPV (at birth, 6, 10 and 14 weeks), one dose of measles (at 9 months) and one dose of yellow fever (at 9 months). Every woman of childbearing age (12-44 years) should receive 5 doses of tetanus toxoid. Although, Ghana's percentage coverage of vaccination for the period under review have improved significantly the quality of vaccines administered is of critical. Figures 54–60 shows Ghana's performance on coverage of vaccination.



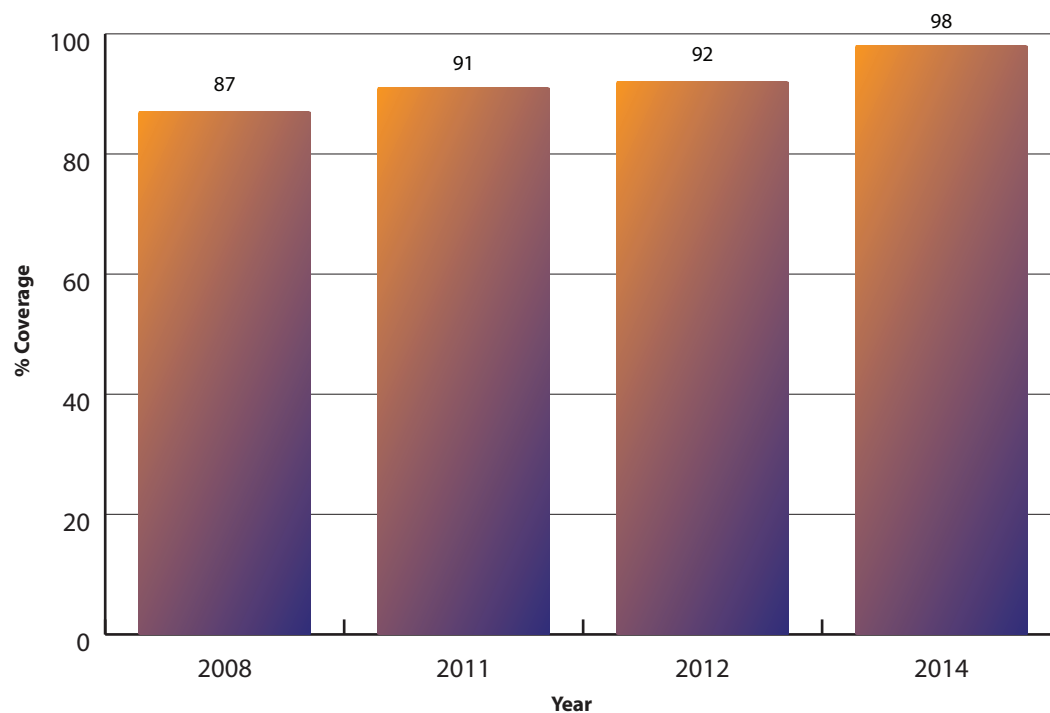
**Figure 48: Percentage of BCG vaccination coverage among 1-year-olds in Ghana.**

Source: The figure was prepared using information from WHO Atlas of African Health Statistics 2016, 2014 and 2012.



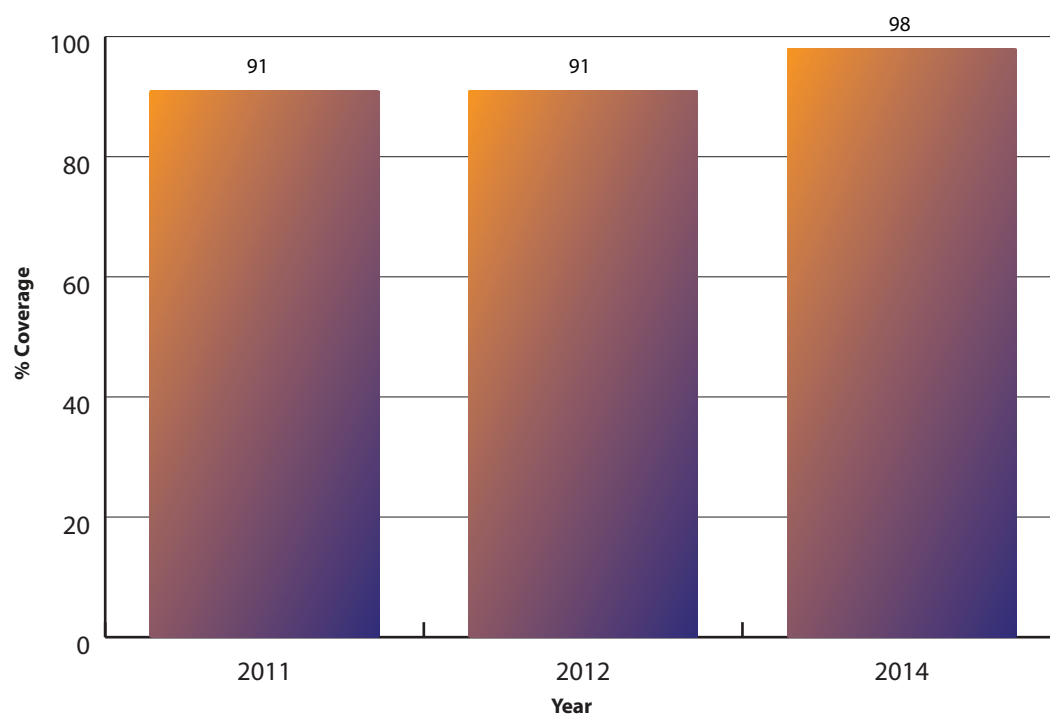
**Figure 49: Percentage of neonates protected at birth against neonatal tetanus (PAB) in Ghana.**

Source: The figure was prepared using information from WHO Atlas of African Health Statistics 2016, 2014, 2012 and 2011.)



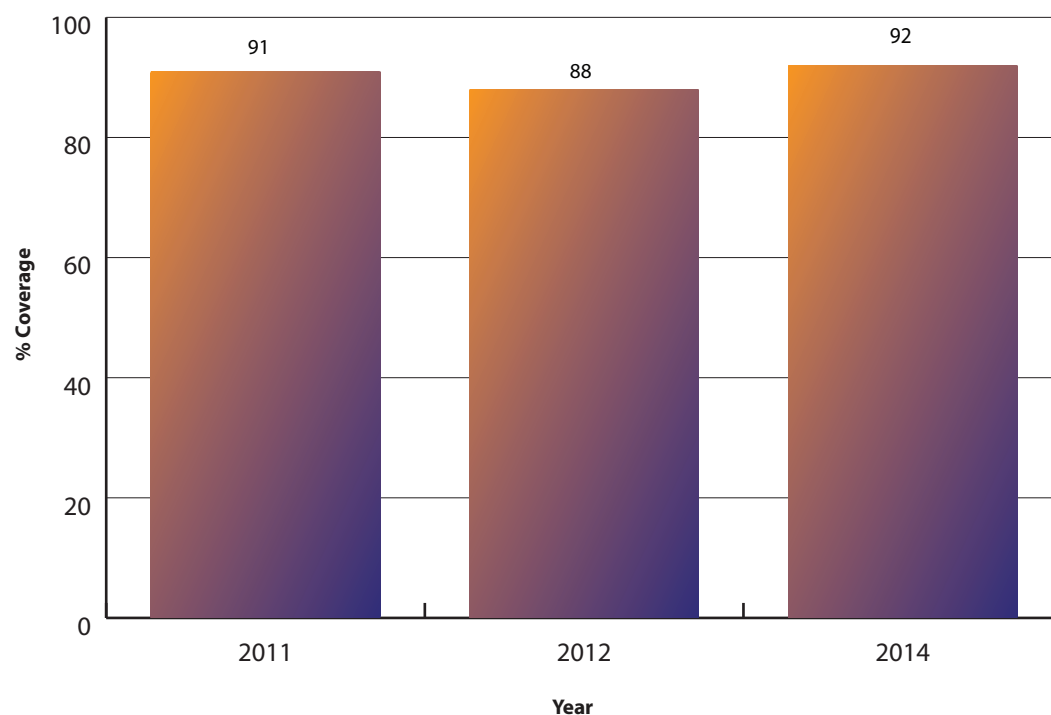
**Figure 50: Percentage of Diphtheria tetanus toxoid and pertussis third dose (DTP3) immunization coverage among 1-year-olds in Ghana.**

Source: The figure was prepared using information from WHO Atlas of African Health Statistics 2016, 2014, 2012 and 2011.



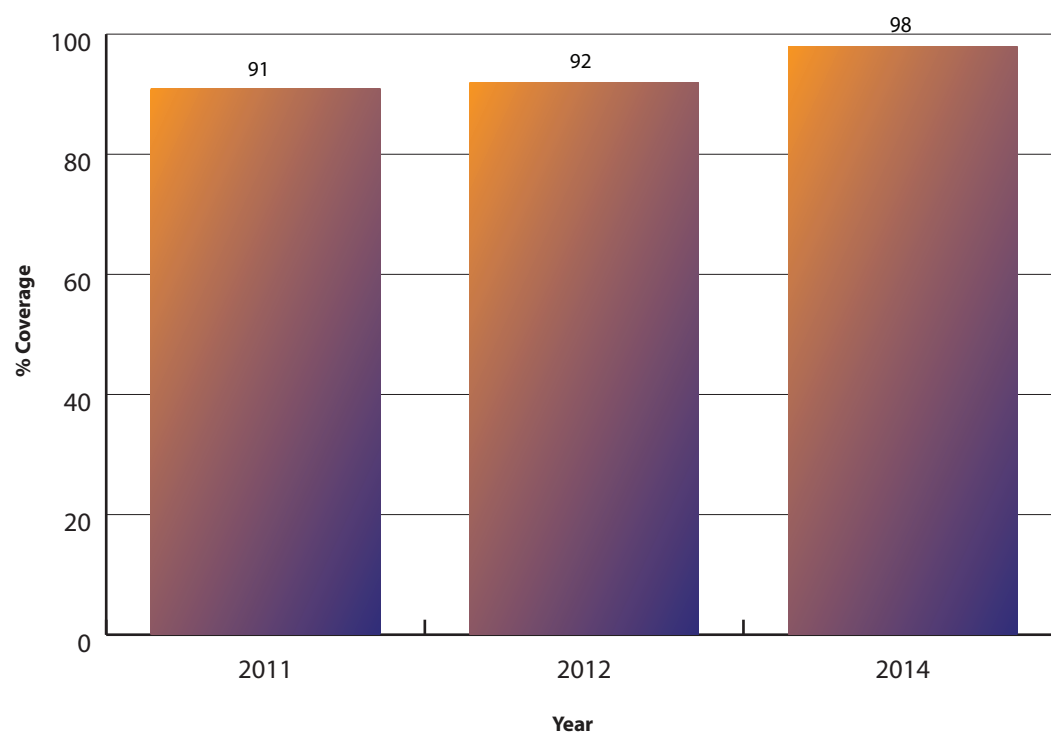
**Figure 51: Percentage of Polio third dose (Pol3) immunization coverage among 1-year-olds in Ghana.**

Source: The figure was prepared using information from WHO Atlas of African Health Statistics 2016, 2014, and 2012.



**Figure 52: Percentage of Measles-containing vaccine (MCV) immunization coverage among 1-year-olds in Ghana.**

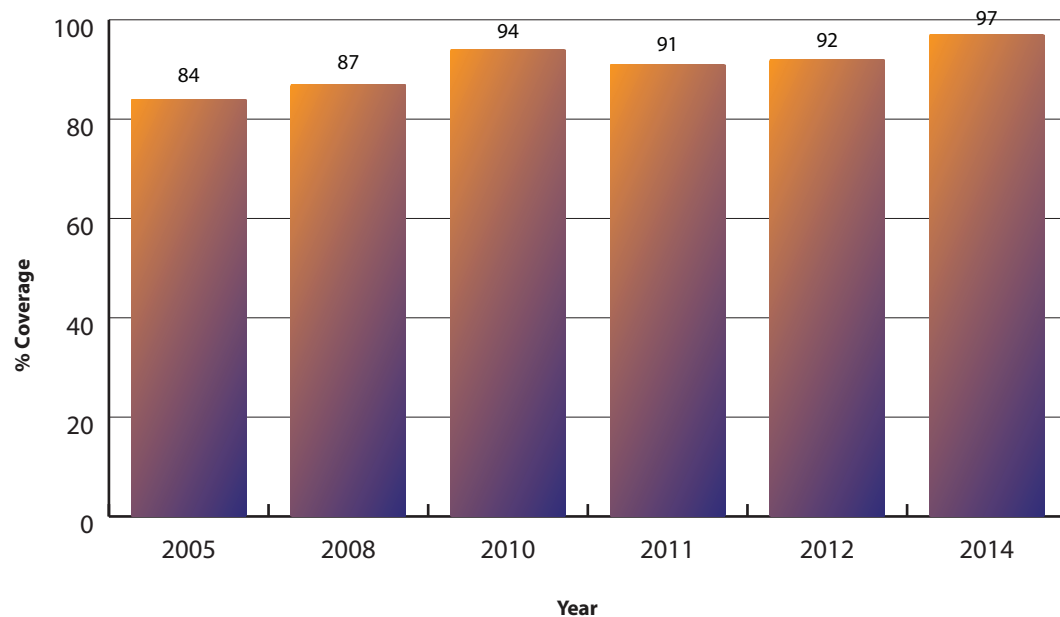
Source: The figure was prepared using information from WHO Atlas of African Health Statistics 2016, 2014, and 2012.



**Figure 53: Percentage of Haemophilus influenza B third dose (Hib3) immunization coverage among 1-year-olds in Ghana.**

Source: The figure was prepared using information from WHO Atlas of African Health Statistics 2016, 2014, and 2012.





**Figure 54: Percentage of Hepatitis B third dose (HepB3) immunization coverage among 1-year-olds in Ghana.**

Source: The figure was prepared using information from WHO Atlas of African Health Statistics 2016, 2014, 2012 and 2011.)

## 5.6 Vaccine Storage and Monitoring

The quality of vaccines administered during vaccination campaigns depends mainly on the appropriateness of storage and a functional cold chain facilities to maintain the quality of vaccines from their receipt to the final administration to children or pregnant mothers. Ghana's functional cold chain facilities for vaccines is fairly distributed across the entire nation (Table 27). Since most liquid vaccines are highly sensitive to freezing and overheating, there is the need for appropriate storage conditions to maintain their quality. The storage facilities are made of walk-in-cold rooms (WICRs), ice-lined vaccine refrigerators TCW 3000, ice-lined vaccine refrigerators TCW 2000, and other refrigerators. The vaccines are received at the national storage facility and then distributed to the various regional facilities, which in turn distributes the vaccines to the district storage facilities. The sub-district facilities obtain their vaccines from the district storage facilities. Proper functioning of the storage facilities and temperature monitoring is key to the quality monitoring of the vaccines.

Ghana conducted assessment of its vaccine management (effective vaccine management (EVM)) in 2010 and 2014. This assessment evaluates the supply chain system of the immunization programme, resulting in recommendations for improved vaccine management. The components of the assessment include arrival procedures, temperature monitoring, storage and transport, buildings and equipment, maintenance, stock management, distribution, vaccine management, and management information system.



**Table 27:** Distribution of storage facilities for vaccines in Ghana in 2014a)

Level	Storage facilities				Total
	WICR <sup>b)</sup>	TCW 3000	TCW 2000	Other fridges	
National	160 m <sup>3</sup>				
Ashanti	40 m <sup>3</sup>	9	21	262	292
Brong Ahafo	40 m <sup>3</sup>	18	19	241	278
Central	40 m <sup>3</sup>	16	14	213	243
Eastern	30 m <sup>3</sup>	25	26	296	347
Greater Accra	80 m <sup>3</sup>	11	19	131	161
Northern	80 m <sup>3</sup>	15	20	242	277
Upper East	30 m <sup>3</sup>	11	10	143	164
Upper West	30 m <sup>3</sup>	8	7	145	160
Volta	30 m <sup>3</sup>	16	18	266	300
Western	30 m <sup>3</sup>	14	21	241	276
Total					

a)The table was adapted from Diamenu et al. (2015) Why Conduct Effective Vaccine Management (Evm) Assessment? Int J Vaccine Immunizat 1(1): doi <http://dx.doi.org/10.16966/2470-9948.104>.

b)WICR: Walk-in-cold room

The results of EMV assessment in Ghana (Table 28) shows that most of the criteria used for the assessment have improved considerably from 2010 to 2014. However, temperature monitoring which is essential for vaccine quality has performed poorly and there was no significant change between 2010 and 2014 assessment data. The reported values at both national and regional levels is far below the acceptable value of at least 80 %. This may directly affect adverse drug reaction (ADR) and adverse events following immunization (AEFI).

**Table 28:** Summary of EVM assessment results in Ghana for the years 2010 and 2014a).

Criteria	National store		Regional store	
	2010	2014	2010	2014
Arrival procedures	95 %	94 %	-	-
Temperature monitoring	50 %	67 %	69 %	61 %
Storage and transportation	93 %	81 %	60 %	90 %
Buildings & equipments	78 %	92 %	75 %	83 %
Maintenance	62 %	100 %	58 %	79 %
Stock management	73 %	88 %	69 %	83 %
Distribution	75 %	87 %	75 %	68 %
Vaccine management	78 %	96 %	78 %	94 %
Management information system	48 %	81 %	66 %	82 %

a)The table was adapted from Diamenu et al. (2015) Why Conduct Effective Vaccine Management (Evm) Assessment? Int J Vaccine Immunizat 1(1): doi <http://dx.doi.org/10.16966/2470-9948.104>.

The result of the EMV assessment at all storage levels in 2014 revealed trends that could impact negatively on the quality of vaccines. For instance, maintenance of storage facilities decreased from 100 % at the national level to 79 % at the regional; which further decreased

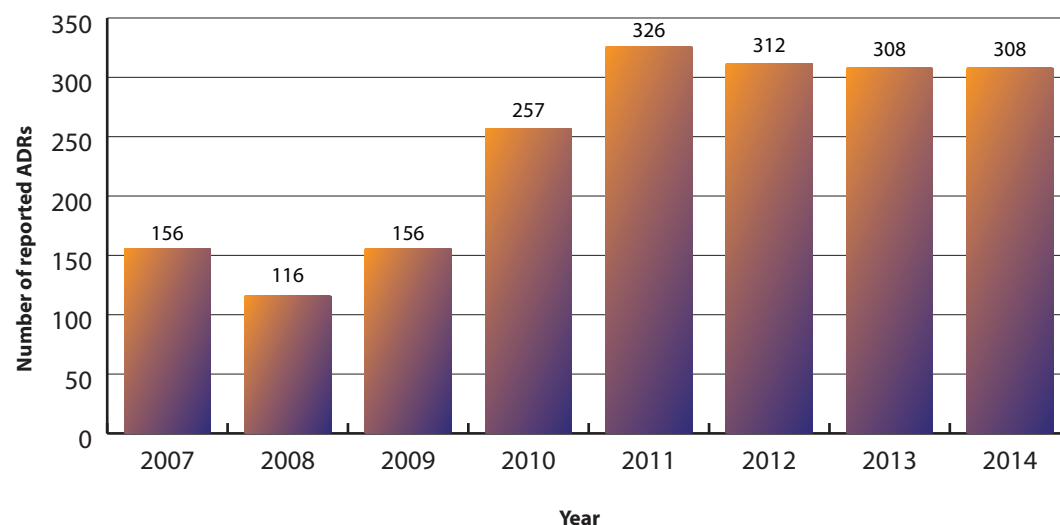
to 62 % at the district level and finally to 59 % at the service point (Table 29). Temperature monitoring at the district level (74 %) and service point (71 %) were however higher than the national (67 %) and regional level (61 %). However, it were still below the accepted value of not less than 80 %.

**Table 29:** Summary of EVM assessment results at different levels in Ghana 2014a).

Criteria	Level			
	National	Regional	District	Service point
Arrival procedures	94 %		-	-
Temperature monitoring	67 %	61 %	74 %	71 %
Storage and transportation	81 %	90 %	84 %	77 %
Buildings & equipment	92 %	83 %	87 %	82 %
Maintenance	100 %	79 %	62 %	59 %
Stock management	88 %	83 %	73 %	57 %
Distribution	87 %	68 %	79 %	92 %
Vaccine management	98 %	94 %	91 %	81 %
Management information system	81 %	82 %	67 %	60 %

<sup>a)</sup>The table was adapted from Diamenu et al. (2015) Why Conduct Effective Vaccine Management (EVM) Assessment? Int J Vaccine Immunizat 1(1): doi <http://dx.doi.org/10.16966/2470-9948.104>.

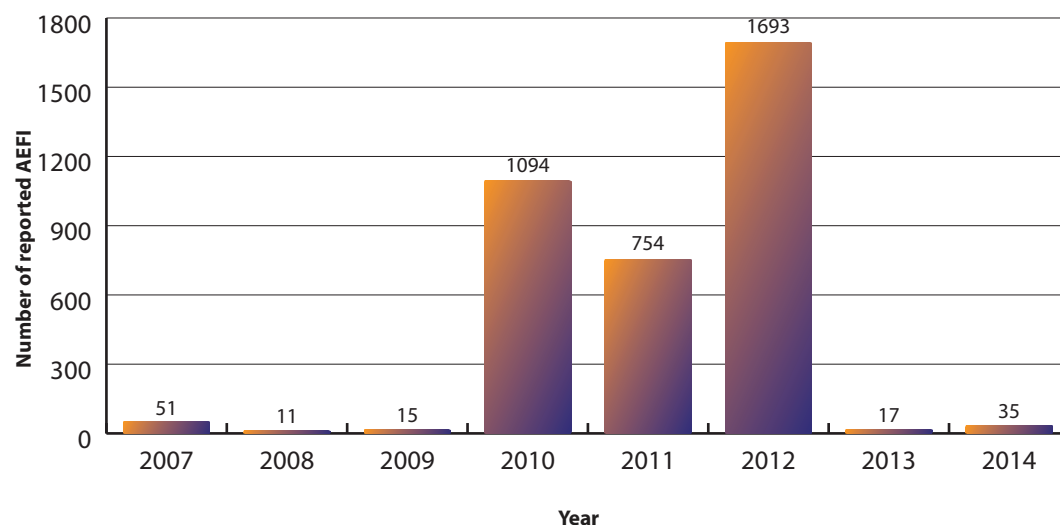
Safety monitoring of medical products and vaccines is important for assuring the safety and continued use of medicinal agent and vaccines for the treatment and management of the top ten communicable and top five non-communicable diseases in Ghana. Among the many benefits of safety monitoring is the provision of unambiguous and timely risk-benefit information on medical products and vaccines to healthcare professionals and the general public. In Ghana, safety monitoring of medical products and vaccines is the core mandate of the Safety Monitoring Department of Food and Drugs Authority (FDA). Their functions include maintenance of a national Drug Safety Database; monitoring of adverse drug reaction (ADR) and adverse events following immunization (AEFI); Communication of safety information to healthcare professionals; report ADR and AEFI to WHO; perform clinical trials assessment; and collaborate with other stakeholders for safety monitoring information gathering and dissemination. In this regard, the FDA through its Safety Monitoring Department have reported on ADRs of medical product (Figure 55).



**Figure 55: Number of adverse drug reactions (ADR) reported by the Safety Monitoring Department of Food and Drugs Authority (FDA) Ghana.**

Source: The figure was prepared using information from Food and Drugs Authority Annual Reports from 2007 to 2014

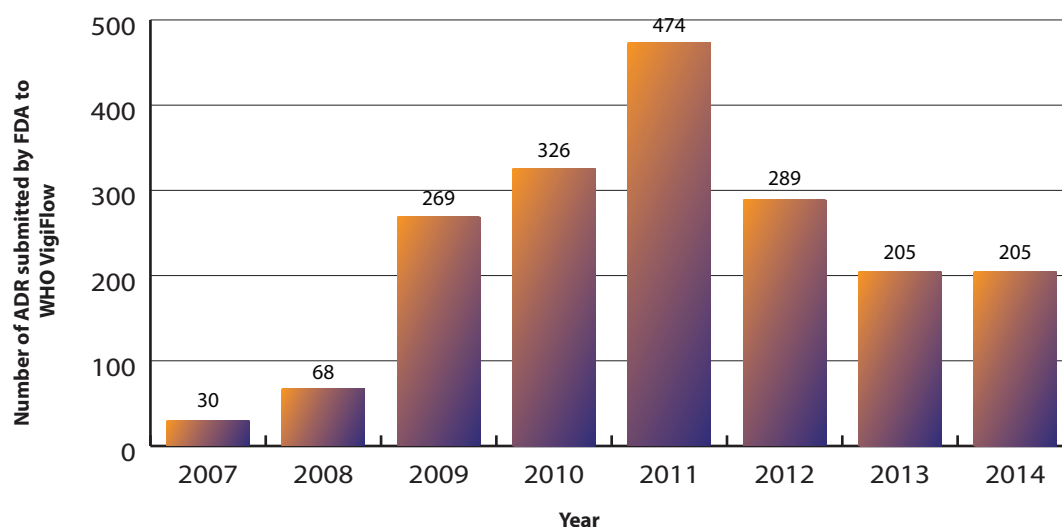
The routine monitoring of adverse drug reactions by the FDA and the communication of these information to the relevant stakeholders have improved the safety of medical products and vaccines in Ghana. Additionally, adverse events following immunization (AEFI) have been monitored since 2007 by FDA. AEFI reported by FDA includes spontaneous reports; active surveillance or monitoring campaigns such as yellow fever and vaccinations; and introduction of new vaccines. Although, a number of AEFI have been reported from 2007 to 2014, higher numbers were recorded between the years 2010 to 2012 (Figure 56).



**Figure 56: Number of adverse events following immunization (AEFI) reported by the Safety Monitoring Department of Food and Drugs Authority (FDA) Ghana.**

Source: The figure was prepared using information from Food and Drugs Authority Annual Reports from 2007 to 2014

The Food and Drugs Authority also disseminates information on ADR to the World Health Organization (WHO) Pharmacovigilance programme (VigiFlow). From 2007 to the year 2014, FDA Ghana has consistently submitted ADR and AEFI information to VigiFlow with the highest submission in 2011.



**Figure 57: Number of adverse drug reactions (ADR) submitted by the Safety Monitoring Department of Food and Drugs Authority (FDA) Ghana to World Health Organization (WHO) Pharmacovigilance (VigiFlow).**

Source: The figure was prepared using information from Food and Drugs Authority Annual Reports from 2007 to 2014

There is therefore the need to commit more resources into the activities of the Safety Monitoring Department of Food and Drugs Authority for accurate compilation of drug safety data and the timely dissemination of such information to the relevant stakeholders which will ultimately improve the health of individuals in Ghana.

## 5.7 Availability of Health Facilities for Service Delivery

Infrastructure for efficient and effective healthcare delivery to combat both communicable and non-communicable diseases in Ghana cannot be over emphasized. The key public health infrastructure in Ghana include mainly health post, health centres, rural hospitals, district hospitals, regional hospitals and referral hospitals. There is also private health infrastructure which are mainly clinics and hospitals. The density of health post per 100,000 population in Ghana decreased marginally from 1.18 to 1.11 for the years 2010 and 2013 respectively. Similarly, the density of health centres per 100,000 population in Ghana decreased marginally from 9.69 to 9.13 for the years 2010 and 2013 respectively. However, the density of provincial or regional hospitals per 100,000 population in Ghana remained the same (0.03) for the years 2010 and 2013. Interestingly, the density of district and rural hospitals per 100,000 population in Ghana increased from 0.8 to 1.41 for the years 2010 and 2013 respectively. This clearly shows the health facility per population density of all health

facilities in Ghana is inadequate to manage both communicable and non-communicable diseases in Ghana.

Although the increased number of health facilities has improved access to health services in general, access remains poor in parts of the country especially in rural areas and in the northern parts of Ghana. The Community-Based Health Planning and Services (CHPS) is the strategy to improve access to basic health services to deprived areas. Though the content of the policy has varied over the years, its coverage has continuously increased. The total number of functional CHPS zones at the end of 2012 was 2,226. The estimated population covered by CHPS increased from 16.4% in 2009 to 21.4% in 2012. Specialist services also received a boost with 10 specialist mobile vans now functional and providing specialist services to the deprived areas. These measures are essential to increase access to basic health care to deprived areas.

## 5.8 Summary and Conclusion

Ghana has increased the availability of medical products and devices in all aspects of health care delivery. The supply of medical commodities in the malaria control and vaccine preventable condition have increased. Efforts are also being made to assist local institutions to produce some medical products and devices for use by health care delivery in Ghana. Routine safety monitoring of the Ghanaian market is ongoing to ensure the safety of medical products and devices. Moving forward, it would be important for Ghana to develop a national list of approved medical devices for procurement or reimbursement. Also, more resources will be required to increase the density of health facilities at all levels throughout the nation for a more effective and efficient management of both communicable and non-communicable diseases in Ghana. Of note, Ghana's immunization program is achieving fantastic results, however the quality of vaccines needs to be improved through implementation of recommendations from the 2014 EMV assessment. Finally, the Food and Drugs Authority should be well-resourced and equipped to monitor the quality of medical products and vaccines on the market; and also monitor and report on the safety of medical products and vaccines on a timely manner to various stakeholders for improved health delivery in Ghana. Finally, the central medical store (national level), regional medical stores, district medical stores and the sub-district medical stores should be reorganized in line with the assessment criteria used for the EMV assessment of vaccines. This has tremendous potential to ensure the quality of medicines across the length and breadth of the nation. Also, Pharmacy Council should ensure that the storage and sale of medicines in pharmacies (both at the private and public facilities) are conducted at the appropriate temperature and humidity conditions.

# CHAPTER 6

## Health management information system

Planning and policy making in health depends on the availability of accurate data reporting from health institutions. Health information thus constitutes an essential component of any effective health system. Reforms in the Ghana Health Sector can only make the necessary impact with proper data and information management. Health information as a building block in the WHO health system framework provides the basic data for the proper functioning of the other building blocks (service delivery, products and technology, governance and leadership, human resource, finance). Without accurate information, wrong management decisions may be made which would cost the health system and the country in terms of use of scarce resources and effective delivery of health services to meet any health or development goal.

In order to improve upon the quality of data reported from lower health facility levels to the national level, the Ministry of Health (MOH) and the Ghana Health Service (GHS) began a reformation of the health management and information system in 2001. The health reforms of 1998 and 1999 restructured and separated the roles of MoH and GHS.

Prior to the restructuring of the health services into a policy making (MoH) and service delivery arms (GHS) health information system in Ghana followed a vertical structure. In this structure, different departments located at the lower level provided information to the national level for onward transmission to meet programme demands and requirements. This vertical structure of



information collection, collation and delivery system had some challenges. There were excessive demand for information from institutions located at the higher levels with little or no feedback to lower levels. Other constraints in the health information management system were: the department of health information centre were not providing data for planning activities, lack of use of data generated for decision making and a disconnect between data sources and users, shortage of manpower to collate and generate quality data and reports, and data was not collected from traditional and private practitioners. These created data quality issues which negatively affected data-based policy formulation and the use of this information for planning and resource allocation. Besieged by these constraints, the new reforms, with the coming into being the MoH and GHS decided to reform health information management system to make it more useful to service delivery, planning and policy making.

The reformed health management information system emphasizes on generating information that will be useful to decision making from the lower level of care to the decision making body at the national level. This led to a reform from the existing health information management system to an integrated Health Information Management System (HIMS) where data use is encouraged at every level of the health delivery system. It was envisioned that data to be collected and analysed under the integrated HIMS will provide health managers with the information to assess the health needs of their target population, ensure efficient allocation of resources to areas, and monitor the use of human and other resources. Furthermore, the reviewers of the health information management system were of the view that the new structure would make data readily available to set targets and monitor achievements in service coverage and quality, control epidemics and other emerging emergencies and to understand local health-related issues and promote community participation in health care programmes.

In order for these outputs to be delivered by the integrated HIMS for management decision making, information was to be generated under 5 sub-systems; health status sub-system, financial management health system, human resource subsystem, drugs and supplies subsystem and the support service subsystem. Table 30 summarises what data is to be gathered and analysed under each subsystem.

**Table 30:** Deliverables of Health Information Management Subsystem

No.	Subsystem	Outcome measure	Expected data deliverable
1.	Health Status	To measure output, outcome and impact of curative and preventive services	Demographic data Disease and health status data Service utilization Data disaggregated into clinical and preventive
2.	Financial Management	To measure financial input to health system	Basic accounting information on cost of service delivery
3.	Human Resource	To measure staffing patterns To measure movements/transfers Training requirements	Data on staffing norms for each level of service delivery system Number of staff by cadre Number of staff under training Number of staff on transfer and frequency of transfers Training requirements for different cadre of staff
4.	Drugs and Supplies	To measure utilisation and stock management at district level To assess rational use of drugs	Data on stock levels of drugs and supplies Data on rational use of drugs Data on budgeting for drugs and supplies Data on procurement procedures
5.	Support Service	To measure minimum set of physical standards To budget for maintenance and replacement of infrastructure and equipment	Data on infrastructure (including years of life) Data on equipment (including years of life) Other capital inputs

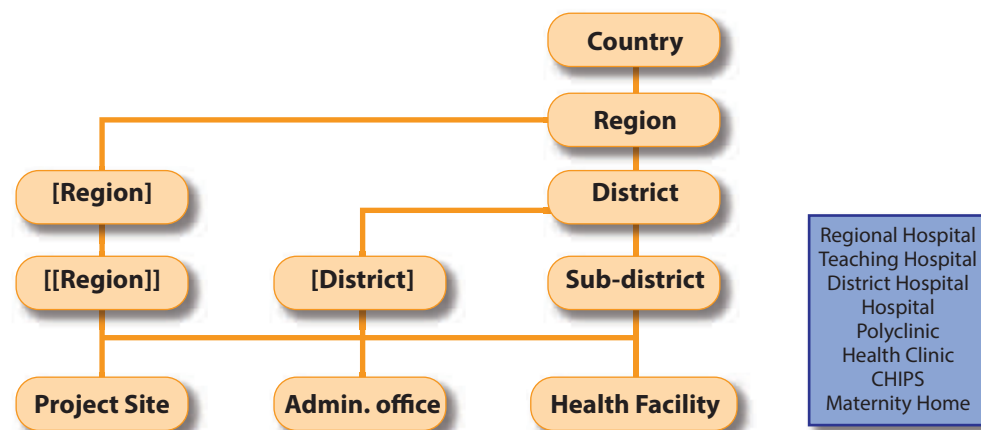
The MoH and Ghana Health Service as part of reforming the health management and information system have invested in data management and information software and capacity building of health staff to manage these databases. There has also been improvement from paper-based reporting to electronic based data reporting. The current health information management system is the District Health Information Management System (DHIMS) which has seen level of improvement from DHIMS I to DHIMS II. The current challenges in routine data collection and reporting include the monitoring and evaluating all sector activities from both the reporting and non-reporting facilities.

How well these investments in health information have improved the measuring of key indicators in the health sector remains a gap without any form of systematic monitoring of the flow of information from the lower level of the health system. Documenting progress and challenges related to information flow on each health subsystem and use in a state of health of the nation's report would provide the opportunity to improve quality of health information and its use in decision making.



## 6.1 Structure of the District Health Information Management System (DHIMS)

Ghana Health Service collects routine health service data on health services, morbidity, mortality and disease which are useful to health managers when planning, budgeting and making decisions. The collection of this data is currently done by facilities and districts and transmitted through the DHIMS structure. The collected data is also monitored and evaluated by the health sectors and helps to assess overall systematic performance as well as identify weak areas well positioned for intervention program. All staff in District Health Directorates and health facilities with the required capacity for DHIMS2 management have received training and registered as users. A registered user is expected to log in using his/her username and password. Data in DHIMS2 is organized in a hierarchy; facility, sub-district, district, regional and national). Hence reports on DHMIS can be generated for the various levels of entries (Figure 58).



**Figure 58: Structure of DHIMS 2**

Source: Nyonator, Ofosu, Osei & Atweam, 2013

The main sources of information for this chapter is the DHIMS and other larger databases such as Ghana Demographic and Health Survey (GDHS) and Multiple Indicator Cluster Survey (MICS).

The Health Information management structure requires that facilities report to the DHIMS using the electronic data system. All facilities from the lowest health service delivery level i.e. community-based health planning service to the tertiary care are expected to report and transmit information to the DHIMS. It is however important to note that DHIMS 2 only capture data of health facilities that are linked to its platform. Thus the number of facilities reporting to DHIMS II may differ from the actual number of health facilities available in the country. It is not therefore surprising to observe discrepancies in the data reported in the annual reports of the Ghana Health Service for the same year and across years. This is a limitation to the representativeness of results reported via the DHIM 2.

The results are presented according to the Health Information Health Management subsystem described.

## 6.2 Human Resource Subsystem

### 6.2.1 Distribution of Health Professionals by Region

There is a worsening trend in doctor patient ratio from 2009-2013 by region (Table 31). The national aggregate shows a slight improvement in doctor patient ratio with a decline from 11,929 population to one doctor in 2009 to 10,452 population to one doctor in 2012. The disparities of doctor patient ratio at regional levels are wide and this could be worse if these are further disaggregated into district level. The Ashanti region which once was endowed with a smaller population to doctor ratio from 2009-2011, in 2012 and 2013 saw phenomenal rise of 14 times more of doctor-population to patient ratio than the rest of the regions while the Upper West and Upper East regions continue to have the highest population to Doctor ratio in the Country. Current trends show an improvement in the doctor-population ratio (see chapter 4 table 23).

**Table 31:** Doctor Population Ratio 2009-2013: Doctor Patient Ratio 2009-2013

Region	2009	2010	2011	2012	2013
Ashanti	288	184	704	9,715	10,503
Brong Ahafo	16,919	22,967	16,103	15,705	17,547
Central	2,877	18,218	20,442	22,505	23,892
Eastern	16,132	15,801	16,065	19,748	19,065
Greater Accra	5,103	4,099	3,712	3,540	3,178
Northern	50,751	18,257	21,751	19,163	22,894
Upper East	35,010	31,214	38,642	39,697	33,896
Upper West	47,932	27,050	38,267	40,502	53,064
Volta	26,538	32,605	23,660	24,728	23,277
Western	33,187	31,190	26,044	27,775	28,653
National	11,929	10,423	10,034	10,452	10,170

Source: GHS, 2010

The regional nurse-patient ratio (Table 32) has shown a worsening trend since 2010 with the Western region showing the worse increase nurse-patient population ratio. Except for the Greater Accra and Northern regions, the Nurse-patient ratio for 2012 has worsened.

**Table 32:** Nurse Patient Ratio 2009-2012

Region	2009	2010	2011	2012
Ashanti	1629	1971	1568	1550
Brong Ahafo	1,822	1,891	1,495	1470
Central	1,518	1,538	1,309	1250

Region	2009	2010	2011	2012
Eastern	1,181	1,356	1173	1237
Greater Accra	1,069	1,017	1,255	917
Northern	1,934	2,067	1,547	1601
Upper East	1,125	1,141	914	930
Upper West	1,136	1,163	950	941
Volta	1,174	1,422	1,242	1244
Western	1,581	1,690	895	1422
National	1,497	1,489	1,240	1251

Source: GHS

The Midwife-Patient ratio improved by 23% (2011-2012) for the Eastern region but worsened for the remaining regions with Central, Volta and the Northern regions being the most disadvantaged (Table 33).

**Table 33:** Midwife Patient Ratio 2010-2012

Region	2010	2011	2012
Ashanti	1800	1545	1553
Brong Ahafo	1,539	1,515	1649
Central	1,781	1,688	1911
Eastern	1,349	1,801	1461
Greater Accra	1,197	1,160	1260
Northern	1,981	2,050	2300
Upper East	1,303	1,265	1354
Upper West	1,063	1,122	1336
Volta	1,428	1,443	1763
Western	2,015	2,039	2142
National	1,538	1,478	1611

Source: GHS

## 6.3 Health Status subsystem

### 6.3.1 Morbidity and mortality among children under five years

The pattern of the top 10 causes of morbidity is changing with malaria declining consistently over the last 5 years and acute upper respiratory infections rising consistently over the same period (Table 34). Diarrhea, anaemia and skin diseases have also seen a steady increase over the same period. The management of the potentially threatening conditions such as upper respiratory conditions diarrhea and anaemia requires the attention of service providers, stakeholders and policy makers.

**Table 34:** Top 10 Causes of Morbidity among Children under five years

No.	Disease Condition	2010	2011	2012	2013	2014
1	Malaria	59.7	55.3	52	49.5	44
2	Upper Respiratory Tract Infections	14.8		19	19.3	22.7
3	Diarrhoea Diseases	7.7	8.4	9.2	9.9	12.3
4	Skin diseases	6	6.3	6.6	6.9	8.1
5	Anaemia	2.9	3.18	3.4	4	4.3
6	Intestinal Worms	2.0	2.1	2.3	2.6	3
7	Acute eye infection	1.3	1.5	1.5	1.4	1.7
8	Pneumonia	1.2	1.2	1.3	1.3	1.3
9	Other acute ear infection	0.8	0.9	0.9	0.8	0.7
10	Acute Urinary Tract Infections	0.5	0.7	0.7	0.7	0.9
11	Others	3.1	3.2	3.1	3.6	1.0
<b>Total cases</b>		<b>3,712,573</b>	<b>4,947,976</b>	<b>5,949,830</b>	<b>6,687,935</b>	<b>5,572,911</b>

Source: GHS/DHIMS

There has been a steady decline in the number of malaria cases reporting at health facilities for those above five and under five years and the decline is similar across both age groups. Upper Respiratory Tract Infections and Diarrhoea diseases have been increasing among both groups. The proportions are however, higher for those under five years (Table 35). An interesting emerging pattern is observed in Intestinal Worms infestation, whereas there is a steady increase in children under five, there is marked increase in those above five years from as low as 3.8% in 2010 to as high as 7.0% in 2014.

**Table 35:** Top Causes of Communicable Diseases

Disease/ condition	Proportion of OPD Morbidity Case - Communicable Diseases/Conditions									
	Above Five years					Under Five Years				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Malaria	70,53%	66,48%	63,73%	62,02%	52,10%	69,32%	65,09%	61,42%	59,29%	51,93%
Upper Respiratory Tract Infections	14,18%	17,13%	18,50%	18,63%	21,49%	17,15%	20,29%	22,47%	23,11%	26,82%
Diarrhoea Diseases	5,44%	6,02%	6,70%	7,15%	9,02%	8,92%	9,88%	10,89%	11,89%	14,54%
Intestinal Worms	3,77%	4,01%	4,48%	5,21%	6,98%	2,35%	2,45%	2,71%	3,10%	3,59%
Typhoid Fever	1,97%	2,04%	2,08%	2,51%	3,06%	0,53%	0,50%	0,49%	0,64%	0,70%
Uncomplicated Malaria in Pregnancy	1,88%	1,93%	1,76%	1,79%	1,63%	0,00%	0,00%	0,00%	0,00%	0,00%
Pneumonia	0,97%	1,08%	1,24%	1,25%	0,00%	1,39%	1,41%	1,53%	1,52%	0,00%
Chicken Pox	0,36%	0,38%	0,58%	0,53%	0,60%	0,15%	0,17%	0,28%	0,26%	0,24%
Gonorrhoea	0,23%	0,20%	0,22%	0,32%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
HIV/AIDS Related conditions	0,21%	0,21%	0,24%	0,17%	0,21%	0,02%	0,02%	0,02%	0,02%	0,02%

Source: DHIMS

Age and life style conditions are increasing in those above five years. Rheumatism and other Joint Pains conditions increased from 15.5% in 2010 to 26.0% in 2014 showing a marked difference of 11% (Table 36). Hypertension and Diabetes Mellitus have been stable over the years. Anaemia has been increasing in those under five years. Surprisingly there were no data on Anaemia in 2014 for both age categories. Road traffic injuries are on a decline but not substantially (Table 36).

**Table 36:** Top Causes of Non-communicable Diseases

Disease/condition	Proportion of OPD Morbidity Case - Non-Communicable Diseases/Conditions									
	Above Five years					Under Five Years				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Rheumatism & Other Joint Pains	15,45%	16,93%	17,79%	19,87%	25,99%	1,61%	1,67%	2,04%	1,64%	2,02%
Skin Diseases	15,46%	15,48%	15,27%	15,39%	15,79%	43,61%	42,53%	42,86%	42,27%	54,52%
Hypertension	16,87%	15,43%	15,30%	13,77%	14,77%	0,00%	0,00%	0,00%	0,00%	0,00%
Acute Eye Infection	7,23%	8,23%	7,37%	6,98%	0,00%	9,17%	10,17%	9,47%	8,42%	0,00%
Anaemia	5,76%	7,10%	8,75%	10,10%	0,00%	20,94%	21,43%	22,33%	24,46%	0,00%
Acute Urinary Tract Infection	4,86%	5,84%	6,09%	6,73%	9,68%	3,85%	4,79%	4,52%	4,41%	7,36%
Pregnancy Related Complications	6,06%	4,54%	4,22%	3,81%	4,32%	0,00%	0,00%	0,00%	0,00%	0,00%
Diabetes Mellitus	3,89%	3,64%	3,68%	3,23%	3,80%	0,00%	0,00%	0,00%	0,00%	0,00%
Other Acute Ear infection	3,80%	3,58%	3,57%	3,37%	2,95%	5,96%	5,90%	5,65%	5,03%	4,79%
Home Injuries (Home Accidents and Injuries)	4,08%	3,47%	2,93%	2,61%	2,83%	4,11%	3,51%	3,16%	2,80%	3,41%
Gynaecological conditions	3,66%	3,44%	3,55%	2,97%	3,25%	0,00%	0,00%	0,00%	0,00%	0,00%
Vaginal Discharge	3,28%	3,26%	2,98%	3,04%	3,41%	0,23%	0,20%	0,18%	0,20%	0,00%
Transport injuries (Road Traffic Accidents)	2,12%	1,92%	1,82%	1,72%	1,75%	1,13%	0,90%	0,86%	0,84%	0,96%
Dental Caries	1,82%	1,75%	1,69%	1,46%	1,50%	0,51%	0,51%	0,37%	0,37%	0,47%
Asthma	1,56%	1,53%	1,53%	1,57%	1,62%	1,04%	1,13%	0,99%	0,96%	1,34%
Other Oral Conditions	1,37%	1,46%	1,19%	1,16%	0,97%	1,59%	1,78%	1,52%	1,59%	1,64%
Pyrexia of unknown origin PUO (not Malaria)	1,44%	0,98%	0,85%	0,00%	0,00%	2,41%	1,55%	1,38%	1,45%	1,28%
Other diseases of the Female reproductive system	0,66%	0,71%	0,75%	0,86%	1,08%	0,00%	0,00%	0,00%	0,00%	0,00%
Malnutrition	0,00%	0,00%	0,00%	0,00%	0,00%	1,54%	1,05%	0,94%	1,11%	1,34%
Pneumonia	0,00%	0,00%	0,00%	0,00%	2,39%	0,00%	0,00%	0,00%	0,00%	8,60%
Septiceamia	0,00%	0,00%	0,00%	0,00%	1,06%	0,73%	1,31%	2,38%	2,93%	6,31%

Source: DHIMS

### 6.3.2 Infant and Under Five Mortality Rate

There is a decline in infant mortality and under five mortality is observed in all regions with under five mortality decreasing significantly in the Western and Volta regions but increasing in the Central region (Table 37). The Upper West region has the highest under five mortality and the rural and urban differences continue to persist.

**Table 37:** Infant and Under Five Mortality

Region	Infant Mortality Rate						Under Five Mortality					
	1988	1993	1998	2003	2008	2014	1988	1993	1998	2003	2008	2014
Western	76.9	76.3	68	66	51	40	151.2	121.8	109.7	109	65	56
Central	138.3	71.6	83.8	50	73	48	208.2	128	142.1	90	108	69
Greater Accra	57.7	58.4	41.4	45	36	37	103.8	100.2	62	75	50	47
Volta	73.5	77.8	53.8	75	37	42	132.7	116.4	98	113	50	61
Eastern	70.1	55.9	50.2	64	53	43	138.1	93.2	89.1	95	81	68
Ashanti	69.8	65.2	41.9	80	54	63	144.2	97.6	78.2	116	80	80
Brong Ahafo	65	48.7	77.3	58	37	38	122.6	94.6	128.7	91	76	57
Northern	103.1	113.7	70.1	69	70	53	221.8	237	171.3	154	137	111
Upper East	103.1	105	81.5	33	46	46	221.8	180.1	155.3	79	78	72
Upper West	103.1	84	70.6	105	97	64	221.8	187.7	155.6	208	142	92
National	77	66	57	64	50	41	155	119	108	111	80	60
Rural	86.8	82.2	67.5	70	56	46	162.5	149.2	122	118	90	75
Urban	66.9	54.9	42.6	55	49	49	131.1	89.9	76.8	93	75	64

**Table 38:** Institutional Infant Deaths

Ashanti	323	424	395	347
Brong Ahafo	632	646	627	769
Central	364	396	509	382
Eastern	398	471	575	539
Greater Accra	791	789	647	850
Northern	612	764	789	703
Upper East	176	187	135	277
Upper West	112	83	94	85
Volta	260	367	276	393
Western	538	627	699	581
National	4, 206	4, 754	4, 746	4, 926

Source: GHS/DHIMS

Though Table 38 shows high institutional infant deaths, antenatal coverage has consistently improved in all regions. Data inaccuracies show some regions such as Northern and Western with over 100% coverage (as a result of denominator under-estimation from the census projections). Antenatal coverage in 2014 is consistently lower than the pattern observed in 2013 (Table 39)

**Table 39:** Antenatal Care Coverage by Region 2009-2014

Region	2009	2010	2011	2012	2013	2014
Ashanti	38.4	84.4	84.3	82.3	81.9	76.60
Brong Ahafo	53.7	75.8	110.6	100.4	95.5	90.30
Central	71.4	82.2	107.7	97.7	89.3	86.
Eastern	67	233.4	93.9	86.9	82.1	77.00
Greater Accra	51.7	227.1	91.7	88.7	86.9	87.90
Northern	84.9	70.6	135.0	112.0	113.6	117.50
Upper East	77.8	35.0	91.6	88.1	83.3	83.60
Upper West	64.9	25.4	86.2	84.4	87.7	85.20
Volta	47.3	66.8	88.7	81.8	78.3	77.00
Western	49.5	104.8	98.6	101.1	103.2	93.80
National	56.4	81.1	98.2	92.2	90.0	87.10

Source: GHS/DHIMS

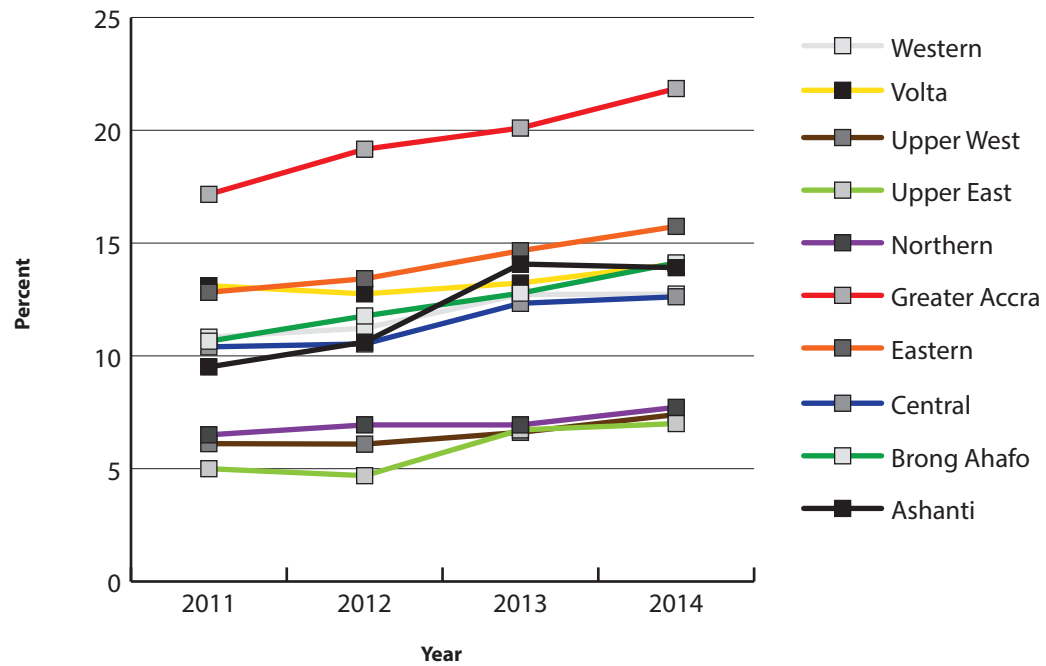
In regions with high antenatal care coverage pregnant women tend to have four to more (4+) antenatal care visits during a pregnancy (Table 40). The Ashanti, Central and the Upper East Regions have consistently had women making four or more visits during a pregnancy. The Northern region however shows very high antenatal coverage but low number of visits per pregnancy.

**Table 40:** Percent of Antenatal 4+ visits by Region 2009-2014

Region	2011	2012	2013	2014
Ashanti	82.2	85.1	93.4	90.6
Brong Ahafo	61.2	66.4	64.0	77.8
Central	80.0	88.2	76.6	75.5
Eastern	68.2	74.0	67.1	66.4
Greater Accra	108.8	92.2	74.6	78.2
Northern	51.2	58.3	57.1	62.2
Upper East	92.1	94.5	87.5	95.2
Upper West	68.2	63.9	70.0	72.3
Volta	74.0	74.3	67.7	66.7
Western	60.9	66.3	63.8	74.4
National	75.2	77.0	72.6	76.0

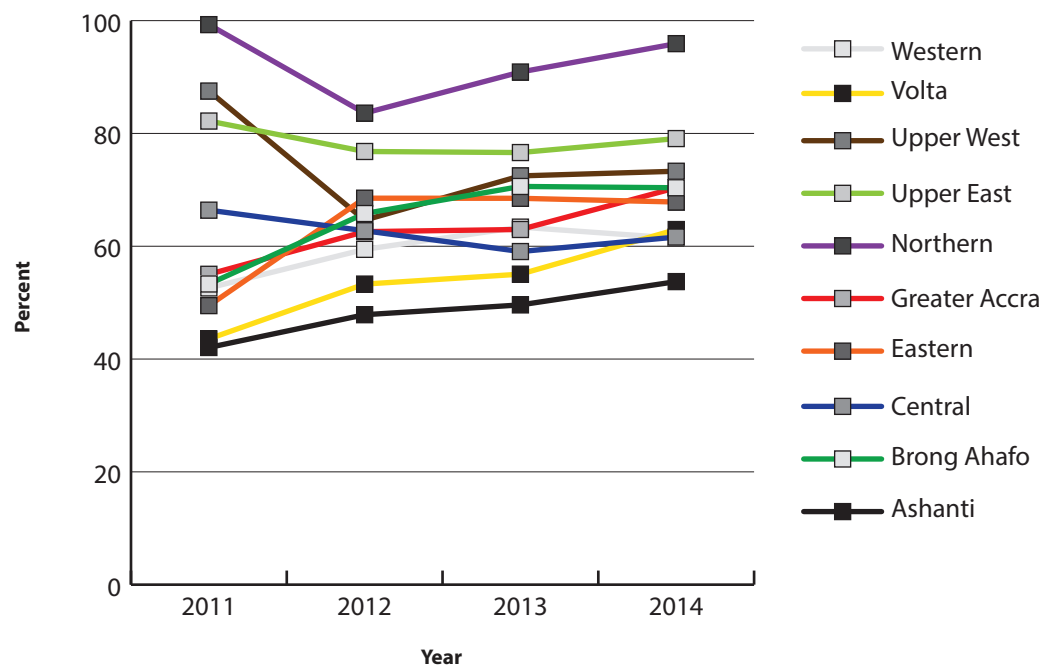
Source: GHS/DHIMS

Caesarean section delivery for all regions is more than the recommended 5% by the World Health Organization with Greater Accra recording the highest. From 2011 to 2014, there has been a consistent increase in Caesarean section deliveries in all the regions (Figure 59).



**Figure 59: Percent Caesarean section deliveries by Region: 2011-2014**

Postnatal coverage has been stable around 66% between 2011 and 2014 with Northern region recording the highest among the ten regions (Figure 60).



**Figure 60: Postnatal Coverage by Regions**

Despite the high ANC (Antenatal care coverage), delivery with skilled attendants ranges between 40%-73% (Table 41). Though there is improvement in skill attendants at delivery between 2013 and 2014 the gains have been minimal. The Volta region has consistently



recorded the lowest skilled delivery. This trend may explain why in Table 37 the Volta region recorded the highest infant mortality compared to the other regions.

**Table 41:** Skilled Delivery by Region 2009-2014

Region	2009	2010	2011	2012	2013	2014
Ashanti	42.4	53.4	45.9	50.1	55.4	54.40
Brong Ahafo	53.7	54.0	46.8	65.7	65.0	65.4
Central	52.5	51.6	51.6	58.7	53.7	57.7
Eastern	52.1	48.2	58.1	56.5	52.8	52.5
Greater Accra	47.9	54.4	58.8	56.6	56.4	59.7
Northern	36.1	36.8	44.5	43.4	46.8	53.4
Upper East	52.6	59.7	67.0	68.4	67.5	73.5
Upper West	36.7	46.5	39.0	52.5	58.2	64
Volta	39.4	36.9	44.3	44.8	43.4	45.3
Western	42.6	49.6	39.3	53.5	55.1	56.9
National	45.6	49.5	49.4	54.0	55.1	56.7

Source: GHS/DHIMS

The institutional maternal mortality ratio does not show a consistent pattern of reduction in mortality (Table 42). The Greater Accra region consistently records high maternal deaths with a high maternal mortality ratio. With the number and quality of health facilities and personnel in the Greater Accra, one should be observing less mortality among women but that is not the situation.

**Table 42:** Institutional Maternal Mortality Ratio: 2009-2014

Region	2009		2011		2012		2013 2014			
	Maternal Deaths	Ratio	Maternal Deaths	Ratio	Maternal Deaths	Ratio	Maternal Deaths	Ratio	Maternal Deaths	Ratio
Ashanti	177	215	109	117	78	77	198	122	139	115
Brong Ahafo	94	194	159	291	112	167	95	138	95	134
Central	69	129	125	250	64	113	61	110	65	105
Eastern	82	136	170	253	116	179	124	200	117	176
Greater Accra	166	197	231	281	196	201	201	198	204	185
Northern	96	147	97	241	111	212	99	174	66	108
Upper East	30	131	40	145	41	139	34	115	45	139
Upper West	41	267	47	334	24	146	34	193	31	161
Volta	55	146	82	234	72	175	72	161	86	179
Western	79	148	62	120	75	132	85	152	93	150
National	889	170	1122	227	889	154	1003	156	919	145

Source: GHS/DHIMS

### 6.3.3 Reproductive and Family Health

Total fertility is 5 children per woman in the rural areas and 3 in the urban areas. The Northern region and Central region and Upper West regions exceed the total fertility in the rural areas. There has been consistent reduction in total fertility between 1993 and 2008 for the Greater Accra, Volta, Brong-Ahafo, Eastern region and Ashanti and Upper East regions (Table 43).

**Table 43:** Total Fertility Rate by Region

Region	1988	1993	1998	2003	2008	2014
Western	6.1	5.5	4.7	4.5	4.2	3.6
Central	6.6	5.6	4.8	5	5.4	4.7
Greater Accra	4.6	3.6	2.7	2.9	2.5	2.8
Volta	6.7	5.4	4.4	4.4	3.8	4.3
Eastern	5.7	5.1	4.4	4.3	3.6	4.2
Ashanti	5.9	5.6	4.5	4.1	3.6	4.2
Brong-Ahafo	6.9	5.5	5.4	4.8	4.1	4.8
Northern	6.8	7.4	7	7	6.8	6.6
Upper East	6.8	6.4	5	4.7	4.1	4.9
Upper West	6.8	6	6.1	5.5	5	5.2
National	<b>6.4</b>	<b>5.5</b>	<b>4.6</b>	<b>4.4</b>	<b>4</b>	<b>4.2</b>
Rural	6.6	6.4	5.4	5.6	4.9	5.1
Urban	5.1	4	3	3.1	3.1	3.4

Source: GDHS

### 6.3.4 Financial Management subsystem

Out Patient Department (OPD) attendance per capita at national level has been decreasing since 2011 (Table 44). The regional OPD attendance per capita show similar trends with the Upper East, Upper West and the Western regions reporting the lowest OPD per capita since 2010. The Greater Accra region reports the highest OPD per capita. The demand for out-patient services is about 3-4 times in the Greater Accra Region than in the Western, Upper East and Upper West regions from 2010-2014. In 2013, total expenditure on health per capita (Intl \$, 2013) was 214. Approximately 5.4% of the GDP is spent on health in Ghana.

**Table 44:** OPD per Capita for Total OPD Cases 2010-2014

Region	2010			2011			2012			2013			2014		
Region	Total OPD Visits	OPD per Capita		Total OPD Visits	OPD per Capita		Total OPD Visits	OPD per Capita		Total OPD Visits	OPD per Capita		Total OPD Visits	OPD per Capita	
Ashanti	4,444,389	1.08		5,503,778	0.93		4,786,819	1.06		4,682,843	1.10		4,863,607	1.09	
Brong Ahafo	2,571,100	0.90		3,057,688	0.80		3,496,028	0.69		3,613,338	0.68		3,895,855	0.65	
Central	1,583,861	1.39		1,940,722	1.04		2,263,750	1.06		2,476,596	1.00		2,781,583	0.65	
Eastern	1,343,106	1.96		1,602,972	1.64		2,061,823	1.30		1,995,292	1.40		1,996,833	1.48	
Greater Accra	1,824,979	2.20		2,097,658	2.01		2,802,946	1.54		2,838,816	1.55		2,728,936	1.66	
Northern	1,374,870	1.80		1,546,621	1.35		1,845,284	1.54		2,109,976	1.36		2,204,674	1.26	
Upper East	2,139,118	0.49		2,503,778	0.40		3,376,668	0.32		31,33,305	0.35		30,458,26	0.36	
Upper West	1,488,208	0.47		1,972,593	0.27		2,530,328	0.29		2534046	0.28		2458727	0.31	
Volta	1,659,565	1.28		1,891,140	1.34		2,331,113	0.96		2562932	0.89		2668761	0.88	
Western	3,026,219	0.79		3,540,035	0.78		4,002,534	0.66		4194539	0.60		4418986	0.61	
National	21,455,415	1.15		25,656,985	0.99		29,497,293	0.90		30141683	0.89		31063788	0.89	

### 6.3.5 Support and services subsystem

There are 4 main categories of health care delivery systems in Ghana – the public, private-not-for-profit, private-for-profit, and traditional systems. The health system is centred on the Ministry of Health which is the highest policy making body and Ghana Health Service (GHS), which is the implementing body.

GHS was established by the Ghana Health Service and Teaching Hospitals Act 525, 1996 and has the responsibility for the administration and management of state owned-hospitals and other health facilities but excluding teaching hospitals and health facilities established by quasi-state institutions such as the universities and the security services.

The public health sector is complemented by the private health sector, which provides about 42 per cent of Ghana's health care services. The main providers in the private sector are the mission based providers and the private medical and dental practitioners. The Christian Health Association of Ghana (CHAG), which constitutes the mission-based providers have member health institutions of sixteen Christian Churches involved in the provision of health care. Government provides about 80% of salaries of CHAG health staff. Private for profit providers also offer health care services under the umbrella of the Private Medical and Dental Practitioners. Table 45 provides the health sector structure of health facilities by category of ownership.

**Table 45:** Health sector structure according to Health facilities by type and ownership

Facility category	Ownership	2014
Teaching hospitals	Government	4
Regional hospitals	Government	10
Psychiatric hospitals	Government	3
Hospitals	CHAG	64
	Government	119
	Islamic	2
	Private	185
	Quasi government	20
Poly clinic	CHAG	2
	Government	28
Health centres & clinics	CHAG	118
	Government	1,080
	Islamic	3
	Private	546
	Quasi government	40
Maternity homes	CHAG	2
	Government	9
	Private	319
	Quasi government	2
CHPS	CHAG	12
	Government	2,959
	Private	5
	Quasi government	8
Grand Totals		5,579

Source: CHIM/PPME-GHS: The Health Sector In Ghana; Facts and Figures, 2014



The DHIMs database and facilities reporting to the DHIMs are to facilitate decision making by providing timely and accurate data. The proportion of facilities reporting to the DHIMs was as low as 27% in 2012 and increase sharply to 70% in 2014. The timeliness of reporting is as high as 83% with a range 54-83. Thus it appears as more facilities report to the DHIMs timeliness improves and thus the data can be used to inform decision making (Table 47).

**Table 47:** Trend in Health Facility Reporting and Timeliness to DHIMs by Region

Region	2010			2011			2012			2013			2014		
	Expected reports	Reporting Rate	Timeliness	Expected reports	Reporting Rate	Timeliness	Expected reports	Reporting Rate	Timeliness	Expected reports	Reporting Rate	Timeliness	Expected reports	Reporting Rate	Timeliness
Ashanti	134,883	10.29	0.04	134,883	11.31	0.10	134,883	37.75	25.43	134,883	51.38	47.7	134,883	80.8	54.8
Brong Ahafo	99,971	9.09	0.07	84,899	4.42	0.19	96,631	45.38	36.31	98,411	58.98	65.08	98,651	74.50	74.03
Eastern	125,980	4.22	0.00	125,548	5.49	0.01	132,232	56.70	43.99	125,212	68.73	70.41	125,944	81.94	87.64
Central	95,761	8.92	0.01	95,761	10.04	0.02	95,833	44.91	29.02	95,833	61.69	56.25	96,108	76.07	73.19
Northern	71,796	12.79	0.01	71,796	13.17	0.01	71,796	38.80	32.09	71,796	59.93	52.53	71,796	69.69	68.76
Upper East	61,744	13.40	0.00	61,744	16.24	0.00	61,744	43.63	43.26	61,744	63.73	63.02	61,744	78.90	85.74
Upper West	61,797	12.23	0.00	61,797	13.17	0.02	61,797	50.93	35.01	61,797	62.00	69.40	61,797	73.85	78.74
Western	97,650	15.88	0.04	97,650	16.18	0.04	97,650	45.09	27.62	97,650	62.59	56.89	97,650	78.78	66.01
Volta	92,791	14.24	0.00	92,791	17.00	0.02	92,791	40.81	33.53	92,791	58.94	65.24	92,791	77.74	74.10
Greater Accra	59,157	8.63	0.02	59,157	12.32	0.16	59,157	40.41	27.89	59,157	59.68	57.27	59,157	83.56	83.25
National	901,530	10.61	0.02	886,026	11.51	0.05	904,514	44.76	33.96	899,274	60.53	60.50	900,521	77.92	73.48

Source: DHIMS II

## 6.4 Summary and Conclusion

The Data Information and Management systems provide a structure for monitoring and measuring service delivery outcomes at the health facility level. The data from the health facilities provide comprehensive information about clinical and preventive services, infrastructure and financial information that may be used to improve the health of the nation. The morbidity data show a declining trend for malaria but a rising trend for acute respiratory infections, anaemia and diarrhea which could be used to design interventions to manage these diseases. In comparing antenatal care visits with coverage and skilled delivery, one observes that districts with high ANC coverage have four or more visits and women are more likely to deliver with a skilled birth attendant.

The health facility level provides rich data that can be used to measure health service utilisation and to monitor the quality of care for the top ten causes of diseases.

There are gaps in the data collected especially for 2010 where most of the data is not available and for the indicators that are available. In calculating the indicators for measuring health coverage and impact of interventions, some denominators are sometimes inaccurate giving rise to unrealistic achievements or proportions in some instance. There is therefore the need to standard the information that is used to compute such indicators.

Although the data management and information system has six subsystems data on human resource, support services, finance and supply chain and drug supplies, they are not reported through the DHIMs and thus makes the data management and information systems reporting incomplete. If the DHIMs will have to be the main tool for making decisions, then every subsystem will have to provide the required information. For example where maternal deaths are on the increase, it would be appropriate to know the number of personnel with the required skill, those in training and on leave or due for retirement to enable redistribution or training of new personnel to fill in the gaps. Since the financial information is not reported through the DHIMs one is unable to understand if the facilities do have the resources to deliver the services appropriately. It is therefore recommended that financial reports of districts be integrated into DHIMS to enable users align activities with cost elements in the health system.

# CHAPTER 7

## Leadership and governance



### 7.1 Introduction

Good leadership and governance mechanisms are very much linked to the health status of a country's population. Health leadership and governance relate to the stewardship function within the health system. The leadership and governance role involves overseeing and guiding the whole of a country's health system, including the public, private and missionary health facilities, in order to promote and improve health outcomes. Leadership and governance in the health system requires political and technical action, since it involves harmonizing varied and competing demands for limited national resources, especially during very challenging times.

In low-middle income countries (LMIC), the right to health is gaining momentum, as there are increased demands and expectations for governments to provide more decentralized but comprehensive package of health services. Although there is arguably no universally accepted blueprint for an effective leadership and governance in health systems, the ultimate responsibility of health systems' leadership and governance lies on government. However, this expected responsibility of the government for the nation's health does not mean that all the leadership and governance functions of the health system must be carried out by the established agencies of government such as the Ministries of Health. There are established legislations that regulate the leadership and governance in the health sector.



## 7.2 Legal frameworks of health sector leadership and governance in Ghana

The organization, management and operations of the health sector in Ghana are governed by parliamentary legislations. These laws govern the operations of certain aspects of health delivery. Legislations governing the health sector have a long history predating independence. Nonetheless, over the years, some of these laws have been revised to conform to the complexities of today's health system. Some of the laws that currently govern the operations of the health sector include, but not limited to:

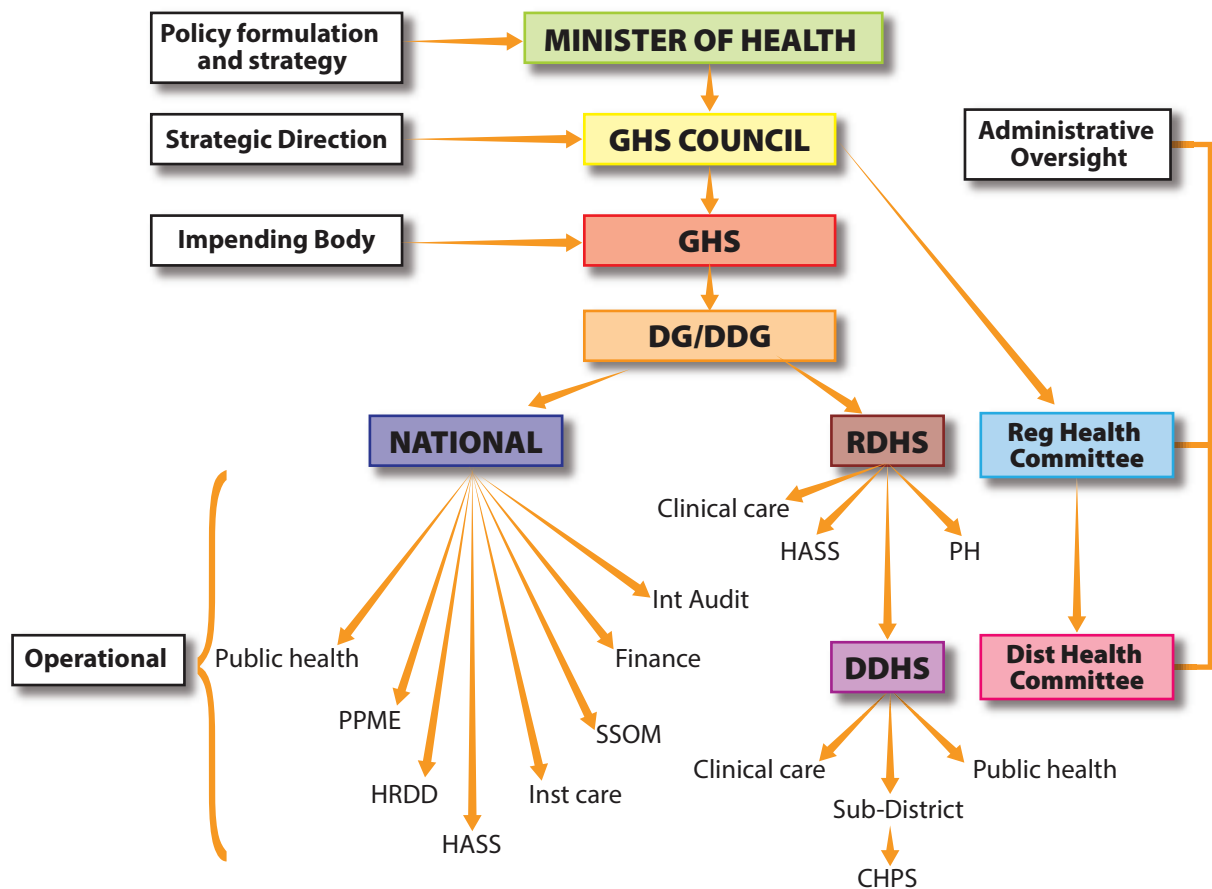
1. The Ghana Health Services and Teaching Hospitals Act 525, 1996 revised into the new General Health Service Bill covering the General Health Service, the Teaching Hospital Authority, the National Ambulance Service and the National Blood Service. This Act set to clarify the roles of the institutions and to help increase their efficiency.
2. The National Health Insurance Scheme under the National Health Insurance Act (2003, Act 650) revised as Act 852 in 2012, was also enacted to bridge the equity gap in access to healthcare; decrease financial barriers to healthcare. This act has been operationalized across Ghana.
3. The Local Government Service Act 656 and the National Decentralization Policy and Action Plan which will see a gradual and systematic transfer of responsibility from centralised to decentralized administrations.
4. The National Environmental Sanitation Policy (2010) was adopted with priorities to increase access to adequate sanitation facilities; adapt to and mitigate the impact of climate change and promote sustainable environmental practices.
5. The Health Coordinating Council Act, 2010 was promulgated to ensure effective integration of health sector agencies. The Act provides council for all health delivery agencies, regulatory bodies, and research and training institutions. The governance structure of Health Professions Regulatory Bodies Bill was based on this Act.
6. The Health Professions Regulatory Bodies Act (2010) provide for governance structures that regulate health professional bodies - Medical and Dental Council; Nursing and Midwifery Council; the Pharmacy Council and the Allied Health Professionals Council. Provision of adequate mix of health professional is important for the delivery of preventive and curative health care. The Act was therefore promulgated to regulate the training of health professionals in the performance of their duties, and also to ensure adequate health professional are produced to cater for the health needs of the population.

7. The Medical Training and Research Act (2010) was established as the Centre for Plant Medicine Research for the promotion of scientific research, knowledge and development in the field of plant medicine. The Act led to the establishment of the Ghana College of Physicians and Surgeons as a national postgraduate medical college for training specialists in medicine, surgery and other disciplines, and the Ghana College of Nurses and Midwives to promote specialist education in nursing and midwifery.
8. The Traditional and Alternative Medicine Act (2010) provides for the promotion and regulation of the practice of traditional medicine and alternative medicine. It established a council that regulates traditional and alternative medicine practice and practitioners. To provide direction in the implementation of traditional medical practitioners in Ghana, a traditional health directorate has been established to provide leadership in the incorporation of traditional medicine into the health care delivery in Ghana. The council therefore regulates the traditional medical practitioners in Ghana.
9. The Health Institutions and Facilities Act 829 (2010) provides for licensing and regulation of facilities. It sets up the Health Facilities Regulatory Agency to oversee the operations of public and private health institutions and monitor the quality of service rendered by them. The Health Institutions and Facilities Act 829, 2010 covers the Centre for Scientific Research into Plant Medicine; Ghana College of Physicians and Surgeons; the Pharmacy College and the Ghana College of Nurses and Midwives.
10. The Mental Health Act 830, 2011 sets up a separate Mental Health Service leadership and governance structures to improve upon mental health service delivery.
11. The Public Health Act of 2012 (Act 851) was enacted to consolidate laws relating to prevention of disease, health promotion and to safeguard, maintain and protect the health of humans and other related matters. Key areas in this Act include certification of vaccines, standards for drugs, prohibition of diseases advertisement, WHO regulations and the regulation of tobacco use as catalogued in the World Health Organization WHO Framework Convention on Tobacco Control.

## 7.3 Governance structure of the health sector in Ghana

The Ghana Health Service (GHS) and Teaching Hospitals Act (ACT 525), passed in 1996, separated the governance and policy from the operational aspects of health service

delivery in Ghana. The Act essentially led to the creation of the Ghana Health Service as an implementation agency of the Ministry of Health policies. This Act also created a Ghana Health Service Council to provide strategic direction to the GHS in the implementation of the MoH policies. The Act mandates the Ministry of Health to formulate health policies and design the appropriate strategies for implementation. The Ghana Health Service Council is mandated to provide strategic direction to the Ghana Health Services (policy implementing body) in the implementation of health policies. The policies are then implemented by national, regional and district sub-structures of the GHS. Regional and District Health Committees are formed to provide administrative oversight on policies implementation at the regional and district levels respectively. Figure 61 illustrates the organizational, leadership and governance structure of the health sector.



**Figure 61: Health Sector Leadership and Governance Structure**

Sources: Adapted from Ghana Health Service and Teaching Hospital ACT (ACT 525)

## 7.4 Ministry of Health (MoH)

At the top of the organizational structure is the Ministry of Health. The Ministry and its policy implementing agency, the GHS provide leadership and governance mechanisms of the health sector. The Ministry of Health formulates and implements policies in collaboration with the Ministries, Department and Agencies (MDAs), Development Partners (DPs) and

the private sector. Recently the MoH sought to strengthen governance structures by establishing the Inter-Agency Leadership Committee (IALC) to promote accountability and collaboration between government agencies and the Ministry. The Agencies perform service delivery, regulatory, financing, research and training functions and are responsible for implementing policies of the Ministry. The Ministry formulates the health sector strategies and technical policies; define health sector goals, provide directions and prioritize sector spending across all services; identify the roles that other actors including the public, private and volunteer organizations play in the health system. Key functions of the Ministry include the following:

1. *Information and oversight:* ensure the generation, analysis and use of information to analyze trends on access, coverage, safety, responsiveness, financial risk protection, health outcomes and the impact of policy on the political environment and as well as the opportunities for action.
2. *Collaboration and coalition building:* with international partners and across all sectors of government, including civil society groups in order to influence action on key determinants of the health and access to health services; to use the collaboration and coalition building to generate support for public health policies.
3. *Formulation and implementation of health regulation:* to ensure that they are effectively implemented and enforced across the health system.
4. *System coordination:* to avoid fragmentation of health delivery and to provide a unified authority and responsibility structure.
5. *Maintaining accountability:* within the health system so that individuals and agencies are held accountable, and also to ensure that there is some level of transparency necessary for health sector performance.

As part of government's development agenda to transform the country into a middle income status, interventions were put in place to spur growth through improvement in the country's human capital. However, achieving such an objective could be hampered with an unhealthy population and an ineffective health sector. Over the years, therefore, the MoH has designed policies to promote private health sector development, increase access, utilization, quality and health outcomes. Some of these policy frameworks are the programmes of work that aimed to create wealth through a healthy population. Other policies that have been developed in line with the ministry's strategic goals include:

1. Health Promotion Policy 2005
2. Regenerative Health and Nutrition Programme Strategic Plan 2007-2011

3. Child Health Policy 2007-2015
4. Ghana Shared Growth and Development Agenda (GSGDA), 2010-2013
5. National Health Policy 2007, creating wealth through health
6. Health Sector Medium Term Development Plan 2010 -2013
7. Health Sector Medium Term Development Plan, 2014-2017
8. Expanded Programme on Immunization (EPI) Policy, 2010
9. Disease Control Strategy 2010-2014
10. Non-communicable Disease policy, 2012
11. National strategy for cancer control, 2012-2016
12. Private sector development policy

## 7.5 Ghana Health Service

The GHS is the implementing body of health policies developed by the MoH. Leadership and governance of Ghana Health Service is structured along a three-tiered administrative system: National; Regional and District levels. In terms of service delivery, the GHS is a five-tiered service system, including: National, Regional, District, Sub-district and the Community (MoH, 2011). The regional, district and community levels, health facilities are established to provide primary and secondary health care services. However, tertiary health care is mainly provided by Korle-Bu, Okomfo Anokye, Tamale and most recently Cape Coast Teaching hospitals. At the services delivery points of the GHS include trained cadre of health related professionals. Recognizing the existence of operational and financing challenges to achieving the health sector policy goals and objectives, the GHS constituted a team tasked with coordinating and designing guidelines for implementing policies and plans at all levels of the service. Among the outputs of the task team included the development of the Ghana Health Service Plans and Budget for 2014 and the Planning and Budget Guidelines for 2014-2016, which were developed and disseminated based on a National Medium Term Development Policy Framework.

Governance of the GHS at the national level is structured into three hierarchical levels including, the Ghana Health Service Council, The offices of the Director General and Deputy Director General, and Eight National Divisional Directorates. The council provides strategic decisions and direction in the implementation of health policies. The eight Divisional Directorates include: finance, Health Administration and Support Services, Human Resources, Institutional Care, Internal audit, Policy Planning Monitoring and Evaluation (PPME), Research and Development and Supplies, Stores and Drug Management. These eight divisions have divisional heads and deputies who provide leadership in the implementation of policies specific to their Directorates. These Directorates are replicated at the regional, and district levels of the governance structures. Governance structures and functions of the directorates are capture in Figure 62.

Directorate	Governance structure	Functions
Health Administration and Support Services	Headed by a Director and four Deputy Directors	The directorate provide general administrative functions of the service. It is also responsible for the management of transport services, estate and clinical engineering.
Human Resources	Headed by a Director assisted by deputies. Three departments in this directorate; training and capacity development, human resource management and human resource planning and monitoring.	In-charge of recruitment and training of all work force cadre. The directorate provide oversight responsibility for practitioners of traditional medicine through training and capacity building.
Institutional Care	Headed by a Director and four deputy Directors. Divided into four departments; clinical information, quality assurance, clinical service and mental health.	Provide clinical supervisory role at clinical service delivery points
Finance	Headed by a director and deputy directors	Oversee prudent financial management at national down to district levels. Institute measures to improve on financial reporting of program funds.
Internal audit	Headed by a director assisted by two deputy directors, one in-charge performance audit and the other responsible for financial control and compliance.	Provides internal audits of financial transactions and also ensure financial controls and compliance.
Policy Planning Monitoring and Evaluation	Headed by a director assisted by three Deputy Directors in-charge of policy, planning and budgeting, and monitoring and evaluation	In-charge of developing plans and strategies for effective implementation of policies at all level of the health services delivery. It also provides monitoring and evaluation of health sector policies.
Research and Development	Headed by a Director with two deputies directors. To facilitate its work, the directorate has established three research centres in Navrongo, Kintampo and Dodowa	Provides cutting-edge knowledge research that inform decision making in the health sector. Conduct clinical trial on vaccines and related medical products.
Supplies, Stores and Drug Management	Headed by Director and two Deputy Directors in-charge of procurement and logistic clearing and warehousing management.	Provides medical supplies to the 10 regional health directorates, and service providers at all levels.
Public Health	Managed by a Director and two Deputy Directors, one in-charge of disease surveillance whilst the other in-charge of disease control.	In-charge of the control of both communicable and non-communicable disease/

**Figure 62: Governance structures and functions of the directorates**

## 7.6 The five-tier operational governance structure of the GHS

In implementing policies and the provision of health care, the leadership and governance of GHS is structured into five-tier levels; national (described above), regional, district, sub-district and community level. At the region level, the Ghana Health Services structure is headed by a Regional Director of Health Services who is assisted by a Deputy Regional

Director of Health Services. There are also leaders' in-charge of public health services, clinical care, and administration and individuals' in-charge of various aspects of health care delivery to reflect the national picture of the governance and leadership structures. At the district level, the Ghana Health Services structures are headed by a District Director of Health Services. There also representative of the various structures at the national level and coordinators of various disease-specific interventions such as malaria, tuberculosis and HIV. The leadership of the district level provide supervisory role to the sub-district level.

Leadership of the health sector has over the years instituted a number of measures as part of its community engagement and partnership efforts to achieve the overall health sector policy goals and objectives. One of such initiatives was the Community-based Health Planning and Services (CHPS) program. The Ghana Health Service continued its efforts to expand and increase access to quality health services through primary health care under the CHPS program. The Ghana Health Service completed a review of the CHPS Operational Policy Guidelines (OPG) in 2009. In 2013, a simplified manual of the CHPS-OPG was developed to enable capacity building of the CHPS implementers and to advocate for CHPS implementation through a renewed community partnerships with DHMTs, MDAs, Sub-districts, Community Health Committees and health volunteers, first in the Volta Region in 2013 and then nationwide in 2014.

The Ghana Health Service recognized that sufficient community health nurses are essential for effective functioning of the CHPS program in the communities and for that matter they have produced more of the community health nurses over time. The Ghana Health Service assigns the community health nurses to demarcated CHPS zones as a measure to ensure the close-to-client model of community health services in those demarcated zones. The Ghana Health Service considered the community health nurses as the lynch-pin to community participation in planning and implementation for the communities health needs. The Ghana Health Service also engaged District Assemblies and local councils as key partners for the provision of CHPS compounds and residential accommodation for the community health nurses. Engaging the District Assemblies ensured their involvement and commitment to community placement and provision of essential tools necessary to enable the community health nurse to function effectively within the demarcated CHPS zone.

## 7.7 Implementation of Specific Policies by GHS

Part of the GHS core mandate is to implement policies to achieve good health. Several policies have been implemented by GHS in the past and recent times. Apart from implementing national policies which have been developed locally to meet the need of people in Ghana, the GHS also implement international health policies and treaties from World Health Assembly resolutions and the World Health Organization. One such international treaty was the just ended Millennium Development Goals (MDGs). As part of moves towards achieving MDGs 4 and 5 of reducing child and maternal mortality, Ghana



adopted the Millennium Development Goals (MDG) Acceleration Framework Country Action Plan (MAF) in 2010, which laid emphasis on prioritizing reduction in maternal and child mortalities.

This initiative enabled the country prioritize its investment in development of the health sector. Recognizing the existence of operational and financial system's challenges to achieving the health sector policy goals and objectives, the Ghana Health Service, as the implementing agency of the Ministry of Health, instituted some measures to address some of these challenges. Among some of the measures included putting together a team that were tasked with coordinating the process of alignment of all divisional programme of work (POW) so that a performance agreement for all levels within the Ghana Health Service would be drafted. Among the initiatives implemented by the task team included the development of the Ghana Health Service Plans and Budget for 2014, the Planning and Budget Guidelines for 2014-2016, which were developed and disseminated based on a National Medium Term Development Policy Framework. The Ghana Health Service organized workshops for implementing staff on the planning process with the implementation timelines. Though Ghana had made significant progress in achieving MDGs 4 and 5, it was unable to achieve the targets on reducing child and maternal mortality (UN/NDPC, 2015).

### 7.7.1 Health promotion and Regenerative health Policies

At the heart of the health promotion and regenerative health policies is promoting healthy living through changes in risky health behaviour and eating of healthy food. The policy focused on the promotion of healthy lifestyles through good nutrition, regular physical exercise, recreation, rest and personal hygiene. The Policy further places healthy lifestyles within the context of the physical and social environment in which people are born, grow, school, work and die; emphasizing potable water, sanitation, and safe food, housing and roads are means to that end. The Policy seeks to build a pluralistic health service that recognizes allopathic, traditional and alternative providers (both private and public). It also ensures access to quality health care for preventing diseases and injuries, as well as for restoring the health of the sick and disabled. In that regard, the policy aims to provide comprehensive health care services comprising preventive, curative and rehabilitative services. Finally, the policy seeks to promote a vibrant local health industry that supports effective, efficient, and sustainable service delivery, creates jobs and contributes directly to wealth creation and the attainment of national development objectives.

Despite the fact that these two policies have been implemented for some years now, their impact on reducing Non-Communicable Diseases (NCD) is not substantial. The high prevalence of NCDs such as cardiovascular conditions, diabetes and cancers undermines the achievements of these policies. Exercise, eating habits, intake of alcohol and smoking play a role in the etiology of these conditions (Bosu, 2012; WHO, 2014). Both active and passive smoking has been reported to predispose people to respiratory tract cancers (WHO, 2015). The public health Act was passed to regulate smoking in public places but



the implementation is yet to see the light of day. The “no smoking” inscription are on public places, yet people still smoke in public environments. Enforcement of the ACT can be achieved through good leadership and inter-sectorial collaboration especially with security agencies to arrest and prosecute offenders to act as deterrents to others. Establishing an inter-agency task force comprising of representatives from GHS, MoH, and security agencies to provide leadership in the implementation of the “no public smoking” will be essential to achieve this policy direction.

### 7.7.2 Non-Communicable Diseases Policies

In recent times, NCDs have received wide recognition because of the burden in human development across the globe. NCDs contribute significantly to illness, disability and deaths in Ghana. The major NCDs in Ghana are cardiovascular diseases, cancers, diabetes, chronic respiratory diseases, sickle cell disease and mental illness. A policy was therefore developed in 2012. The NCD-policy focuses on health promotion and early detection of these conditions and strengthening the health system (MoH, 2012). To enable effective implementation of the policy on NCD, health directorates were supposed to establish and assign focal persons to provide leadership in that direction. Though measures are put in place to ensure full implementation of the tenets of this policy, progress has been slow with minimal achievements of results. Cardiovascular conditions and cancers still remain a burden in Ghana and key components of the policy remains unimplemented (Bosu, 2012). For example, cervical cancer is the commonest of cancers among women with high fatality but access to screening services (a key component in reducing the burden) is still a problem and limited to mostly regional and teaching hospitals (GHS, 2015). Training of lower medical cadres working at primary health service system on screening procedures will increase access to these services. For example, a task shifting proof of concept study conducted in Ghana showed that Community Health Officers (CHO) can be re-oriented to conduct cervical cancer screening at community level using visual inspection with acetic acid and cervicography (Asgary et al., 2016).

### 7.7.3 Mental Act and Policy on Mental Health

In March 2012, the Parliament of Ghana passed the Mental Health Act (MHA-2012) law following series of advocacy by civil society, stakeholders and institutions. Some of the key areas of the law include the establishment of a mental health authority, enshrinement of human rights, community oriented care, and least restrictive environment. It also included strong emphasis on public education, integration of mental health into the general health care, establishment of mental health fund, free mental health care to all in need, wide accessibility to quality mental health services, emphasis on research, just to mention a few. The Mental Health Authority was established to spearhead the implementation of the provisions of the law. Though the law has been passed, mental health care is still largely provided at three public institutions (Accra, Pantang and Ankaful Psychiatric Hospitals) with little integration into primary health care, to enable prevention and early

treatment of psychiatric disorders. Nonetheless, efforts are being made to strengthen community services which is required to decentralize management of mental health to the communities and foster early detection and treatment of mental disorders.

The Accra Psychiatric Hospital for instance has the semblance of a prison where there are no adequate ventilation outlets, thus predisposing inmates to all kinds of diseases, particularly skin disease, due to overcrowding in the facilities. Institutional mental care in the country mostly limited to psychiatrists and nurses. The fact however, is that these two health professionals cadre alone cannot handle all issues pertaining to mental health care. Consequently, the need for a multidisciplinary team becomes paramount. As the situation is now, the availability of adequate number of well-trained multidisciplinary workforce (psychiatrists, psychologists, social workers, occupational therapists and nurses) leaves much to be desired. The Mental Health law includes a requirement that certain state institutions provide inputs to ensure successful implementation of the law. For example, the judicial system, social services, education services and the Ministry of Health, all have roles to play under the MHA-2012. It is impossible to say with certainty if these various institutions are prepared for these additional demands expected of them. It is obvious that the law was passed without the adequate political, organizational and structural readiness. The inference therefore is that the law was compromised even before its passage. Good leadership will be required to bring all these stakeholders together to circumvent the challenges in the implementation of MHA.

#### 7.7.4 Malaria, Tuberculosis and HIV Control Policies

The Okinawa Infectious Disease Initiative, announced by Japan at the G8 summit in 2000, led to strengthened global efforts on several diseases, in particular HIV/AIDS, tuberculosis, and malaria, poliomyelitis, parasitic diseases, and other neglected tropical diseases (Reich et al., 2008). These efforts contributed to the establishment of the Global Fund to Fight AIDS, Tuberculosis (TB) and Malaria, as well as other single-disease control programmes, ushering in a new era in global health cooperation.

Tuberculosis remains a major communicable disease in Ghana despite expansion in prevention and control interventions. Since the year 2005, Ghana has been implementing the new Stop TB Strategy covering the six strategic areas developed by the WHO in all health facilities nationwide. Nonetheless, in the year 2014, 44,000 new tuberculosis cases were reported, which translates to 165 newly infected people per 100,000 population. This makes Ghana part of the high incident countries (estimated incidence rate of 40 per 100,000 or greater) in the world (WHO, 2015). Tuberculosis prevalence among adults in Ghana is 290 per 100,000 population, which is more than twice the estimated World Health Organization (WHO) acceptable TB prevalence for all ages (NTP, 2014). Though progress has been made in adherence<sup>24</sup>, case detection remains a problem in Ghana. It has been found that case detection was being undermined by the lack of coordination between

24 **Adherence:** the extent to which a person's behaviour – taking medication, following a diet and/or changing lifestyle – corresponds with agreed recommendations from a health worker.

community level health services provider and the district level (Ahorlu and Bonsu 2013), a key leadership function of the managers of the district health management team. As the global targets is to end TB by 2030 as envisioned in the sustainable development goals, there would be the need health managers to re-strategize to increase case detection.

Ghana has made some significant progress in malaria control. Ghana scaled up malaria interventions between 2000 and 2012. This scale-up led to a reduction of prevalence of more than 50% from 62.5% to current meso-endemic values of 27.5% (GSS, 2011). Malaria Case Fatality Rate has also been reported to have declined from 1.32% in 2010 to 0.54% in 2014 (NMCP, 2014). Regarding HIV control, the prevalence has also declined from 1.8% in 2007 to 1.37% in 2012 and 1.3% in 2014 (NACP, 2015). NACP records also show that annual AIDS-related deaths in adults has declined from a little under 16,000 in 2006 to about 7,800 in 2013 (NACP, 2015). However, early infant diagnosis (EID) is a major challenges in Ghana as it is reported to about 17% which is low (NACP, 2015). Though remarkable progress had been made in these trio diseases, many Ghanaians still die annually from these preventable diseases. Therefore, there would be a need to rethink the approaches and implementation strategies adopted in the past (as their achievements has been minimal relative to financial investment in those areas) to bring their burden among Ghanaians and foreigners living in Ghana.

### 7.7.5 Neglected Tropical Diseases policy

The Neglected Tropical Diseases (NTDs) policy covers a wide range of endemic conditions such as lymphatic filariasis, onchocerciasis, trachoma, schistosomiasis, and soil transmitted helminthiasis, which the policy on NTP aims to prevent through administration of Preventive Chemotherapy (PCT). The other conditions in this policy include yaws, Buruli ulcer, leprosy and trypanosomiasis. Significant progress has been reported in the control of these diseases through specific interventions. Ghana has been able to achieve the WHO targets for these conditions. For example, Ghana has achieved the WHO target of eliminating leprosy set at <1/10,000 and after several round of mass drug administration (MDA) for lymphatic filariasis, LF Transmission Assessment Survey (TAS) in 2014 showed that all the participating 64 districts passed the TAS and therefore qualify to stop mass drug administration, a significant progress. However, many people still live with the sequelae of Buruli ulcer and leprosy, which are also associated with high stigma. Efforts need to be tailored towards early detection and prompt treatment to prevent the permanent disabilities resulting from these diseases.

### 7.7.6 Expanded Programme on Immunization (EPI)

Routine immunization against preventable childhood conditions is one of the strategies used to reduce the burden of conditions such as poliomyelitis, measles, tetanus, haemophilus influenza type 2, diphtheria amongst other. Immunization activities therefore continue throughout the 216 districts in Ghana as envisioned in the EPI policy. Supply of

all the antigens for the infant immunization are often regular with minimal cases shortage reported across the countries. Out of the 216 districts in Ghana, 150 districts (69.7%) have recorded penta3 coverage  $\geq 80\%$  whilst two districts recorded penta3 coverage of  $<50\%$  (GHS, 2015). This is a remarkable achievement the pentavalent vaccine offer protection for children under five against the five most common “killer conditions”. The estimated number of un-immunized children was 60,121 (representing 5.8%) of total annual EPI target and this is a major progress towards reducing the burden of vaccine preventable conditions in Ghana as the high coverage offer herd immunity for the un-immunized.

### 7.7.7 Private Sector Development Policy

This policy which has its roots in the Private Hospitals and Maternity Homes Board Act (1958, Act 9) for regulating, accrediting and licensing healthcare providers has now been repealed and replaced with the Health Institutions and Facilities Act 829, 2011. The Act provides for the establishment of a Health Facilities Regulatory Agency to license facilities for the provision of both public and private health care services. This policy has led to the establishment and accreditation of several private institutions to provide health care. The integration of private sector into the formal health sector is essential in increasing access to health care.

## 7.8 Summary and Conclusion

Leadership and governance are the bed rock of health care delivery in any country. Good leadership and governance are pivoted in both the design and implementing health-related policies to address the health needs of a country. In Ghana, leadership and governance of the health sector is regulated by various legislations. These legislations regulates all aspects of the health system, including training institutions management, all health professionals cadres, health institutions establishment, and designing and implementing both national and international health policies. The Ghana Health Service and Teaching Hospitals Act (ACT 525), which was passed in 1996, separated the governance and policy from the operational aspects of health service delivery. This Act institutionalized the MoH as the health policy formulation body and made the GHS in-charge of implementing the policies developed by MoH. Over the years several, numerous policies have been developed by the MoH, including those targeting health promotion and regenerative health, communicable and non-communicable diseases, neglected tropical disease, immunization and public-private partnership. The GHS which is mandated to implement these policies is organized into three-tier system at the national level (GHS council, Office of Director General and Deputy Director General and eight Divisional Directorate). However, at the operational level, GHS is structured into five level from the national through to the community. Through these operational levels, policies are implemented to reach their beneficiaries at the community. Generally, the health sector has a well-structured leadership and governance that ensure implementation of policies at all levels. This notwithstanding, many health policies have achieved marginal impact, partly because, of weak leadership and governance structures.

Therefore, it would be important to evaluate and devise more innovative ways of strengthening leadership structures to efficiently and effectively implement policies to achieve desired results.

From the review, it is obvious that progress in health can only be sustained through good leadership and governance. The prospects look good for Ghana provided measures are put in place to ensure that all managers of health systems are trained on good leadership skills. The introduction of leadership and governance at all levels of training of health workers will be essential in the global drive to achieving sustainable development goals. Emphasis should also be put on social accountability such that mechanisms can be put in place to ensure that communities, citizens and civil society organizations are oriented to hold public officials accountable. As funding of health interventions from donors are shrinking, another area that will emerge in the coming years will be how to mobilize local funding sources for health care. This will require leadership thinking outside the box and efficient use of limited resources.

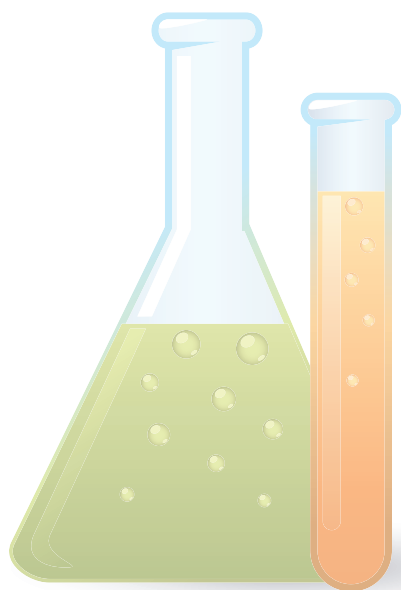
# CHAPTER 8

## Cross-cutting issues (Health and Development)

### 8.1 Introduction

Human health is a critical ingredient for economic growth and human development. Principle 1 of The 1992 Rio Declaration Principles argues *"human beings are the central concern of sustainable development"*. Since then, internationally agreed development goals, such as the United Nations Millennium Declaration, Agenda 21, the MDGs, the UN Global Fund and the new Sustainable Development Goals (SDGs) recognize health as crucial ingredient for economic and human development. Historically, there have been attempts at associating the health of the Ghanaian population with development within the country. A comprehensive review conducted in 2000, using data from the Ghana Living Standards Survey (1988) and Ghana Health Demographic Survey (1993) showed low performance in key health indicators including malnutrition, high under-five mortality, access to healthcare, etc. These were associated with declines in socioeconomic development during the same period. For critics, this suggested that poor health smothered development for which reason the World Bank policy direction for Structural Adjustment Programmes was initiated in the 1980s.

In this Chapter, we attempt to describe health and development trends over the past 15 (2000 to 2014) years in Ghana. We first define health and development, discuss Ghana's vision and mission, and present an overview of collaborations between the Ministry of Health (MOH) and other ministries



in Ghana. Later we conceptualize the relationship between health and development and describe some contemporary health and development indicators. We also discuss both public and private sector contribution to health and development.

## 8.2 Defining Health & Development

Definitions provided for both health and development as concepts are often contested. Health, according to World Health Organization (WHO), is a complete state of physical, mental and social well-being, and not merely the absence of disease or infirmity. Development, on the other hand is often defined from one of three perspectives - either as a process of change which can be short-to-medium-to-long term change or as a dominant discourse. Gross domestic product (GDP) and human development index are most often used to measure development. Although the use of GDP as a measure of development is popular it often fails to capture inequalities and differences in social deprivation in the population. Consequently, Human development index (HDI)<sup>25</sup> is preferred as a broader approach to understanding developmental issues. The index includes most basic human capabilities such as long life, being knowledgeable, and enjoying a decent standard of living (UNDP, 1999) and good health etc. We define development broadly, as a measure of progressive change in the lives of the Ghanaian population as a result of public and private strategies, investment and interventions put in place over the period of 2000 and 2015. For example improvement in health status, economic growth, living standards and related factors such as water, sanitation, social and health lifestyles, and health service delivery are indicative of development.

## 1.3 Ghana's Health and Development Agenda: Vision, Mission and State of Health Care Delivery

The economic role of health provides a compelling rationale for Ghana's vision on health and development. Ghana's health vision is to create a healthy population for development. This is supported by the sector mission of contributing to socio-economic development by promoting health and vitality through access to quality health for all people living in Ghana using well-motivated personnel. These vision and mission statements were carved with the aim of having a healthy and productive Ghanaian population to facilitate the achievement of the Millennium Development Goals (MDGs), as well as human development and economic growth over the past 15 years. The underlining mechanisms for achieving the MDGs in conjunction with the vision, mission and goals of the Ministry of Health in Ghana were; 1) Delivery of health services; 1) Policy formulation and policy implementation; 3) Quality and regulatory services; 4) Financing and infrastructure; and

<sup>25</sup> **Human Development Index:** A composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living.



5) Research and training. Health is thus not only emphasized as central to development but also presents a unique set of opportunities for improving the health sector of Ghana.

The Ministry of Health works with several agencies, sector partners (e.g. MIDAs, MMDAs, and DPs) and private partners. Among these partners are the Ghana Health Services (GHS) with its Community Based Health Planning and Services (CHPS) programme as primary health care units, Mission Based Health Providers (MBHP) such as the Christian Health Association (CHAG), and other private health institutions. These partners are tasked to provide public and clinical health services at primary and secondary levels. Four main Teaching Hospitals (Korle Bu, Komfo Anokye, Cape Coast and Tamale) support with tertiary health services including emergency, referrals, teaching etc.

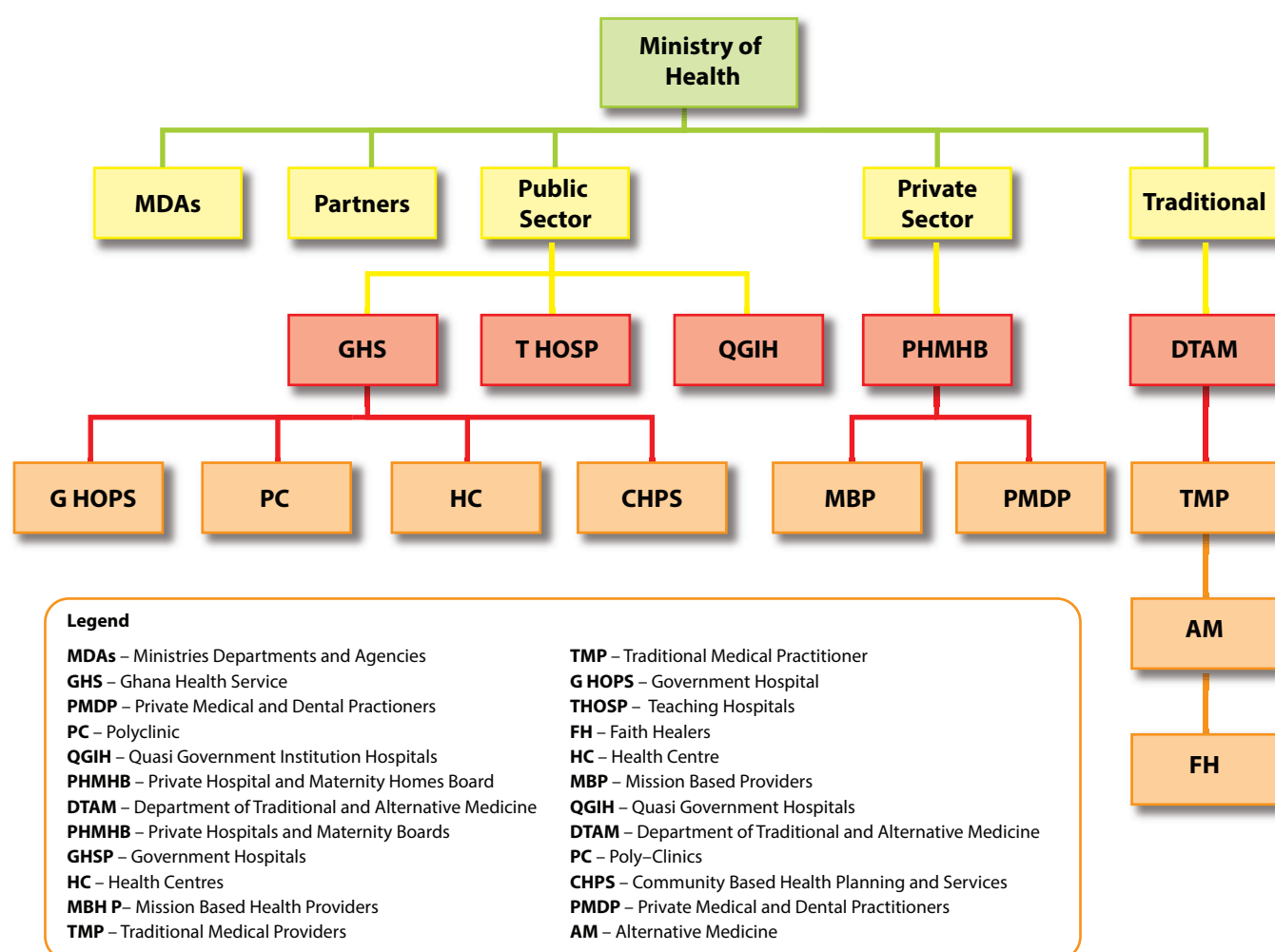
## 8.4 Historical Overview of Ghana's Health Sector

The development of modern healthcare system in Ghana can be categorized into four phases, before 1471-1844, 1844-1868, pre-independence and post-independence. The first phase (1471-1844) saw the emergence of biomedicine and establishment of healthcare system to protect colonial masters and missionaries from infectious diseases (Senah, 2001). The Bond of 1844 marked the beginning of the second phase, when health delivery was extended to natives working with the colonial governments. The third phase started from 1868 to 1957, when the first hospital was built in Cape Coast with dispensaries in several rural communities. The first national hospital, Korle Bu Teaching Hospital was built in 1923. Following independence in 1957, an inclusive social and welfare services were prioritized to the health sector through state funds. The government intervention aimed at enlarging and modernizing health delivery facilities as well as training more medical personnel. Between 1957 and 1963 the number of health care facilities increased from 10 to 41 and Government health expenditure increased from 6.4% to 8.2% between 1965 and 1969. However, the quality of healthcare began to decline in late 1960s when government failed to sustain investment in the healthcare system.

The Community-based Health Planning and services (CHPS) facility concept was initiated in 1990 to improve accessibility to primary health care such as clinical services and community outreach covering antenatal and postnatal care through community health officer (CHO). It was done at a time when Ghanaians lived more than 8km from the nearest provider, and rural infant mortality was 50 higher in rural areas than urban areas. Following pressure from the International Monetary Fund's (IMF) and World Bank's Structural Adjustment Program (SAP), reforms sought after private supports, leading to introduction of user fees in 1969 and cash-and-carry in 1985. Government health expenditure decreased 10% in 1982 to 1.3% in 1997. Many people who could not afford to pay the cost of healthcare at the point of delivery "cash-and-carry" turned to self-medication and other cost-saving behaviours/practices (Asenso-Okyere et al., 2008)



With the aim of further improving access to healthcare in Ghana, in 2003 the National Health Insurance Scheme (NHIS) was introduced. The NHIS aims at ensuring equitable access to quality services especially by the poor and vulnerable to date. The National Health Insurance Law, 2003 (Act 650) and the National Health Insurance Regulations, 2004 (L.I. 1809) were enacted to abolish the “cash-and-carry” system in order to limit out-of-pocket payments at the point of service delivery. NHIS is financed from four main sources. These are a value-added tax (2.5%) on goods and services, a reserved portion of social security taxes (23%) from formal sector workers, individual premiums (5%), and miscellaneous other funds (2%) from investment returns, Parliament and donors. Since the introduction of the NHIS, cost of healthcare become more affordable to the poor and marginalized. Outpatient utilization of healthcare services increased over forty-fold from 0.6 million in 2005 to 25.5 million in 2011. In addition, inpatient utilization increased over fifty-fold from 28,906 to 1,451,596 in 2011 (NHIA, 2011). Figure 63 shows the structure of Ghana health sector.



**Figure 63: Structure of the Ghana health sector**

Source: Adapted from Abor, P.A; G. Abekah-Nkrumah and J. Abor (2008): An Examination of Hospital Governance in Ghana. In Leadership Health Services Vol. 21. Issue 1.

## 8.5 Theory and conceptual framework

### 8.5.1 Theory of Health and Development

In this Chapter, the conceptual framework underlying health and development is derived from the national development goal of Ghana. The national development goal aims at accelerating shared economic growth, reducing poverty and attaining per capita income of 1000USD and becoming a middle income status. According to Preston, an increase in life expectancy can lead to increases in human productivity and national GDP per capita. Using data from the World Bank and WHO on Ghanaian life expectancy at birth and GDP per capita based on international purchasing power parity (<http://data.worldbank.org/country/ghana>), we illustrate this theory following Preston's curve.

Preston's curve indicates that individuals born in richer countries, on average, can expect to live longer than those born in poor countries. However, the link between income and life expectancy flattens out. This means that at low levels of per capita income, further increases in income are associated with large gains in life expectancy, but at high levels of income, increased income has little associated change in life expectancy. In other words, if the relationship is interpreted as being causal, then there are diminishing returns to income in terms of life expectancy. Improvements in health technology will shift the Preston Curve upwards.

Where life expectancy at birth is defined as the number of years a new-born infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.

GDP per capita based on purchasing power parity (PPP) is gross domestic product divided by midyear population of Ghana and converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. Data are in current international dollars based on the 2011 International Comparison Program (ICP) round.

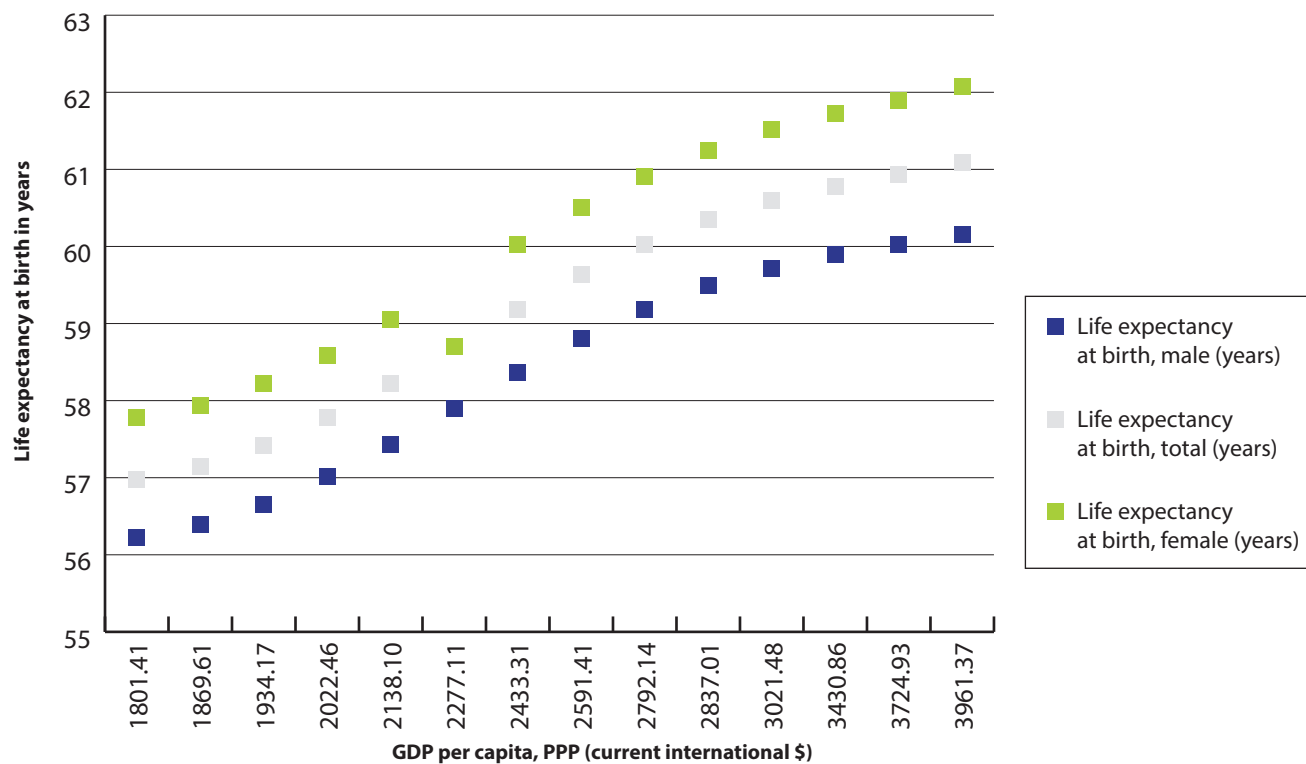
Source: Preston (1975)

### 8.5.2 Relationship between Life expectancy and Gross Domestic Product of Ghana (2000-2014)

Figure 64 indicates a 15-year-annual data trend of Ghanaian life expectancy and GDP per capita from 2000 to 2014. The graph confirms Preston's curve that an increase in GDP per capita will increase life expectancy and that the increase in life expectancy will flatten out in the long run. Behind this relationship (curve) is the proposition that healthier workers are physically and mentally more energetic, robust and have more productive lifespan to

influence development. In other words, the population health status is essential for national economic development. Poor health resulting from heavy disease burden negatively affects productivity, education, demography and eventually economic development in most Sub-Sahara African (SSA) countries including Ghana. For instance, it is estimated that the economic growth lost as a result of high prevalence of malaria in Africa is about one percent annually.

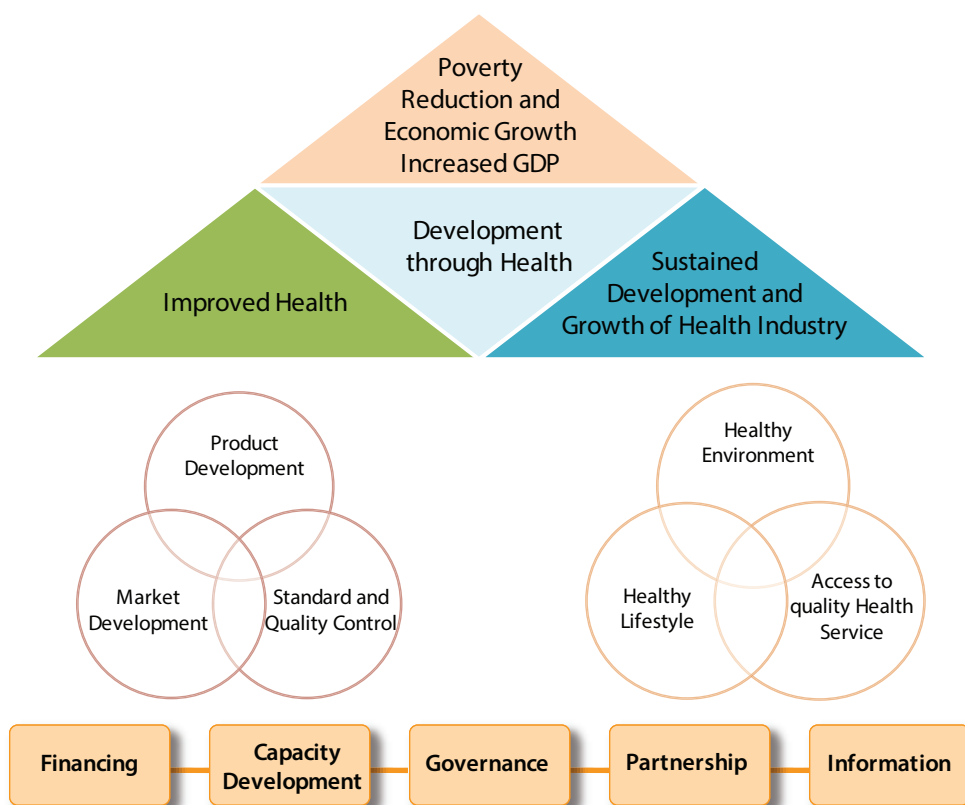
Poor health status of a country's population can impede the economic wellbeing, growth and development of that nation through a decline in life expectancy and high disability adjusted life years (DALYS). Good population health is therefore a critical input for poverty reduction, economic growth and development of whole societies (CMH, 2001).



**Figure 64: Preston Curve of relationship between Ghana GDP and life expectancy at birth -2000-2014**

### 8.5.3 National Health Policy Framework (Adapted from MOH, 2007)

Using health as tool for development requires multi-faceted interventions such as health product development, marketing, standard and quality control on one hand and interaction of human behavioural factors such as healthy lifestyle, healthy environment and accessible quality healthcare service on the other hand. Collectively, these work to improve human health and more productive working hours that may lead to increased productivity, economic growth, reduced poverty and sustained development.



**Figure 65: Framework for health and development**

**Assumptions of the framework:**

- Health improves productivity and creates wealth for development.
- Health promotion and nutrition ensure that people remain healthy and stay out of hospitals.
- Healthy environment and health lifestyles play a key role in ensuring healthy individuals, families and communities and the nation.
- Health delivery is more than health service delivery; it is everybody's business, it is affected by individual lifestyles and it also influenced by multi-sector actions.
- Health delivery is an industry that contributes to economic development.

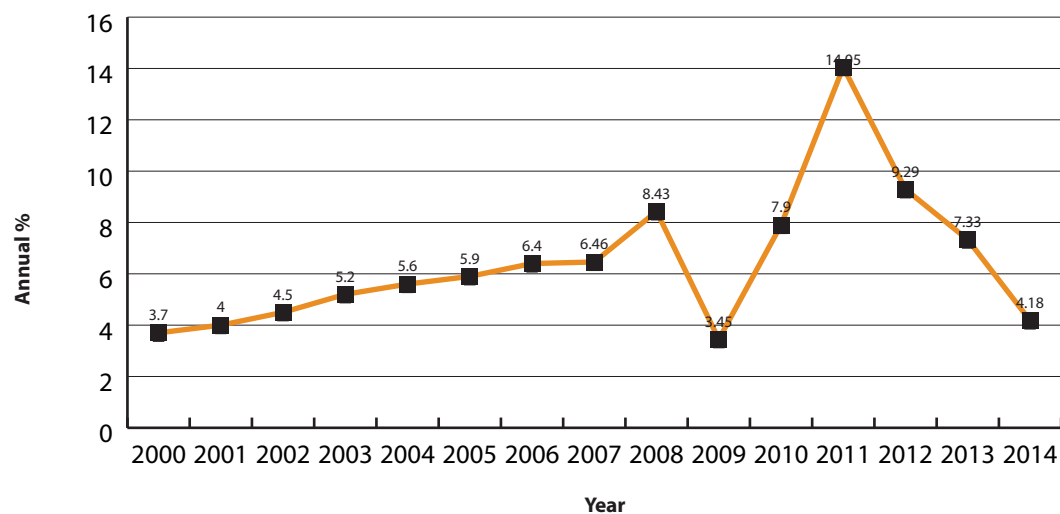
Source: MOH, 2007

## 8.6 Trends in Economic and Socio-Economic Development

### 8.6.1 Economic and human development index growth

Since the 1980s, the main thrust of development strategy in Ghana has been economic growth measured by GDP vis-à-vis poverty alleviation. Accelerated economic growth is seen as a precondition for poverty alleviation. This is based on the assertion that poverty change is largely determined by economic growth most often assessed by GDP and other macro-economic indicators. Figure 66 shows the trend of Ghana's GDP growth over the period 2000 to 2014. Since 2000, the economy of Ghana has been on upward trend with an average GDP growth rate of 3.1% per annum. The figure increased from 3.7% in 2000 to 8.43% in 2008, dropped in 2009, rose up to 14.05 in 2011 dropped again to 4.2% in 2014.

The performance of the economy was given a boost in 2010 when the national accounts of the country was rebased resulting in 60.3% increase in the size of GDP from 24,093.9million Cedis to 44,799.0 million Cedis. This led to an increase in per capita income from 1070 Cedis (US\$753 to 1,872 Cedis (US\$1318.16) to become a middle income nation. The human development reports show that Ghana is making improvement in human development index (HDI) with an average annual growth rate of 1.26% between 2000 and 2013. The HDI increased from 0.487 in 2000, 0.511 in 2005 and to 0.556 in 2010. The HDI stood at 0.573 in 2013 as compared to Sub Sahara African (SSA) regional average of 0.389. The country ranks 130 out of 169 countries and is placed among Medium Human Development countries.



**Figure 66: Trend of GDP growth 2000-2014**

Source of data: World Bank: Ghana's annual GDP growth rate from 2000 to 2014

## 8.6.2 Poverty, inequalities and health and development

In comparing poverty trends, the Ghana Statistical Services (GSS) records show that poverty incidences have declined alongside increasing GDP and human development index growth rates. Currently, the proportion of Ghanaians defined as poor stands at 24.2%. It was about 28.8% in 2000. According to GLSS 2005/6 and GLSS 2012/13 poverty incidence reduced from 31.9% in 2005/06 to 24.3% in 2012/13 representing 7.8%. The 7.8% implies that the average income of the poor fell below the upper poverty line (GHC 1,134) by 7.8%. Although, the MDG target of halving poverty which stood at 51.7% in 1991/92 by 2015 was achieved, poverty is still prominent in rural localities. Proportion of the poor is high among those living in rural savannah than those in rural coastal and forest areas.

Poverty and inequality retard development. Poverty is a major cause of under-nutrition and ill health which retard development. Although, the proportion of Ghanaian in extreme poverty reduced from 27% to 23% over the period, considerable poverty remains in some districts especially, districts in the three northern regions of Ghana. Their health risk exposure is disproportionately high. The poor experience a disproportionate share of ill health and often live in unsafe crowded housing facilities and poor environment. About 99% of all deaths from AIDS, tuberculosis and malaria occur in developing countries (IMF, 2004). This situation is a reflection of uneven economic development and inadequate primary health care in remote rural areas.

In Ghana, Two ly-based poverty lines are derived from this procedure:

1. A lower poverty line of 792.05 Ghana Cedis per adult per year: this focuses on what is needed to meet the requirements of household members. Individuals whose total expenditure falls below this line are considered to be in extreme poverty, since even if they allocated their entire budget to food, they would not be able to meet their minimum nutrition requirements (if they consume the average consumption basket).
2. An upper poverty line of 1314.00 Ghana Cedis per adult per year: this incorporates both essential food and non-food consumption. Individuals consuming above this level can be considered able to purchase enough food to meet their requirements and their basic non-food needs.

### 8.6.3 Correlations between health and development indicators

Using Pearson's correlation coefficient, we estimate the strength and direction of correlation between economic development (GDP) and health indicators over the 15 years period of 2000 to 2014. The results show generally that performance of health indicators are related to economic development indicators at varying degrees. Table 48 shows correlation estimates between GDP and under-5 and neonatal mortalities, immunizations, water and sanitation coverage. The correlation between GDP and neonatal mortality and under-five mortality were negative 0.45 and 0.50 respectively. This means lower rate of neonatal and under-5 mortality is related to improved health and development. On the other hand there was a weak positive correlation between immunization against DPT and GDP (0.29). The same applies to immunization against measles 0.31. The positive correlations are indicative of economic development with increase immunization coverage. There was strong correlation between GDP and improved sanitation in both rural (0.53) and urban (0.52) areas. The correlation between GDP and improved access to portable water in both rural and urban areas were positive 0.5 and 0.5 respectively.

**Table 48: Correlation between GDP and some health indicators**

	GDPg	GDPp
Immunization, DPT (% of children ages 12–23 months)	0.29	0.31
Immunization, measles (% of children ages 12–23 months)	0.27	0.28
Improved sanitation facilities (% of population with access)	0.52	0.53
Improved sanitation facilities, rural (% of rural population with access)	0.53	0.54
Improved sanitation facilities, urban (% of urban population with access)	0.52	0.53
Mortality rate, neonatal (per 1,000 live births)	–0.45	–0.47
Mortality rate, under-5 (per 1,000 live births)	–0.5	–0.51
Improved water source (% of population with access)	0.51	0.52
Improved water source, rural (% of rural population with access)	0.5	0.51
Improved water source, urban (% of urban population with access)	0.5	0.52

GDPg=GDP growth (annual %), GDPp=GDP per capita growth (annual %)

Source: World Bank and WHO, 2014

**Table 49: Correlation between GDP, HIV and health expenditure**

	GDPg	GDPp
Prevalence of HIV, female (% ages 15–24)	–0.59	–0.59
Prevalence of HIV, male (% ages 15–24)	–0.48	–0.48
Out-of-pocket health expenditure (% of private expenditure on health)	0.08	0.11
Out-of-pocket health expenditure (% of total expenditure on health)	–0.45	–0.43
Health expenditure, total (% of GDP)	0.41	0.42
Health expenditure per capita (current US\$)	0.5	0.51

	GDPg	GDPp
Health expenditure, private (% of GDP)	0.52	0.52
Health expenditure, public (% of total health expenditure)	0.61	0.6
GDPg=GDP growth (annual %), GDPp=GDP per capita growth (annual %)		

Source: World Bank, WHO 2014

## 8.7 Summary and Conclusions

The study was occasioned by scare information on the trends of events in relation to health and development indicators over the past 15 years in Ghana. The theory of health and development that healthier long human lifespan yields more productivity at micro and macro levels of economic, social and environmental development have long been established. We conducted reviews of the trend and also a correlation analyses, using contemporary health and development indicators based on data from a number of sources such as the WHO, World Bank, GSS, MOH, GHS and others.

It was generally observed that life expectancy soars alongside increasing trends in GDP growth averaging 3.9% per annum over the last 15 years. In addition a general increase in standard of living and alongside declining poverty trend (from 28.8 to 24.2) and malnutrition and other social and environmental health and development indicators were observed.

Finally, we established strong correlations between performance of health and development indicators over the study period. Correlation estimates show strong positive correlation between economic development (GDP and GDP per capita) and health indicators such as life expectancy, health expenditure, access to quality water, and good sanitation.



# Appendices

## Appendix 1 Doctors Situation by Region and Year

Year	Ashanti	Brong Ahafo	Central	Eastern	Greater Accra	Northern	Upper East	Upper West	Volta	Western	Total
2011	487	117	81	132	812	98	22	12	67	72	1,900
2012	363	120	79	106	948	114	22	12	61	66	1,891
2013	320	109	72	107	1,103	97	25	8	64	61	1,966
2014	347	108	79	125	1,361	89	24	15	85	77	2,310
2015	559	127	101	141	1,172	125	34	18	98	63	2,438
Absolute Increase											
2012	-124	3	-2	-26	136	16	0	0	-6	-6	-9
2013	-43	-11	-7	1	155	-17	3	-4	3	-5	75
2014	27	-1	7	18	258	-8	-1	7	21	16	344
2015	212	19	22	16	-189	36	10	3	13	-14	128
Total	72	10	20	9	360	27	12	6	31	-9	538
Percentage Increase (Over 2011 Workforce)											
2012	-25.5	2.6	-2.5	-19.7	16.7	16.3	0.0	0.0	-9.0	-8.3	-0.5
2013	-8.8	-9.4	-8.6	0.8	19.1	-17.3	13.6	-33.3	4.5	-6.9	3.9
2014	5.5	-0.9	8.6	13.6	31.8	-8.2	-4.5	58.3	31.3	22.2	18.1
2015	43.5	16.2	27.2	12.1	-23.3	36.7	45.5	25.0	19.4	-19.4	6.7
Total	14.8	8.5	24.7	6.8	44.3	27.6	54.5	50.0	46.3	-12.5	28.3

## Appendix 2 Specialists/Consultants Situation by Region and Year

Year	Ashanti	Brong Ahafo	Central	Eastern	Greater Accra	Northern	Upper East	Upper West	Volta	Western	Total
2011	142	28	25	33	269	18	4	5	23	18	565
2012	156	34	25	33	261	23	5	6	29	23	595
2013	173	32	29	40	280	21	7	6	34	27	649
2014	195	37	35	46	290	28	11	6	29	31	708
2015	201	39	35	42	296	29	12	7	32	33	726
Absolute Increase											
2012	14	6	0	0	-8	5	1	1	6	5	30
2013	17	-2	4	7	19	-2	2	0	5	4	54
2014	22	5	6	6	10	7	4	0	-5	4	59
2015	6	2	0	-4	6	1	1	1	3	2	18
Total	59	11	10	9	27	11	8	2	9	15	161
Percentage Increase (Over 2011 Workforce)											
2012	9.9	21.4	0.0	0.0	-3.0	27.8	25.0	20.0	26.1	27.8	5.3
2013	12.0	-7.1	16.0	21.2	7.1	-11.1	50.0	0.0	21.7	22.2	9.6
2014	15.5	17.9	24.0	18.2	3.7	38.9	100.0	0.0	-21.7	22.2	10.4
2015	4.2	7.1	0.0	-12.1	2.2	5.6	25.0	20.0	13.0	11.1	3.2
Total	41.5	39.3	40.0	27.3	10.0	61.1	200.0	40.0	39.1	83.3	28.5

## Appendix 3 Professional Nurse Situation by region and year

Year	Ashanti	Brong Ahafo	Central	Eastern	Greater Accra	Northern	Upper East	Upper West	Volta	Western	Total
2011	1,789	674	717	921	2,928	789	424	259	659	617	9,777
2012	2,096	720	858	1,019	3,336	900	505	288	712	691	11,125
2013	2,286	815	960	1,117	3,530	1,067	604	311	785	770	12,245
2014	2,885	997	1,256	1,331	3,995	1,305	750	364	978	915	14,776
2015	3,219	1,228	1,454	1,466	4,279	1,597	1,059	435	1,147	978	16,862
Absolute Increase											
2012	307	46	141	98	408	111	81	29	53	74	1,348
2013	190	95	102	98	194	167	99	23	73	79	1,120
2014	599	182	296	214	465	238	146	53	193	145	2,531
2015	334	231	198	135	284	292	309	71	169	63	2,086
Total	1,430	554	737	545	1,351	808	635	176	488	361	7,085
Percentage Increase (Over 2011 Workforce)											
2012	17.2	6.8	19.7	10.6	13.9	14.1	19.1	11.2	8.0	12.0	13.8
2013	10.6	14.1	14.2	10.6	6.6	21.2	23.3	8.9	11.1	12.8	11.5
2014	33.5	27.0	41.3	23.2	15.9	30.2	34.4	20.5	29.3	23.5	25.9
2015	18.7	34.3	27.6	14.7	9.7	37.0	72.9	27.4	25.6	10.2	21.3
Total	79.9	82.2	102.8	59.2	46.1	102.4	149.8	68.0	74.1	58.5	72.5

## Appendix 4 Enrolled Nurse Situation by year and region

Year	Ashanti	Brong Ahafo	Central	Eastern	Greater Accra	Northern	Upper East	Upper West	Volta	Western	Total
2011	416	189	193	392	498	237	165	78	236	255	2,659
2012	928	305	469	584	910	705	314	226	374	535	5,350
2013	1,732	549	850	776	1,237	1,266	495	357	523	1,012	8,797
2014	2,281	757	1,236	961	1,796	2,223	612	466	707	1,385	12,424
2015	2,981	1,285	1,551	1,114	2,245	2,625	845	896	939	1,782	16,263
Absolute Increase											
2012	512	116	276	192	412	468	149	148	138	280	2,691
2013	804	244	381	192	327	561	181	131	149	477	3,447
2014	549	208	386	185	559	957	117	109	184	373	3,627
2015	700	528	315	153	449	402	233	430	232	397	3,839
Total	2,565	1,096	1,358	722	1,747	2,388	680	818	703	1,527	13,604
Percentage Increase (Over 2011 Workforce)											
2012	123.1	61.4	143.0	49.0	82.7	197.5	90.3	189.7	58.5	109.8	101.2
2013	193.3	129.1	197.4	49.0	65.7	236.7	109.7	167.9	63.1	187.1	129.6
2014	132.0	110.1	200.0	47.2	112.2	403.8	70.9	139.7	78.0	146.3	136.4
2015	168.3	279.4	163.2	39.0	90.2	169.6	141.2	551.3	98.3	155.7	144.4
Total	616.6	579.9	703.6	184.2	350.8	1,007.6	412.1	1,048.7	297.9	598.8	511.6

## Appendix 5 Community Health Nurse Situation by Region and year

Year	Ashanti	Brong Ahafo	Central	Eastern	Greater Accra	Northern	Upper East	Upper West	Volta	Western	Total
2011	891	699	745	946	1,077	619	553	388	838	840	7,596
2012	1,158	924	1,015	1,200	1,312	740	647	487	1,077	1,049	9,609
2013	1,710	1,172	1,076	1,576	1,787	832	911	558	1,225	1,438	12,285
2014	2,004	1,239	1,243	1,850	1,931	910	891	567	1,552	1,472	13,659
2015	2,372	1,493	1,565	2,038	2,016	992	1,113	772	1,783	1,670	15,814
Absolute Increase											
2012	267	225	270	254	235	121	94	99	239	209	2,013
2013	552	248	61	376	475	92	264	71	148	389	2,676
2014	294	67	167	274	144	78	-20	9	327	34	1,374
2015	368	254	322	188	85	82	222	205	231	198	2,155
Total	1,481	794	820	1,092	939	373	560	384	945	830	8,218
Percentage Increase (Over 2011 Workforce)											
2012	30.0	32.2	36.2	26.8	21.8	19.5	17.0	25.5	28.5	24.9	26.5
2013	62.0	35.5	8.2	39.7	44.1	14.9	47.7	18.3	17.7	46.3	35.2
2014	33.0	9.6	22.4	29.0	13.4	12.6	-3.6	2.3	39.0	4.0	18.1
2015	41.3	36.3	43.2	19.9	7.9	13.2	40.1	52.8	27.6	23.6	28.4
Total	166.2	113.6	110.1	115.4	87.2	60.3	101.3	99.0	112.8	98.8	108.2

## Appendix 6 Midwives Situation by region and year

Year	Ashanti	Brong Ahafo	Central	Eastern	Greater Accra	Northern	Upper East	Upper West	Volta	Western	Total
2011	754	370	308	489	833	298	198	147	358	279	4,034
2012	779	352	294	451	812	274	190	131	303	277	3,863
2013	855	382	298	479	880	273	232	120	342	324	4,185
2014	1,066	426	328	556	884	313	261	152	391	387	4,764
2015	1,281	483	383	600	973	408	311	219	465	459	5,582
Absolute Increase											
2012	25	-18	-14	-38	-21	-24	-8	-16	-55	-2	-171
2013	76	30	4	28	68	-1	42	-11	39	47	322
2014	211	44	30	77	4	40	29	32	49	63	579
2015	215	57	55	44	89	95	50	67	74	72	818
Total	527	113	75	111	140	110	113	72	107	180	1,548
Percentage Increase (Over 2011 Workforce)											
2012	3.3	-4.9	-4.5	-7.8	-2.5	-8.1	-4.0	-10.9	-15.4	-0.7	-4.2
2013	10.1	8.1	1.3	5.7	8.2	-0.3	21.2	-7.5	10.9	16.8	8.0
2014	28.0	11.9	9.7	15.7	0.5	13.4	14.6	21.8	13.7	22.6	14.4
2015	28.5	15.4	17.9	9.0	10.7	31.9	25.3	45.6	20.7	25.8	20.3
Total	69.9	30.5	24.4	22.7	16.8	36.9	57.1	49.0	29.9	64.5	38.4

## Appendix 7 Maternal Health services and outcomes

Region	2010				2011				2012				2013				2014			
	Expected pregnancies	ANC registrants	ANC Coverage	% making 4+ visits	Expected pregnancies	ANC registrants	ANC Coverage	% making 4+ visits	Expected pregnancies	ANC registrants	ANC Coverage	% making 4+ visits	Expected pregnancies	ANC registrants	ANC Coverage	% making 4+ visits	Expected pregnancies	ANC registrants	ANC Coverage	% making 4+ visits
Ashanti	191,215.2	161,257.0	84.33	97.31	204,678	167,937	82.00	84.80	202,330	165,593	81.60	85.30	205,334	169,099	82.40	93.50	211,681	162,127	76.60	90.60
Upper West	92,439.3	23,519.0	25.44	70.32	21,682	23,513	108.40	69.70	29,463	24,853	84.10	63.90	28,434	26,054	91.60	70.00	30,030	25,577	85.20	72.30
Western	88,074.5	92,254.0	104.75	65.28	110,850	104,931	94.70	62.50	105,632	106,792	100.80	66.30	101,018	104,833	103.80	63.90	108,593	101,843	93.80	74.70
Central	105,326.2	86,522.0	82.15	83.43	81,009	87,346	107.80	77.00	95,861	93,630	97.40	88.20	99,151	91,714	92.50	76.70	103,420	89,592	86.60	75.50
Northern	160,402.2	113,157.0	70.55	55.00	83,756	114,277	136.40	55.90	113,796	127,398	111.60	58.30	114,703	132,045	115.10	57.10	111,193	130,599	117.50	62.60
Upper East	99,178.4	34,755.0	35.04	78.61	40,549	38,329	94.50	92.20	42,990	37,863	87.80	94.50	43,387	36,155	83.30	87.50	43,908	36,715	83.60	95.20
Greater Accra	41,861.8	95,081.0	227.13	122.32	168,948	134,468	79.60	114.10	172,181	152,650	88.40	92.20	175,787	152,730	86.90	74.60	181,236	159,373	87.90	78.20
Eastern	28,084.4	65,560.0	233.44	65.10	104,908	78,833	75.10	66.70	107,545	93,442	86.60	74.00	112,102	92,058	82.10	67.10	118,335	91,093	77.00	66.40
Brong Ahafo	84,730.1	64,215.0	75.79	81.53	98,367	89,454	90.90	65.50	97,011	97,434	100.20	66.40	98,058	94,648	96.50	64.00	101,586	91,747	90.30	77.80
Volta	95,040.8	63,477.0	66.79	76.51	101,119	72,980	72.20	73.90	89,264	73,038	81.60	74.30	91,245	71,409	78.30	67.70	93,526	72,003	77.00	66.70
National	986,352.9	799,797.0	81.09	81.94	1,015,866	912,068	89.80	77.80	1,056,071	972,693	91.90	77.10	1,069,219	970,745	90.80	72.70	1,103,509	960,669	87.10	76.00

## Appendix 8 Non-Communicable Disease Trends : 2010-2014

Disease/condition	Proportion of OPD Morbidity Case - Non-Communicable Diseases/Conditions										
	Above Five years					Under Five Years					
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014	
Rheumatism & Other Joint Pains	15,45%	16,93%	17,79%	19,87%	25,99%	1,61%	1,67%	2,04%	1,64%	2,02%	
Skin Diseases	15,46%	15,48%	15,27%	15,39%	15,79%	43,61%	42,53%	42,86%	42,27%	54,52%	
Hypertension	16,87%	15,43%	15,30%	13,77%	14,77%	0,00%	0,00%	0,00%	0,00%	0,00%	
Acute Eye Infection	7,23%	8,23%	7,37%	6,98%	0,00%	9,17%	10,17%	9,47%	8,42%	0,00%	
Anaemia	5,76%	7,10%	8,75%	10,10%	0,00%	20,94%	21,43%	22,33%	24,46%	0,00%	
Acute Urinary Tract Infection	4,86%	5,84%	6,09%	6,73%	9,68%	3,85%	4,79%	4,52%	4,41%	7,36%	
Pregnancy Related Complications	6,06%	4,54%	4,22%	3,81%	4,32%	0,00%	0,00%	0,00%	0,00%	0,00%	
Diabetes Mellitus	3,89%	3,64%	3,68%	3,23%	3,80%	0,00%	0,00%	0,00%	0,00%	0,00%	
Other Acute Ear infection	3,80%	3,58%	3,57%	3,37%	2,95%	5,96%	5,90%	5,65%	5,03%	4,79%	
Home Injuries (Home Accidents and Injuries)	4,08%	3,47%	2,93%	2,61%	2,83%	4,11%	3,51%	3,16%	2,80%	3,41%	
Gynaecological conditions	3,66%	3,44%	3,55%	2,97%	3,25%	0,00%	0,00%	0,00%	0,00%	0,00%	
Vaginal Discharge	3,28%	3,26%	2,98%	3,04%	3,41%	0,23%	0,20%	0,18%	0,20%	0,00%	
Transport injuries (Road Traffic Accidents)	2,12%	1,92%	1,82%	1,72%	1,75%	1,13%	0,90%	0,86%	0,84%	0,96%	
Dental Caries	1,82%	1,75%	1,69%	1,46%	1,50%	0,51%	0,51%	0,37%	0,37%	0,47%	
Asthma	1,56%	1,53%	1,53%	1,57%	1,62%	1,04%	1,13%	0,99%	0,96%	1,34%	
Other Oral Conditions	1,37%	1,46%	1,19%	1,16%	0,97%	1,59%	1,78%	1,52%	1,59%	1,64%	
Pyrexia of unknown origin PUO (not Malaria)	1,44%	0,98%	0,85%	0,00%	0,00%	2,41%	1,55%	1,38%	1,45%	1,28%	
Other diseases of the Female reproductive system	0,66%	0,71%	0,75%	0,86%	1,08%	0,00%	0,00%	0,00%	0,00%	0,00%	
Cataract	0,00%	0,71%	0,00%	0,64%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	
Burns	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,37%	
Cardiac Diseases	0,00%	0,00%	0,66%	0,72%	0,00%	0,00%	0,00%	0,00%	0,21%	0,00%	
Malnutrition	0,00%	0,00%	0,00%	0,00%	0,00%	1,54%	1,05%	0,94%	1,11%	1,34%	
Occupational Injuries	0,00%	0,00%	0,00%	0,00%	0,00%	0,24%	0,00%	0,00%	0,00%	0,00%	
Other Animal Bites	0,61%	0,00%	0,00%	0,00%	0,00%	0,54%	0,55%	0,42%	0,39%	0,00%	
Other diseases of the Male reproductive system	0,00%	0,00%	0,00%	0,00%	0,00%	0,20%	0,19%	0,24%	0,00%	0,37%	
Other Diseases	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,25%	0,21%	0,39%	0,68%	
Otitis Media	0,00%	0,00%	0,00%	0,00%	1,26%	0,00%	0,00%	0,00%	0,00%	2,27%	
Pneumonia	0,00%	0,00%	0,00%	0,00%	2,39%	0,00%	0,00%	0,00%	0,00%	8,60%	

Disease/condition	Proportion of OPD Morbidity Case - Non-Communicable Diseases/Conditions									
	Above Five years					Under Five Years				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Septiceamia	0,00%	0,00%	0,00%	0,00%	1,06%	0,73%	1,31%	2,38%	2,93%	6,31%
Sickle Cell Disease	0,00%	0,00%	0,00%	0,00%	0,00%	0,60%	0,57%	0,49%	0,52%	0,87%
Ulcer	0,00%	0,00%	0,00%	0,00%	1,58%	0,00%	0,00%	0,00%	0,00%	1,43%
Grand Total	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%

## Appendix 9 Infant and Maternal Mortality Trends

Year	Region	Live births	% Skilled delivery	% Caesarean section deliveries	Total maternal deaths	Maternal mortality ratio	Number of PNC registrants	*PNC Coverage	Total infant deaths
2011	Ashanti	93,292	45.46	9.52	109	116.80	86,081	42.06	323
	Brong Ahafo	54,569	55.58	10.65	159	291.40	52,443	53.31	632
	Central	49,985	61.59	10.40	125	250.10	53,792	66.40	364
	Eastern	48,163	45.77	12.83	170	353.00	51,902	49.47	398
	Greater Accra	81,935	48.51	17.16	231	281.90	92,980	55.03	791
	Northern	40,233	47.91	6.51	97	241.10	83,166	99.30	612
	Upper East	27,572	67.50	5.01	40	145.10	33,332	82.20	176
	Upper West	14,085	65.17	6.11	47	333.70	18,976	87.52	112
	Volta	35,378	35.05	13.12	82	231.80	44,065	43.58	260
	Western	51,512	46.45	10.83	62	120.40	58,319	52.61	538
	Ashanti	102,017	49.86	10.62	78	76.50	96,839	47.86	424
	Brong Ahafo	67,198	65.68	11.77	112	166.70	63,836	65.80	646
	Central	56,479	58.73	10.54	64	113.30	60,157	62.75	396
	Eastern	64,701	56.50	13.43	116	179.30	73,690	68.52	471
2012	Greater Accra	97,577	56.65	19.16	196	200.90	107,783	62.60	789
	Northern	52,350	43.40	6.95	111	212.00	95,138	83.60	764
	Upper East	29,456	68.39	4.69	41	139.20	33,020	76.81	187
	Upper West	16,445	52.46	6.10	24	145.90	19,042	64.63	83
	Volta	41,271	44.81	12.76	72	174.50	47,574	53.30	367
	Western	56,996	53.47	11.23	75	131.60	62,799	59.45	627

Year	Region	Live births	% Skilled delivery	% Caesarean section deliveries	Total maternal deaths	Maternal mortality ratio	Number of PNC registrants	*PNC Coverage	Total infant deaths
2013	Ashanti	162,984	55.68	14.08	198	121.50	101,864	49.61	395
	Brong Ahafo	68,646	65.63	12.79	95	138.40	69,233	70.60	627
	Central	55,640	55.70	12.33	61	109.60	58,563	59.06	509
	Eastern	62,082	52.80	14.66	124	199.70	76,797	68.51	575
	Greater Accra	101,304	56.36	20.11	201	198.40	110,704	62.98	647
	Northern	57,028	47.42	6.94	99	173.60	104,265	90.90	789
	Upper East	29,549	67.54	6.73	34	115.10	33,242	76.62	135
	Upper West	17,624	60.79	6.61	34	192.90	20,607	72.47	94
	Volta	44,727	43.40	13.23	72	161.00	50,239	55.06	276
	Western	55,738	55.39	12.72	85	152.50	64,036	63.39	699
2014	Ashanti	120,977	54.40	13.92	139	114.90	113,738	53.73	347
	Brong Ahafo	71,128	65.37	14.13	95	133.60	72,367	71.24	769
	Central	61,809	57.71	12.63	65	105.20	63,748	61.64	382
	Eastern	66,669	52.47	15.74	117	175.50	80,287	67.85	539
	Greater Accra	110,477	59.69	21.85	204	184.70	127,550	70.38	850
	Northern	61,392	53.42	7.72	66	107.50	106,664	95.93	703
	Upper East	32,451	73.54	7.01	45	138.70	34,731	79.10	277
	Upper West	19,243	63.95	7.41	31	161.10	22,015	73.31	85
	Volta	48,096	45.27	14.08	86	178.80	58,892	62.97	393
	Western	62,223	56.88	12.75	93	149.50	66,717	61.44	581

\* Denominator is based on the expected pregnancies



# Glossary

**Adherence:** the extent to which a person's behaviour – taking medication, following a diet and/or changing lifestyle – corresponds with agreed recommendations from a health worker.

**Age-specific fertility rate:** the number of live births per 1000 women in a specific age group for a specified geographic area and for a specific point in time.

**Antiretroviral drugs:** Medicines used to manage HIV.

**Antiretroviral therapy:** The use of a combination of three or more ARV drugs for treating HIV infection.

**Blood Collection Index:** Blood collection ratio per 1000 population in a year.

**Case fatality rate:** The proportion of people who die from a specified disease among all individuals diagnosed with the disease over a certain period of time.

**Consumer price ratio:** ratio between median unit prices and the median international reference prices for that same product for the year preceding the survey.

**Crude birth rate:** number of live births per 1000 of population.

**Early infant diagnosis:** Testing of infants to determine their HIV status following possible exposure to HIV during pregnancy, delivery and postpartum through breastfeeding.

**General fertility rate:** the total number of live births per 1,000 women of reproductive age (ages 15 to 49 years) in a population per year.

**Gross Domestic Product:** The monetary value of all the finished goods and services produced within a country's borders in a specific time period.

**Human Development Index:** A composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living.

**Infant Mortality Rate (IMR):** Number of infants dying between birth and exactly age 1, expressed per 1,000 live births in a given period.

**Institutional Maternal Mortality Rate:** is the annual number of female deaths that occur in health facilities in Ghana per 100,000 live births from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes).

**Live birth:** refers to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life - e.g. beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles - whether or not the umbilical cord has been cut or the placenta is attached.

**Life expectancy at birth:** Average number of years that a newborn is expected to live if current mortality rates continue to apply.

**Loss to Follow Up rate:** A proportion of patients whose treatment is interrupted for 2 consecutive months or more after initiation of treatment to the number of patients who were initiated treatment within the same period.

**Maternal Mortality:** is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

**Maternal Mortality Rate:** is the annual number of female deaths per 100,000 live births from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes).

**Medium-Term Expenditure Framework (MTEF):** is annual, rolling three year-expenditure planning. It sets out the medium-term expenditure priorities and hard budget constraints against which sector plans can be developed and refined.

**Modern family planning acceptor rate:** The number of persons who accept any modern contraceptive for the first time in their lives.

**Neonatal Mortality Rate:** Number of deaths during the first 28 completed days of life per 1 000 live births in a given year or period.

**Point-of-care testing:** are tests conducted at or near the site at which care is being provided. **Outpatients per capita:** The number of outpatient visits to health facilities during one year relative to the total population of the same geographical area

**Shirking:** refers to a situation where a worker avoids working hard while at work.

**Stillbirth:** Baby born with no signs of life at or after 28 weeks' gestation.

**Total Fertility Rate (TFR):** The number of children who would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates.

**Under five mortality rate:** is the probability (expressed as a rate per 1,000 live births) of a child born in a specified year dying before reaching the age of five if subject to current age-specific mortality rates.

**Under-five overweight:** the percentage of children under age 5 whose weight for height is more than two standard deviations above the median for the international reference population of the corresponding age.

**Under-five stunting:** Percentage of children under age 5 whose height is two standard deviations or more below the median height-for-age of the reference population.

**Under-five underweight:** Percentage of children under age 5 whose weight is less than two standard deviations below the median weight-for-age of the reference population.

**Under-five wasting:** Percentage of children under age 5 whose weight is two standard deviations or more below the median weight-for-height of the reference population.

**Voluntary Non-Remunerated Blood Donations:** Donating blood to health facility without expecting any form of reward or remuneration.

