HRDC

HUMAN RESOURCE DEVELOPMENT COUNCIL

# HEALTH SECTOR HUMAN RESOURCE DEVELOPMENT PLAN

**NOVEMBER 2016**

TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| **HRDP** | Human Resource Development Plan |
| **MoESD** | Ministry of Education and Skills Development's |
| **NHRDS** | National Human Resource Development Strategy |
| **PESTEL** | Political, Economic, Social, Technological, Environmental and Legal |
| **BPOMAS** | Botswana Public Officers' Medical Aid Scheme |
| **NBFIRA** | Non-Bank Financial Institution Regulatory Authority |
| **MAFs** | Medical Aid/Fund Schemes |
| **BOMAID** | Botswana Medical Aid |
| **BISIC** | Botswana Health Sector International Standard Industrial Classification |
| **MRI** | Magnetic Resonance Imaging |
| **BHPC** | Botswana Health Professions Council |
| **NMCB** | The Nursing and Midwifery Council of Botswana |
| **NGOs** | Non-Governmental Organisations |
| **BONASO** | Botswana Network of AIDS Service Organizations |
| **BONEPWA** | Botswana Network on Ethics, Law and HIV/AIDS; and Botswana Network of People Living with HIV/AIDS |
| **BBCA** | Botswana Business Coalition on AIDS |
| **BORNUS** | Botswana Retired Nurses Association |
| **ACHAP** | African Comprehensive HIV/AIDS Partnerships |
| **BONU** | Botswana Nurses Union |
| **BPM** | Botswana Private Medical |
| **HSWU** | Health Services Workers Union |
| **BFTU** | The Botswana Federation of Trade Unions |
| **NDP** | National Development Plan 11 |
| **MoH** | Ministry of Health |
| **IPMS** | Integrated Patient Management System |
| **ARV** | Antiretroviral |
| **PPP** | Public Private Partnership |
| **MFDP** | Ministry of Finance and Development Planning |
| **HRD** | Human Resource Development |
| **HPC** | Health Professionals Council |
| **NMCB** | Nursing and Midwifery Council of Botswana |
| **DPSM** | Department of Public Service Management |
| **RASA** | Remote Area Service Allowance |
| **BOCODOL** | Botswana College of Distance and Open Learning |
| **BQA** | Botswana Qualifications Authority |
| **HRDC** | Human Resource Development Council |
| **PMS** | Performance management system |
| **WISN** | Workload Indicator of Staffing Needs |
| **DHMTs** | District Health Management Teams |
| **DTEF** | Department of Tertiary Education Fund |
| **WHO** | World Health Organization |

## EXECUTIVE SUMMARY

The overall goal of the Health Sector HRD Plan is to ensure that Government's national priority on "Human Capital Development" is archived during the National Development Plan (NDP) 11. The Plan is therefore, expected to facilitate the Government's strategies of matching the supply and demand of human resources, improving employment prospects, supporting economic diversification as well as facilitating the country's transition to a knowledge economy. In the overall, the country is expected to have a globally competitive human resource.

The development of this plan involved profiling of the sector, identifying strategic direction of the sector through the use of the PESTEL analysis, determining the current skills in demand and analysing what impact future changes will have on the demand for skills, analysing the factors influencing the supply of human resources coming into the sector, analysing the main priority areas for human resource development and at the end, developing a response strategy for skills development.

The analysis, therefore, indicated that there is a serious shortage of health professionals in the health sector and as such, there is a need for training. Furthermore, there is a need for specialisation in different health disciplines.

The Health HRD Plan has therefore identified five broad objectives that are required to be implemented in order to realise the above-mentioned goal. The broad objectives are as follows:

1. Improve Human Resource Management Planning
2. Improve curriculum relevance to the needs of the health labour market
3. Develop Work Plan for Health Professionals (Work – Place Learning)
4. Develop career guidance
5. Create partnership of Tertiary Institutions and Employers in the Health Sector

# CHAPTER 1: INTRODUCTION

## 1.1 Introduction

The purpose of this Health Sector Human Resource Development (HRD) Plan is to map out a strategy for the development of a skilled workforce in the sector. The Plan is aligned to the Government's policies and strategies in the Health sector as well as the Ministry of Education and Skills Development's (MoESD) Strategic Plan, Education and Training Sector Strategic Plan (ETSSP).

The development of the Health Sector HRD Plan is a response to the National Human Resource Development Strategy (NHRDS, 2009 – 2022), which calls for a shift from the Country's industrialized state to a knowledge-based economy. The Strategy guides on the direction Botswana should take in order to develop individual capacities and archive potentials.

## 1.2 Aims

The aims of the Health Sector HRD Plan are as follows;

- Profile the sector
- Indicate the strategic direction of the sector
- Identify key skills issues
- Determine the skills shortages
- Develop an action plan

The Human Resource Development planning has recently been introduced in the country following the realization that the manpower planning approach that was in existence for a period of over 20 years did not take into account the rapid changes in the economy. This approach is more comprehensive, inclusive and strategic as it is driven by industry.

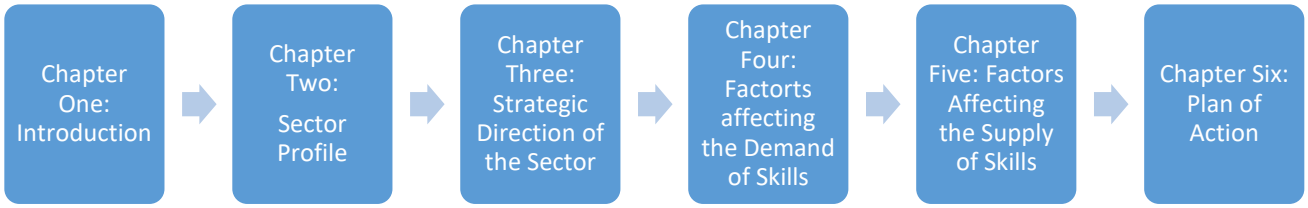
## 1.3 Human Resource Development Approach

The approach used draws from lessons from the past, on the limitations of manpower planning and relying wholly on a supply-led approach. Botswana has taken a deliberate decision to move to the Human Resource Development Approach which considers the employer perspective on skills needs and focuses on planning per strategic sector of the economy, in alignment with Government policies.

The Health Sector HRD Plan will assist in the planning of the Sector HRD needs to ensure efficient and optimal attainment of the right caliber of people in the sector who are also globally competitive.

## 1.4 Structure

The Health Sector HRD Plan is structured as follows:




**Chapter One:** The first chapter sets the foundation and the objectives of the Health Sector Human Resource Development Plan. The chapter explains the approach to human resource development in Botswana and its limitations.

**Chapter Two:** The chapter focuses on the profile of the Health Sector. It demarcates the industry, describes the macro-economic context, establishes a legal and policy context, identifies key role players, outlines economic performance and provides a labour market profile of the sector.

**Chapter Three:** This chapter identifies the factors that influence the strategic direction of the sector. The aim of the chapter is to identify the key Political, Economic, Social, Technological, Environmental and Legal (PESTEL) factors that have an impact on the supply and demand for skills.

**Chapter Four:** The focus of this chapter is on the factors that affect the demand for skills in the Health Sector.

**Chapter Five:** This chapter focuses on the factors that affect the supply of skills, and profiles the education institutions and their ability to respond to the employer needs.

**Chapter Six:** Identifies the recommended strategies and outlines the interventions going forward.

## 1.5 Limitations

The following limitations were noted in this Health Sector HRD Plan:

- Unavailability of up-to-date data
- Different reporting styles used in the Ministry of Health Data

# CHAPTER TWO: SECTOR PROFILE

## 2.1 DEFINITION OF HEALTH SECTOR

Broadly, the health sector comprises people, institutions and resources, arranged together in accordance with established policies, whose primary purpose is to promote, restore and maintain health.[1] Through the provision of quality health services, Botswana strives to address a number of health challenges that threaten the country (both communicable and non-communicable) such as high infant and child mortality and high mortality and morbidity, trauma and chronic diseases that act in concert to undermine life expectancy in the general population.[2] In so doing the health sector is critical in ensuring a productive population contributes to economic prosperity and social wellbeing.

Health Sector in the Botswana context comprises a combination of Public, Private and Civil Societies health service providers. The sector can be segmented into six sub-sectors which include the following (BHRSP, 2008-2016):-

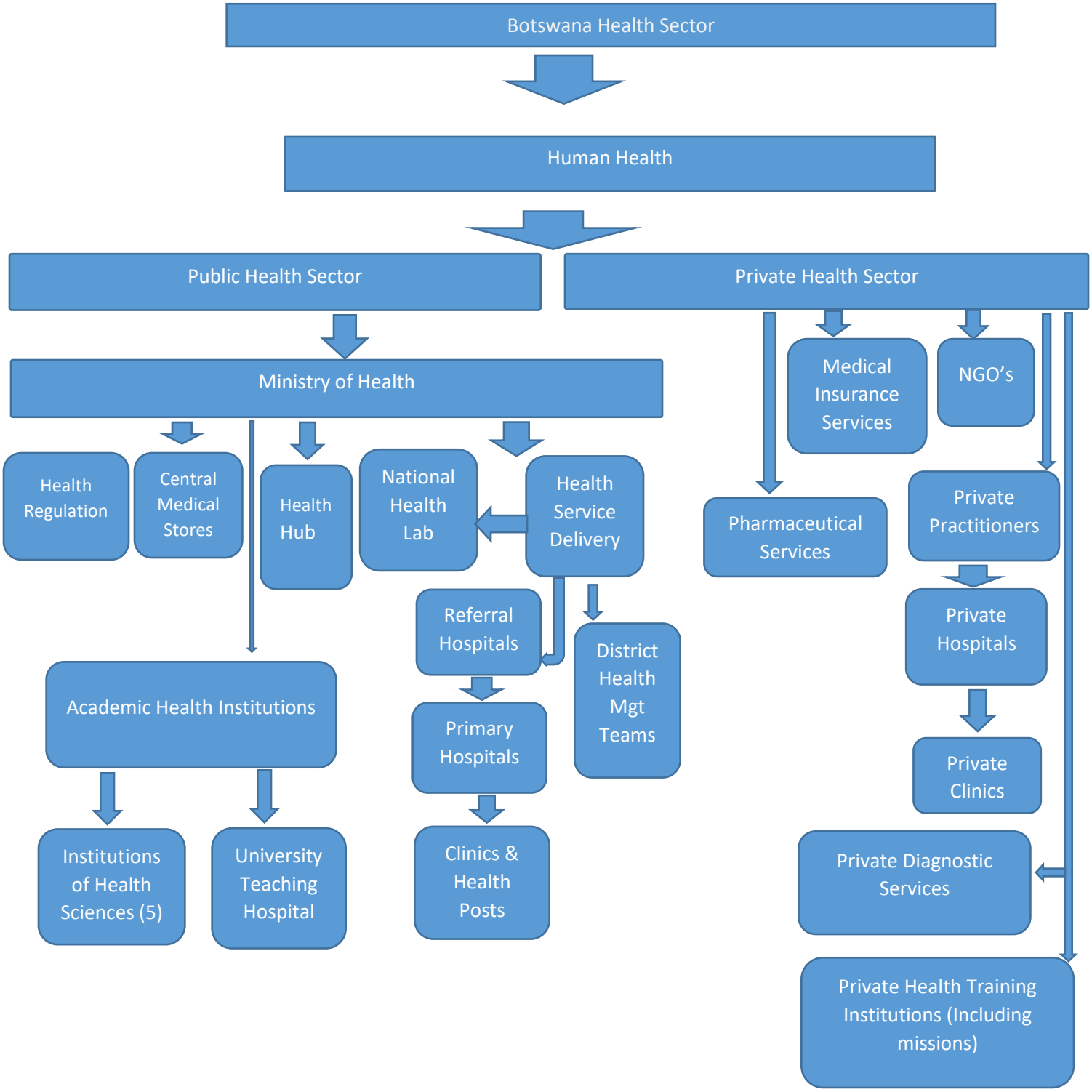
i. health service delivery;
ii. pharmaceutical services;
iii. diagnostic services (imaging services and laboratories);
iv. biomedical engineering services (medical equipment and maintenance);
v. health training institutions; and
vi. health insurance services.

1 www.who.int/glossary

2 (Ministry of Health , Integrated Health Plan: A Strategy for Changing the Health Sector for Healthy Botswana 2010-2012, 2010)

Figure 1 provides a graphical representation of the Botswana Health Sector with all the six sub-sectors and key entities in the sector clearly indicated. Below the graph follows the description of the sub sectors.

***Figure 1 Botswana Health Sector***



## 2.2 HEALTH SUB-SECTORS

### 2.2.1 Health Service Delivery

The public health system is based on a primary health care model. Health services are provided at primary, district and tertiary levels. Primary level facilities include clinics, health posts and mobile stops. Hospital services are provided at district and national level by primary hospitals, district hospitals and referral hospitals. These public health facilities are clustered into 27 health districts.[3] Table 1 presents Botswana's public health facilities.

*Table 1: Botswana's Public Health Facilities, 2015*

| HEALTH FACILITIES | NO. OF FACILITIES |
|---|---|
| 1. Referral hospitals | 3 |
| 2. District hospitals | 15 |
| 3. Primary hospitals | 17 |
| 4. Primary care clinics | 318 |
| 5. Health posts | 347 |
| **TOTAL HEALTH FACILITIES** | **700** |
| 6. Mobile stops | 973 |

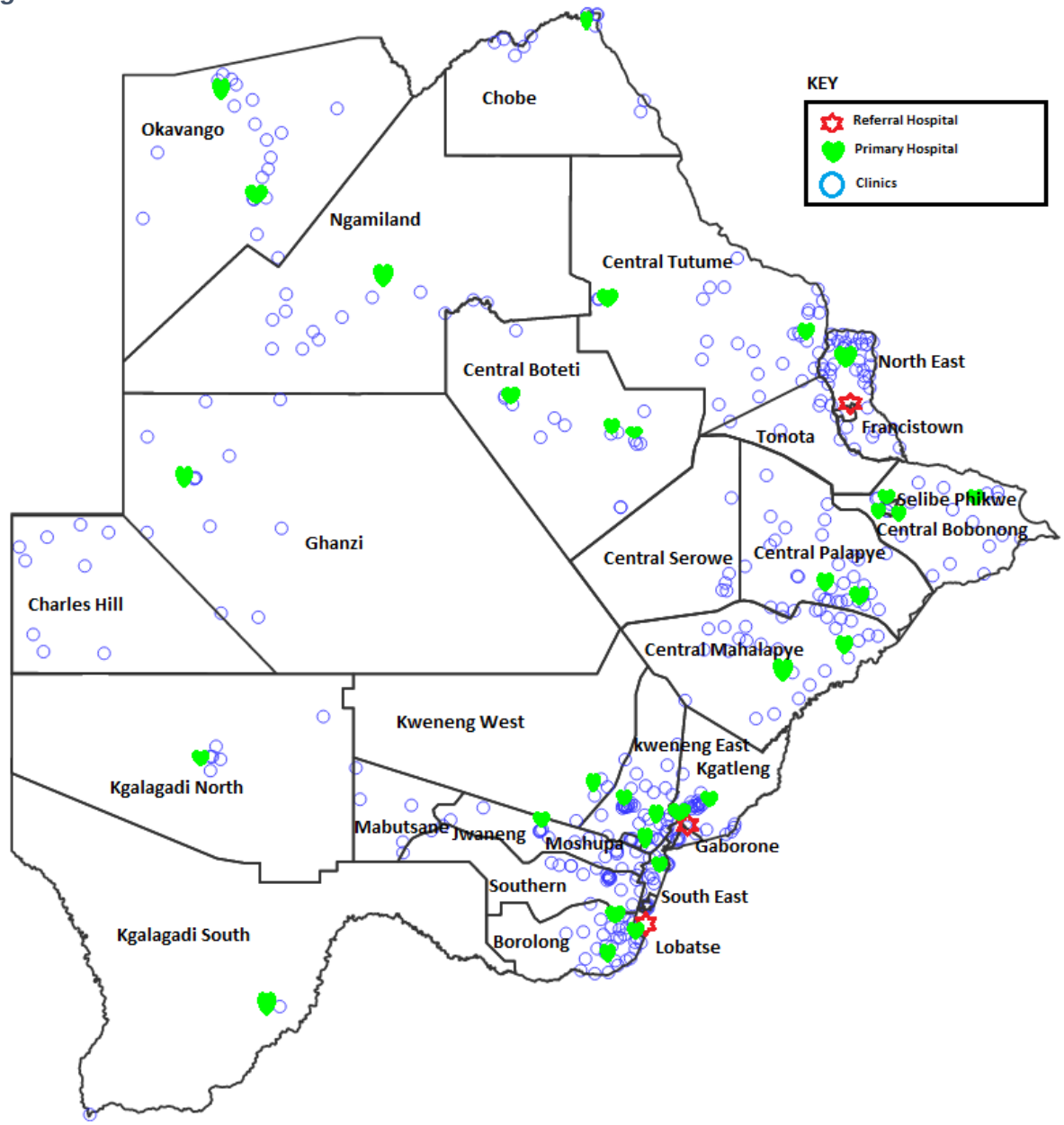
(Source: Ministry of Health , Master Health Facility List, 2015)

Broadly, access to public health facilities is notable. Despite Botswana's sparse population distribution, at a national level, 84% of the population lives within 5 km radius of the nearest health facility and 95% live within an 8 km radius. For urban residents, there is a health facility at least within 8 km distance from where they live. In rural areas, 72% of the people live within 5km and 89% live within 8 km of a health care facility.[4]

(Statistics Botswana , 2012)
(Health Statistics Report , 2009)

Figure 2 presents the distribution of health facilities in the country.

***Figure 2 Distribution of Health facilities in Botswana***




**Source: Ministry of Health DHIS System**

Private health facilities serve as an important source for general and specialized health service delivery accounting for 41% of total health facilities in the country (excluding mobile clinic sites). While there are only eight hospitals (3 private hospitals, 3 mine

hospitals and two mission hospitals), there are 354 private clinics[5] and 106 independent pharmacies.[6]

*Table 2: Distribution of Private Health Facilities by District*

| DISTRICTS | FACILITIES | | |
|---|---|---|---|
| | HOSPITALS | PRIVATE CLINICS | PHARMACY |
| North West District | 1 | 19 | 8 |
| Gantsi District | 0 | 5 | 1 |
| Central District | 2 | 35 | 11 |
| **Francistown** | **1** | **30** | **8** |
| North East District | 0 | 2 | 0 |
| Kgalagadi District | 0 | 1 | 1 |
| Kweneng District | 0 | 13 | 2 |
| Southern District | 2 | 17 | 6 |
| South East District | 0 | 14 | 7 |
| **Gaborone** | **2** | **213** | **58** |
| Kgatleng District | 0 | 5 | 4 |
| **TOTAL 468** | **8** | **354** | **106** |

**Source: SHOPS Project (2014)**

[5] Private clinics are commonly referred to as Surgery Centres
(SHOPS Project, 2014)

## Private Sector Health Specialities in Botswana

*Table 3: Medical Practitioners in the Private Sector*

| Location | Total | Location | Total |
|---|---|---|---|
| Bobonong | 5 | Nata | 1 |
| Francistown | 66 | Orapa | 3 |
| Gabane | 1 | Otse | 1 |
| Gaborone | 449 | Palapye | 23 |
| Ghanzi | 8 | Pitshane | 2 |
| Gumare | 1 | Ramotswa | 8 |
| Jwaneng | 12 | Sebele | 1 |
| Kanye | 16 | Sehitwa | 1 |
| Kasane | 5 | Serowe | 10 |
| Letlhakane | 5 | Shakawe | 1 |
| Letlhakeng | 1 | Shoshong | 1 |
| Lobatse | 18 | Sowa | 4 |
| Mahalapye | 11 | Tati Siding | 1 |
| Masunga | 2 | Thamaga | 1 |
| Maun | 26 | Tonota | 1 |
| Metsimotlhabe | 1 | Toteng | 1 |
| Mmadinare | 2 | Tsabong | 3 |
| Mmopane | 3 | Tutume | 5 |
| Mochudi | 13 | Selibe – Phikwe | 18 |
| Mogoditshane | 6 | Moshupa | 2 |
| Molepolole | 13 | | |
| **Total** | **664** | | **88** |
| **Grand Total** | **752** | | |

**(AFA, Medical Practitioners in the Private Sector, May, 2016)**

Table 3 shows that there are 752 private medical practitioners in Botswana covering among others, six broad areas in the medical field. The practitioners cover forty-one (41) cities, towns and villages across the country. The table shows that Gaborone covers the highest number of private practitioners with 449 (60%), followed by Francistown with 66 (9%). The following locations; Toteng, Tonota, Tati-Siding, Thamaga, Shakawe, Shoshon, Sihitwa, Nata, Metsimotlhabe, Letlhakeng, Gumare, Sebele and Gabane have the lowest number of private practitioners. Each with one private practitioner.

Table 4 below shows 2013 data from the Health Professionals Council that reveals that expatriates continue to constitute a significant portion of the health workforce especially for medical doctors. Reassuringly there are several occupational groups where the number of trained citizens is now well in excess of registered expatriates. With the advent of the opening of the medical school at the University of Botswana as well as the registration of a new private university to train medical doctors, this should help redress the existing imbalance for medical doctors in the next decade.

*Table 4: Active Registered Professionals as at May 2013*

| **Occupational Group** | Nationality | |
|---|---|---|
| | Botswana | **Other** |
| Medicine | 487 | 1257 |
| Dentistry | 128 | 58 |
| Pharmacy | 300 | 450 |
| Psychology | 34 | 12 |
| Optometry | 30 | 19 |
| Laboratory Science | 145 | 116 |
| Physiotherapy | 69 | 82 |
| Speech Therapy and Audiology | 19 | 3 |
| Nutrition and Dietetics | 46 | 5 |
| Social Workers and Paramedics | 189 | 23 |
| Biomedical Engineering | 17 | 3 |
| Alternative Medicine | 6 | 19 |
| Medical/Dental Technologists | 802 | 410 |
| TOTAL | 2272 | 2457 |

*Source: Botswana Health Professionals Council – Annual Report 2012/2013*

### 2.2.2 Pharmaceutical Services

The pharmaceutical industry develops, produces, and markets drugs or pharmaceuticals. Botswana has a growing wholesale and retail pharmaceutical industry. However, the local pharmaceutical manufacturing capacity is limited. The Ministry of Health is responsible for the regulation, standardization, management, and ensuring the adequate supply and quality of medicines and medical supplies, as well as providing support to hospital pharmacies through the: Drug Regulatory Unit; Botswana Essential Drugs Action Programme; Drug Management Coordinating Unit; Central Medical Stores; National Drug Quality Control Laboratory and Hospital Pharmacies.

### 2.2.3 Diagnostic Services

Diagnostic services include imaging services and laboratories. The National Health Laboratory is responsible for about 30 public health laboratories. There are also several private diagnostic service providers. However, due to limited availability of local facilities and expertise Botswana currently sends some samples for diagnostic and laboratory analysis to South Africa and other countries.

### 2.2.4 Biomedical Engineering Services

Most medical equipment and maintenance service providers are sales representatives for imported products. However, there is a growing number of companies involved in the maintenance of medical equipment with even fewer in the manufacturing of medical equipment products.

### 2.2.5 Academic Health Institutions

Botswana's health training institutions consist of both public and private providers. There are five institutes of health sciences with campuses in Gaborone, Francistown, Molepolole, Serowe and Lobatse, and there are three mission led institutions (Mochudi, Kanye and Ramotswa). The University of Botswana offers medical and nursing programmes and is also in the process of establishing a 450-bed teaching hospital. Furthermore, there are two private health training institutions namely Boitekanelo Training Institute and Derick Dikgato Tlhoiwe (DDT) College of Medicine.

### 2.2.6 Health Insurance Services

About 18% of Botswana's population are covered by health insurance.[7] The main participants in health insurance are households (65%) while private companies and parastatals contribute about 35%. The Botswana Public Officers' Medical Aid Scheme (BPOMAS) serves about 55% of total public sector employees. Private medical aid schemes serve about 35% of the private sector workforce. The Non-Bank Financial Institution Regulatory Authority (NBFIRA) is responsible for the regulation and supervision of all medical aid/fund schemes (MAFs) in the country. The MAFs that are currently registered with NBFIRA are the following; Pula Medical Aid Fund, Botswana Medical Aid (BOMAID), Botswana Public Officers Medical Aid Scheme (BPOMAS), Symphony Health, Itekanele Health Scheme, Botsogo Health Plan, Botlhe Medical Aid, Etudiant Medical Aid, and Doctors Aid Medical Aid Scheme. As at December 2014, the MAFs covered 385, 470 lives. This was 149 295 principal members and 236 175 dependents. The Botswana Health Sector International Standard Industrial Classification (BISIC) is presented in Table 5. The classification covers all the sub-sectors that had been discussed.

[7] www.nbfira.org.bw

*Table 5: Industrial Classification of the Health Sector (BISIC Codes)*

| | | |
|---|---|---|
| **DIVISION 86: HUMAN HEALTH ACTIVITIES** | | |
| 861 Hospital activities | 8610 | Activities of general hospitals and specialized hospitals; laboratory and technical facilities, including anaesthesiologist and emergency room services, operating room services, pharmacy services, food and other hospital services and family planning centres. |
| 862 Medical and dental practice activities | 8620 | Medical consultation and treatment in the field of general and specialized medicine by general practitioners and medical specialists and surgeons; dental practice activities of a general or specialized nature. |
| 869 Human health activities | 8690 | Activities for human health not performed by hospitals or by medical doctors or dentists including activities of dental paramedical personnel; medical laboratories; blood banks, transplant organ banks; ambulance transport of patients by any mode of transport including airplanes. |
| **DIVISION 21: MANUFACTURE OF PHARMACEUTICAL, MEDICAL AND BOTANICAL PRODUCTS** | | |
| 210 Manufacture of pharmaceutical, medical and botanical products | 2100 | Manufacture of medicinal active substances; medicaments; chemical contraceptive products; radioactive in-vivo diagnostic substances; biotech pharmaceuticals; preparation of botanical products (grinding, grading, milling) for pharmaceutical use. |
| **DIVISION 26: MANUFACTURE OF COMPUTER, ELECTRONIC AND OPTICAL PRODUCTS** | | |
| 266 Manufacture of irradiation, electro-medical and electro-therapeutic equipment | 2660 | Manufacture of irradiation apparatus and tubes; CT scanners; PET scanners; magnetic resonance imaging (MRI) equipment; medical ultrasound equipment; electrocardiographs; electro medical endoscopic equipment; medical laser equipment; and pacemakers and hearing aids. |
| **DIVISION 32: OTHER MANUFACTURING** | | |
| 325 Manufacture of medical and dental instruments and supplies | 3250 | Manufacture of surgical drapes and sterile string and tissue; dental fillings and cement, dental plaster preparations; bone reconstruction cement; laboratory ultrasonic cleaning machinery; laboratory sterilizers; medical, surgical, dental furniture; and manufacture of bone plates and screws, syringes, and needles. |
| **DIVISION 85: EDUCATION** | | |
| 853 Higher education | 8530 | Higher education in human health related courses |
| **DIVISION 65: INSURANCE AND OTHER FINANCIAL ACTIVITIES** | | |
| 651 Non-life insurance | 6512 | Provision of health insurance |

**(Statistics Botswana, 2008 BISIC Revision 4, 2015)**

## 2.3 MAJOR PLAYERS IN THE SECTOR

### 2.3.1 Ministry Of Heath

The Ministry of Health has oversight responsibility for health services and handles the formulation of policies, regulation and norms, standards and guidelines for the health services.[8] Amongst other responsibilities, the Ministry of Health is responsible for the registration of private facilities through recognized standards; licencing of private practitioners; registration and approval of drugs and medicines used in Botswana. The ministry is also responsible for monitoring compliance of food processing and manufacturing against set standards.

[8] Prior to 2010, primary health care was managed by the Ministry of Local Government while the Ministry of Health managed curative care (all hospitals). However from April 2010, all health care was transferred to the Ministry of Health.

### 2.3.2 Professional Bodies

The Botswana Health Professions Council (BHPC) is a parastatal of the Ministry of Health and is the regulator for all doctors and allied health professionals. There are about 23 different professions registered with the BHPC. The Nursing and Midwifery Council of Botswana (NMCB) also a Ministry of Health parastatal is responsible for the registration and regulation of the practice of nurses and midwives. Both public and private sector professionals are accredited by BHPC and NMCB in accordance with the *Botswana Health Professions Act* of 2001 (Cap. 61:02) and the Nurses and Midwives Act, 1995 respectively.

Baitseanape Basetso mo Botswana organisation serves as an overseer of all the traditional practitioners in Botswana. It is made up of eight associations of traditional practitioners namely: Botswana Medical Dingaka tsa setso, Diepamere, Herbalists, Legwame, African Dingaka Association, Bamalete and Botswana Dingaka Association. However the practice of traditional medicine is yet to be formally regulated by an act of parliament.

### 2.3.3 Botswana Health Hub

The Health Hub facilitates opportunities for partnerships and collaboration between public and private sector, the community and individuals to stimulate growth and improvements in the health sector. The hub also facilitates the improvement of service delivery and access to specialist health services, as well as promote 'medical tourism', in partnership with technical partners the Hub is establishing centers of excellence that offer a high standard of health care to the public. These include specialised centres located at Princess Marina Hospital, Sekgoma Memorial Hospital and Mahalapye District Hospital. The Health Hub promotes private sector investment in the establishment of pharmaceutical manufacturing, diagnostic facilities, medical equipment manufacturing, and provision of specialist medical equipment.

### 2.3.4 Health Insurance Providers (Medical Aids)

Botswana has several health insurance providers providing co-payment pooled risked schemes for both the public and private sector subscribers. Key players here have been previously identified in section 2.2.6. Through these schemes subscribers are able to pay for affordable medical coverage in their preferred public and private sector institutions.

### 2.3.5 Private Medical Practitioners

As shown earlier, there are several health care providers providing a broad array of services through private clinics and hospitals spread across the country. The registration and regulation of private practice is through the Botswana Health Professionals Council and they rely heavily on resources mobilized through the health insurance schemes without whom their fees will be unaffordable for the majority of the populace.

### 2.3.6 Other Players

Office of President, Parliament, and relevant government ministries play specific roles in managing the health sector. Health-related non-governmental organisations (NGOs) among others include Botswana Network of AIDS Service Organizations (BONASO); Botswana Network on Ethics, Law and HIV/AIDS, Botswana Network of People Living with HIV/AIDS (BONEPWA), Botswana Business Coalition on AIDS (BBCA), Botswana Retired Nurses Association (BORNUS) and the Botswana Coalition of Non-Governmental Organizations (BOCONGO).

Other players include the Development Partners, research institutions including, Baylor Children's Clinic, the Botswana Harvard AIDS Institute Partnership, Botswana UPenn, ITECH, University of Maryland, Mine Hospitals (such as Debswana), World Health Organization (WHO), UN Family, Centre for Disease Control (BOTUSA – CDC) and ACHAP. The Botswana–Harvard HIV Reference Laboratory houses clinical and laboratory research and serves as a training facility. The Lab increases Botswana's research infrastructure by providing opportunities for students, scientists, clinicians and technicians.

Labour Unions play a formative role in shaping labour market policies, labour relations practices and human resources management. Labour Unions in the health sector include the Botswana Nurses Union (BONU) and the Botswana Private Medical and Health Services Workers Union (BPM & HSWU). The Botswana Federation of Trade Unions (BFTU) is the national trade union federation of Botswana. It represents Unions covering all sectors of the economy.

A number of medical associations also exist for the purpose of ensuring that professionals effectively execute their mandates of providing quality health care to the nation. Registered associations among others include; Pharmaceutical Society of Botswana, Botswana Medical Association, Botswana Dental Association, Botswana Optometrists Association, Botswana Paediatric Association, Botswana Physiotherapy Association and Traditional Healers Association.

## 2.4 EMPLOYMENT AND SKILLS ISSUES WITHIN THE SECTOR

### 2.4.1 POPULATION EMPLOYED IN THE ECONOMY

According to the 2011 Labour Statistics Report (Statistics Botswana, 2015), the population employed in all the sectors in the economy stood at 640 567. Of this total, 362 926 (56.7%) were males while 277 6429 (43.3%) were females. Local Government constituted 20.8% of the total employed, Central Government 26.3%, Parastatal 4.4%, while Private Sector constituted 48.5%. The main industrial employers were Agriculture (15.3%), Wholesale and Retail Trade (13.7%), Public Administration (10.9%) and Construction (9.3%).

### 2.4.2 INFORMAL SECTOR

According to the last 2007 Informal Sector survey report (CSO, 2007), the number of informal sector business in Botswana stood at 40 421, employing a total of 16 950 employees. The estimated total number of people involved (self-employed and employee) was 57 311. The sector grew by 72.3% between 1999 and 2007. According to the report, there were more informal sector activities in the cities/towns and in urban areas than in rural areas.

### 2.4.3 HEALTH LABOUR PROFILE

The health sector alone had employed a population of 23 644 (3.7%) of the total employed in the economy (Statistics Botswana, 2015). The sector had employed more females (14 285) than males (9 359), 60% and 40% respectively. Employers in the sector cover

organizations in the six subsectors covering Government ministries and departments, hospitals, pharmaceutical, academic institutions, non-governmental organizations and insurance companies. The following professions are employed; medical and pharmaceutical technicians, medical specialists, health associate professionals, nursing and midwifery associate professionals, traditional and complementary medicine associate professionals, service/sales workers, clerks and elementary occupations.

Table 6 compares the distribution of employees over a period of 5 years in the health sector by occupational group. Table 7 indicates that the total number of people employed in the sector increased by 68.8% from 2006 to 2011. Health associate professionals accounts for a larger share of 41.3% of all the employees in the sector, followed by service/sales workers and elementary occupations with 16.5% and 15.6% respectively in 2011. Craft workers are the least employees in the sector with 0.9% within the same year.

The results show that Health and Associate professional is the highest occupational group employed in the sector with 34.6% and 53.1% respecively within the years. Craft workers are the lowest employed in the sector.

*Table 6: Total Employment by Occupational Category for Health Sector (Private & Public Sector)*

| **Occupational Group** | **NO. of Employees** | | **% Distribution of Employees** | |
|---|---|---|---|---|
| | **2005/06** | **2011** | **2005/06** | **2011** |
| Health Associate professional | 4,839 | 9,776 | 27.3 | 41.3 |
| Service/sales workers | 1,975 | 3,890 | 14.1 | 16.5 |
| Elementary occupations | 2,829 | 3,699 | 20.2 | 15.6 |
| Health professionals | 1,018 | 2,783 | 7.3 | 11.8 |
| Clerks | 2,045 | 1,237 | 14.6 | 5.2 |
| Plant and machine operators | 750 | 1,276 | 5.4 | 5.4 |
| Skilled agriculture workers | 0 | 414 | 0 | 1.8 |
| Managers | 408 | 329 | 2.9 | 1.4 |
| Craft workers | 140 | 207 | 1.0 | 0.9 |
| Not stated | 0 | 33 | 0 | 0.1 |
| **TOTAL** | **14,002** | **23,644** | **100%** | **100%** |

**(Statistics Botswana, Labour Statistics Report 2011 Population and Housing Census, 2015)**

*Table 7: Employment Distribution According to Group and Gender in the Health Sector*[9]

| | **Count** | | | **Percent** | | |
|---|---|---|---|---|---|---|
| **Occupation** | **Male** | **Female** | **Total** | **Male** | **Female** | **Total** |
| Technicians & Associate Professionals | 3425 | 6354 | 9779 | 36.6 | 44.5 | 41.4 |
| Service Workers and Shop & market sales Workers | 998 | 2893 | 3891 | 10.7 | 20.3 | 16.5 |

[9] The 2011 Population and Housing Census questionnaire did not include question on Public or Private Sector so analysis could not be done by Public/Private Sector Employment

| | | | | | | |
|---|---|---|---|---|---|---|
| Elementary Occupations | 1256 | 2445 | 3701 | 13.4 | 17.1 | 15.7 |
| Professionals | 1645 | 1111 | 2756 | 17.6 | 7.8 | 11.7 |
| Plant and Machine Operators & Assemblers | 1096 | 175 | 1271 | 11.7 | 1.2 | 5.4 |
| Clerks | 276 | 961 | 1237 | 2.9 | 6.7 | 5.2 |
| Skilled Agricultural and Related Workers | 338 | 88 | 426 | 3.6 | .6 | 1.8 |
| Legislators, Administrators and Managers | 163 | 166 | 329 | 1.7 | 1.2 | 1.4 |
| Craft and Related Trade Workers | 146 | 61 | 207 | 1.6 | 0.4 | 0.9 |
| Other Occupation | 10 | 17 | 27 | 0.1 | 0.1 | 0.1 |
| BDF | 6 | 0 | 6 | 0.1 | 0.0 | 0.0 |
| Total | 9359 | 14271 | 23630 | 100.0 | 100.0 | 100.0 |

**Source: Generated from 2011 Population and Housing Census data**

Table 8 presents the distribution of employees in health sector according to occupation group and age. The results suggest that the younger workforce (<35 years) tends to dominate the Associate Professionals category (48.3%), while those aged between 35 – 55 are more represented in the Elementary Occupations (17.5%), and the older workers (+56 years) are mainly engaged as service workers (22.9%).

*Table 8: Employment Distribution According to Occupation Group and Age for Health Sector*

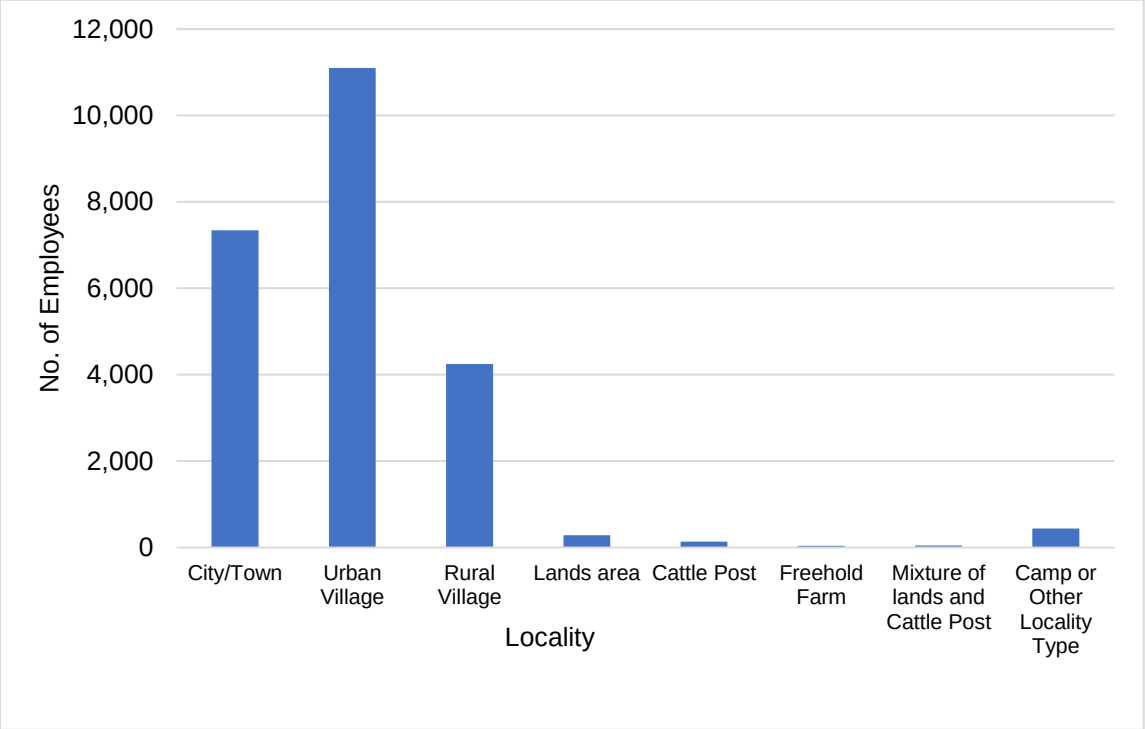
| | **Count** | | | | **Percent** | | | |
|---|---|---|---|---|---|---|---|---|
| | **Age group** | | | | **Age group** | | | |
| **Occupation** | **< 35** | **35 - 55** | **56+** | **Total** | **< 35** | **35 - 55** | **56+** | **Total** |
| Technicians & Associate Professionals | 4817 | 4176 | 768 | 9761 | 48.3 | 35.9 | 38.9 | 41.4 |
| Service Workers and Shop & market sales Workers | 1473 | 1953 | 451 | 3877 | 14.8 | 16.8 | 22.9 | 16.5 |
| Elementary Occupations | 1282 | 2083 | 317 | 3682 | 12.9 | 17.9 | 16.1 | 15.6 |
| Professionals | 1234 | 1321 | 196 | 2751 | 12.4 | 11.4 | 9.9 | 11.7 |
| Plant and Machine Operators & Assemblers | 258 | 889 | 119 | 1266 | 2.6 | 7.7 | 6.0 | 5.4 |
| Clerks | 617 | 580 | 38 | 1235 | 6.2 | 5.0 | 1.9 | 5.2 |
| Skilled Agricultural and Related Workers | 109 | 280 | 34 | 423 | 1.1 | 2.4 | 1.7 | 1.8 |
| Legislators, Administrators and Managers | 100 | 200 | 29 | 329 | 1.0 | 1.7 | 1.5 | 1.4 |
| Craft and Related Trade Workers | 71 | 118 | 18 | 207 | 0.7 | 1.0 | 0.9 | 0.9 |
| Other Occupation | 10 | 14 | 3 | 27 | 0.1 | 0.1 | 0.2 | 0.1 |
| BDF | 3 | 3 | 0 | 6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 9974 | 11617 | 1973 | 23564 | 100.0 | 100.0 | 100.0 | 100.0 |

**Source: Generated from 2011 Population and Housing Census data**

**Distribution of Work-Force**

An analysis of the distribution of workforce across the country is illustrated in Figure 3.

*Figure 3 Distribution of Workforce by Locality*



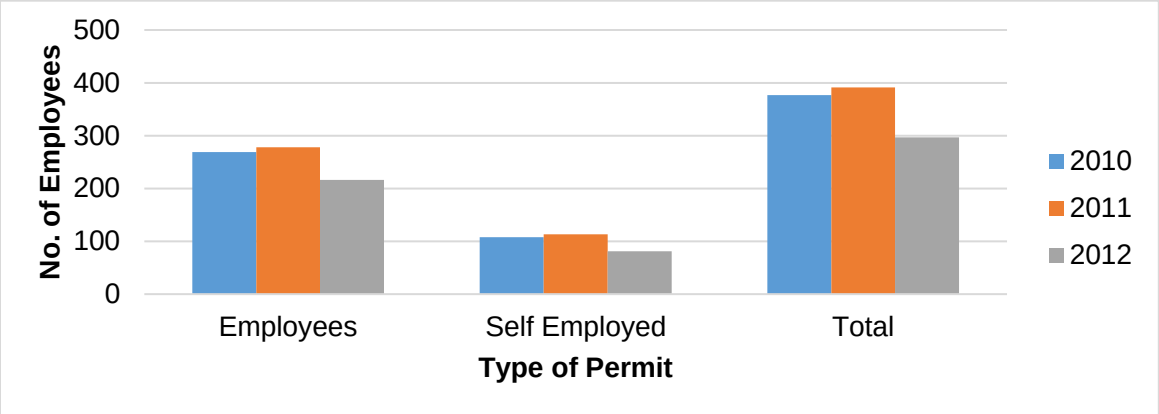

( Statistics Botswana, Labour Statistics Report 2011, 2015)

Figure 3 shows that cummulatively, urban villages have the highest numbers of health employees working within them followed by cities and towns. An insignificant number of employees work in freehold farms and mixture of lands and cattle posts. Communities in these areas access health services from the mobile stops.

**Import of Labour**

Botswana continues to import labour on scarce skills that are not available locally. Most of the imported labour is placed in the public facilities. The private sector also absorbs imported labour. The private sector predominantly consists of specialists having their private health business.

*Figure 4 Total Work Permit Holders by Type of Permit*




**Source: Statistics Botswana, Labour Statistics Reports (2013)**

Figure 4 shows that most of the permit holders in the health sector were employed for the years 2010 up to 2012. A smaller number of permit holders was self employed. The self employed cover private business owners operating in the health sector while the employees include those working in both public and private sector.

## Density of Health workers: Botswana and Southern African Countries

Compared to the African Region, Table 9 shows that Botswana is generally doing well in terms of the different specialists per 10 000 population. Botswana is however, still far behind South Africa. The table indicates that for Botswana, there are 34 nurses and midwives per 10 000 population as compared to 51 per 10 000 for South Africa for the same period.

*Table 9: Density of Health Workforce (per 10, 000 Population), 2007-2013*

| COUNTRY/GROUP | PHYSICIANS | NURSES AND MIDWIVES | DENTISTS | PHARMACISTS |
|---|---|---|---|---|
| African Region | 2.7 | 12.4 | 0.5 | 0.8 |
| Namibia | 3.7 | 27.8 | 0.4 | 1.8 |
| **Botswana** | **4.0** | **33.5** | **0.8** | **2.1** |
| South Africa | 7.8 | 51.1 | 2.0 | 4.1 |
| Upper Middle-Income Countries | 16.1 | 26.3 | - | 3.4 |
| **Global Average** | **13.9** | **28.6** | **2.8** | **1.8** |

**( World Health Statistics Part II Global Health Indicators, p114, 2015 )**

## 2.5 STRENGTHS AND WEAKNESSES OF THE SECTOR

### 2.5.1 SWOT ANALYSIS

*Table 10: SWOT Analysis of the Health Sector*

| **Strengths** | **Weaknesses** |
|---|---|
| *Primary care facilities constitute 95% of health care infrastructure in the country (excluding mobile stops)<br>*Reasonably structured system referral & communication between different levels of service structure<br>*At a national level, 84% of population live within 5km radius of the nearest health facilities and 95% live within 8km radius. | *Disparity in the way health facilities are utilised. Some primary hospitals are used more than district hospitals although there are fewer health workers in primary hospitals. Therefore, workload is not equaly distributed.<br>*Inequality in distribution of the beds.<br>*Low health insurance penetration<br>*Lack of synergy between Government and Private Sector |
| **Opportunities** | **Threads** |
| *Promote Private Public Partnerships s<br>*Invest in local pharmaceutical, medical equipment and diagnostic service industries, to reduce reliance on costly imports.<br>*Promote Medical tourism<br>*Invest in specialised training for various health sectors including deliberate collaboration initiatives with other Governments and countries | *Staff turnovers<br>* Shortage of human resource<br>*Shortage of various manufacturing industry players<br>*High dependence on Government as the main support of most sub sectors including training |

# CHAPTER 3: STRATEGIC DIRECTION OF THE HEALTH SECTOR

## 3.1 INTRODUCTION

This chapter presents key factors driving change in the health sector. The factors eventually influence the skills demand and supply in the labor market.

## 3.2 A LONG TERM VISION BEYOND 2016 AND THE NATIONAL DEVELOPMENT PLAN

A Framework for a Long Term Vision for Botswana – Vision 2036, (March 2015) indicates that human resources are critical to service delivery and that shortage of trained and qualified staff remains one of the major bottlenecks towards availability of quality health care in Botswana. According to the framework, the human resource strategy as outlined in Vision 2036 will be implemented. The strategy mainly focuses on five (5) key objectives being: reducing the shortage of health professionals, improving the distribution of health professionals, ensuring staff have the necessary skills to deliver the required services, improving performance and motivation of human resources as well as coordination of human resource planning across the health sector.

The human capital development forms part of the six national priorities during the National Development Plan 11 (NDP). The six national priorities are all expected to address the main national challenges of poverty, unemployment and income equality. Strategies for human capital development during NDP 11 will center on improved quality of education and training, employment creation and productivity, research innovation and development and skills development.

The health sector will also during NDP 11 pursue a four legged strategy which covers; access to good quality health care and utilization of health services, prevention, rehabilitation and sustainable health and health care (Key Policy Paper for NDP 11, MFDP, September 2015)

## 3.3 NATIONAL HEALTH POLICY

### 3.3.1 Policy Framework

Botswana formulated the first National Health Policy in 1995 to guide the development of the health sector. The National Health Policy was later revised in 2011. The policy recognizes health care as one of the key determinants of health and the role of the government as a policy maker and supervisor of health care.

According to the policy, human resources for health are the backbone of service delivery in the health sector. Creating an appropriately skilled, highly motivated, client – focused health workforce is critical for the country to attain its ambition of ensuring an enabling environment in which all people living in Botswana have the opportunity to reach and maintain the highest attainable level of health. Human resource development of health care professionals is provided for by a combination of Institutions in the country and outside the country.

## 3.4 PESTEL FRAMEWORK

The PESTEL Framework has been adopted in presenting the factors driving change within the health sector. The framework covers the six types of environmental influences being the Political, Economic, Social, Technological, Environmental and the Legal drivers. Tables 11-16 summarizes the identified strategic direction of the sector using the PESTEL Framework.

*Table 11: Political Drivers*

| **What will be happening in the Sector over the next 4-5 years** | |
|---|---|
| **Significant drivers of change** | **Issues**<br>(Challenges & Opportunities) |
| Political Commitment | *Political will and commitment (Parliament & Office of the President) |
| Government commitment | *Government is committed to providing health to the entire population.<br>*For 2016/17, the second largest share of budget (P5.7 billion) went to MoH after MoESD (Budget Speech, MFDP).<br>*The total budget spent on the Health Sector between the years 2007 and 2010 indicates that 67.9% was contributed by Government. Donors and the Private sector contributed 11.5% and 20.6% respectively during the same period (NHA, 2012). |

*Table 12: Economic Drivers*

| **What will be happening in the Sector over the next 4-5 years** | |
|---|---|
| **Significant drivers of change** | **Issues**<br>(Challenges & Opportunities) |
| Global Economic downturns & Declining donor support | * Economic crunch and dwindling donor support - these affects budgets, allocation of human resources and provision for training.<br>*The emerging disease (communicable and non-communicable diseases) and turbulent international economic conditions (such as the 2008 Global Financial Crisis which resulted to a decline in diamond export revenues due to depressed demand and falling prices) complicate the sustainability of government financing of the health sector.<br>*Botswana has one of the most comprehensive and proactive public health care systems whose objective is to provide all its citizens with primary health care at subsidized rates, the issue of long-term sustainability of government funding of health care is critical.<br>***** Botswana's total expenditure on health as a percent of Gross Domestic product is 5.4%. Government's expenditure on health as percentage of total expenditure on health is 57.1% [WHO, 2013; BoB Annual Reports] demonstrating the effort of government to address health funding. |
| Upcoming health sector projects during NDP 11 | * During NDP 11, upgrading of some health facilities will be done as well as construction of new health facilities in different areas of the country. Different cadres of professionals including specialists and support staff within these facilities will be required upon completion. Therefore, there will be need for more skilled staff to augment the existing staff during NDP 11. |
| Shortage of human resource | * The sector (particularly the public sector) is challenged with shortage of skilled human resource (IHSP, 2010) |
| Poverty & Unemployment | *There is skewed distribution of wealth, 28% of the total population live on less than a dollar-a-day (UNDP , 2007)This disproportional distribution with the existence of poverty and unemployment has led to alcohol and substance abuse that impacts negatively on the overall health status of the people. |

| | |
|---|---|
| | *Government has introduced measures to curb alcohol abuse in the general population - review of legislature to regulate alcohol consumption, increased taxation to discourage potential clients, promotion of programs to educate communities on dangers of alcohol abuse. |
| Health Care Financing | Health care in the country is financed largely through public sector funding allocations, supplemented with co-payment insurance schemes (medical aid) in the public and private sectors, donor contributions, and very little direct payments and cost recovery schemes. The MOH and partners are already reviewing this to make it more sustainable while still minimizing the need for out of pocket payments by the citizenry. |
| Health Literacy | Health literacy is provided largely through the activities of the Ministry of Health via their Health promotion units at national and district levels. This is supplemented by the activities of NGOs funded by international development partners. The mass media also contribute to a lesser degree. |
| Research and Development Investment | The country does not currently invest significantly in health related research and development. Most research activities in this area are funded by international funding agencies who largely determine the agenda for research. |

*Table 13: Social Drivers*

| **What will be happening in the Sector over the next 4-5 years** | |
|---|---|
| **Significant drivers of change** | **Issues**<br>(Challenges & Opportunities) |
| Gender disparities<br><br>Gender Based Violence & Family structures | * The rapid and sustained economic growth that Botswana has experienced has allowed the nation to build its productive base and thus improve the quality of life for its citizens. However, the following challenges exist: gender disparities as women appear to be more disadvantaged than men, changes in the family structures including marital formation and dissolution, gender based violence, settlement have implications on social attitudes and relationships patterns, tradition and culture. |
| Income inequalities & Poverty | * Botswana is also characterized by large income inequalities, a high level of poverty (for a middle income country) and high unemployment. Living in poverty, with limited economic opportunities sometimes creates an unfortunate incentive for cross-generational, multiple sexual relationships, that might be 'compensated' in cash or in kind. This is the root cause of increasing levels of transactional sex and prostitution, with serious implications for sexually transmitted diseases such as HIV/AIDS. |
| Disease burden | *A shortage of trained and qualified staff remains one of the major bottlenecks towards availability of quality health care in Botswana. There are also increasing demands on the already overstretched skilled workforce as a result of additional programmes and projects, in particular those related to HIV and AIDS. Staff turnover is high; inequitable deployment and failure to optimise the existing skill mix present additional challenges. |
| Belief systems | *The other critical social component of health care is the belief system in spiritual and traditional practitioners. The spiritual healers are faith-based (based on religious beliefs), whereby some beliefs discourage the use of modern medicine and rely on supernatural healing. Such religious beliefs affect the way people interact with formal health institutions to seek health care.<br>* Given the heavy influence of traditional medicine in society, it is critical for government to establish a policy and collaborative working arrangements with traditional practitioners to promote the good health status of the population.<br>*Baitseanape Basetso mo Botswana, an organization that serves as an overseer of all the traditional healers in Botswana was registered with the Registrar of Societies in 2008. Currently, discussions are on-going between Government (specifically MoH) and Baitseanape Basetso mo Botswana on their role in the health sector and governing policy to regulate their relationship. They argue that if government can agree to incorporate traditional practitioners to the health system, they can be able to reduce the pressure on the demand for health assistance as they can be able to relieve clinics and hospitals of patient's overload. This is a critical policy gap that should be closed between MoH and traditional practitioners to enhance the health status of the population who use both |

| | |
|---|---|
| | traditional and modern medicine. Therefore, there is need for provision of relevant skills to such population. Furthermore, relevant skills transfers are also needed on the preservation of plants used by traditional health practitioners. During the national consultative meeting held in Gaborone the traditional practitioners confirmed their willingness to share their knowledge with modern health care service providers. |

*Table 14: Technological Drivers*

| **What will be happening in the Sector over the next 4-5 years** | |
|---|---|
| **Significant drivers of change** | **Issues**<br>(Challenges & Opportunities) |
| Use of IT on Tele medicine | *Technology plays an important role in the delivery of health care right from training up to facility level. It is used for analysing data to offer a better diagnosis and treatment, helping doctors communicate with patients, linking doctors with other doctors, connecting doctors and patients hence consultations can be done online or via the cell phone, helping patients stay healthy by giving the health care industry an upgrade for medical translation to mobile applications that help patients live healthy lifestyles.<br>*Botswana has a sparse population and health resource challenges. The sector is challenged with lack of essential supplies and low utilization of primary health facilities.<br>*In 2013, MoH in collaboration with partners launched a telemedicine project in an effort to improve access of health care regardless of geographic areas and economic status. The partnership has provided telemedicine and mobile health services, which enabled assessment of patients' needs via use of telephonic imaging. |
| Continuous upgrading of health facilities | *The sector continuous to upgrade and equip (outdated) health facilities. There are challenges with skilled personnel in the area. There is need to ensure staffing the facilities with appropriately skilled health workers. |
| Utilization of facilities | *There are however, challenges on the use of telemedicine which include; malfunctioning mobile devices, unreliable IT infrastructure, accidental damage to devices, cultural misalignment between IT and health. Sustainability of this project is being promoted via alignment with national health and education systems and ownership of the initiative by local stakeholders (Implementing M-health applications in Botswana: Telemedicine and education on mobile devices in a low resource setting).<br>*The Botswana Innovation Hub has embarked on a project with Microsoft to provide internet access and telemedicine services to local hospitals and clinics to improve the quality of life of those in rural settings. Attaining this depends heavily on the availability of skilled human resources in the right place at the right time; the use of telemedicine, as an innovative technology intervention comes into play at this point as a mechanism that makes it possible to spread thin human resources around the country without necessarily physically moving them around.<br>* Health Institutions are equipped with skills laboratories where trainees are presented with simulated health scenarios before being exposed to real life situations in the facilities. Laboratories are equipped with technology that is found in the actual hospitals. The equipment requires regular maintenance, hence a need for training.<br>*Technology improves transparency and accountability for better monitoring, sharing and application of data. The MOH uses an Integrated Patient Management System (IPMS), an IT comprehensive patient management system solution providing health facilities with dynamic paperless information management technology that synchronizes the workflow and the process flow across the entire enterprise. Continuous skills transfer in the area is necessary as technology keeps changing. Furthermore, monitoring and evaluation skills are necessary as the sector continuous using technology for monitoring and evaluation. It is also important to capacitate support staff as they provide services to the sector. |
| Challenges in the use of IPMS | *The introduction and rollout of IPMS in Botswana has taken quite a long time since the early 2000. Despite the delay, the process has been successful as basically all hospitals (except 2 hospitals) in the country have the system. Most health personnel in these facilities have been trained with support mechanisms in place. Some modules such as |

| What will be happening in the Sector over the next 4-5 years | |
|---|---|
| **Significant drivers of change** | **Issues**<br>(Challenges & Opportunities) |
| | the laboratory and the pharmacy highly use IPMS. However, there are still challenges faced with IPMS some of which are: insufficient in-country technical support, rollout of the system to the entire country, inadequate IT Infrastructure in facilities, and poor connectivity infrastructure.<br>*Over the years most equipment has changed from being manually operated to being digital. This has resulted in the reduction of work load for health workers and an increase in the time that health workers will have with their patients. Despite reducing the work load of health workers, technology has its disadvantages. It makes health workers lose their compassion and human touch towards patients. It affects the health worker/patient relationship. It also reduces the manual skills that the workers have attained over the years during training and experience in their work. Health workers therefore, need to be multi-skilled. |
| Weak information management system | Health management information systems is weak. Challenges include untimely data collection, collation, analysis, interpretation and dissemination of information. The public sector has several databases (epidemiology, human resources, finance) existing in parallel. Monitoring and evaluation is fragmented; as a consequence, tracking health outcomes and measuring the impact of specific interventions may be compromised. This indicates a need for training in monitoring and evaluation as well as on information management systems |
| Supply chain management | *Compared to the public sector on supply chain management, private sector manages it better. Supply chain management systems are weak resulting in limited availability and regular stock-out of essential drugs in the public service, hence a need for training of staff. |

*Table 15: Environmental Drivers*

| What will be happening in the Sector over the next 4-5 years | |
|---|---|
| **Significant drivers of change** | **Issues**<br>(Challenges & Opportunities) |
| Conducive environment | ***** Human resource for health is the backbone of service delivery in the health sector. There is need to create appropriately skilled, highly motivated, client-focused health workforce for Botswana to attain its ambition of ensuring an enabling environment in which all people living in Botswana have the opportunity to reach and maintain the highest attainable level of health (Republic of Botswana, 2011).<br>*The working environment of the health care providers does affect service delivery and these include how conducive the working environment is, work load, established office ambience including lighting and sitting. |
| Distribution of health professionals | *Other factors that affect the human resource environment for the health sector include (The recruitment and retention guidelines; transfer guidelines; and disciplinary procedures (MoH), 2012) |

*Table 16: Legal Drivers*

| What will be happening in the Sector over the next 4-5 years | |
|---|---|
| **Significant drivers of change** | **Issues**<br>(Challenges & Opportunities) |
| Policies, guidelines and Acts in place governing various services | * (The Public Health Act (Chapter 63:01) , 2002) which states that the MoH is responsible for the overall oversight and delivery of health services for Batswana, as well as for the formulation of policies, regulations and norms, standards and guidelines for health services.<br>*The ministry is also responsible for the registration of private facilities through recognized standards. For both public and private sectors, professionals are accredited by professional councils; by the Medical, Dental and Pharmacy Act; Healthcare technicians and practitioners; and Midwives Act.<br>*There are other policies and guidelines governing the various services provided in the health sector. These include (The National Health Policy , 2011)), (Botswana National Drug Policy, 1999), the (National Heath Quality Standards and Guidelines , 2013), the(National Population Policy , 1997) and the (Botswana National Strategic Framework II for HIV and AIDS (2010 - 2016)).<br>All these Acts and policies guide the accountability and the legal environment for the practice and delivery of health services. |
| Health Regulatory Body | *The Botswana Health Professions Council (BHPC) is the regulator for all doctors and allied health professionals, whilst the Nursing and Midwifery Council of Botswana (NMCB) is responsible for the registration and regulation of the practice of nurses and midwives. Currently, a Bill that proposes merging of the two Councils is with the Attorney General. It is expected to be discussed in the next Parliament seating. |
| Quality of regulations and weak sector wide management | *The sector is challeged with poor quality management and regulation in both private and public sector (ISHP, 2010-2020)<br>*Traditional medicine is widely used, but there is no regulatory framework governing the practice. The MoH in consultation with traditional health practitioners and other stakeholders, are in the process of formulating a bill to regulate traditional medicine. |
| Public Private Partnership | At National level, the Ministry of Finance and Development Planning (MFDP) is coordinating the country's approach in relation to the Public - Private Partnerships (PPP). The Ministry has a (PPP Policy and Implementation Framework, MFDP, June,2009)that stipulates parameters for engaging PPPs. This is a policy for all sectors in Botswana, however there are no guidelines for activating implementation at sectoral levels, i.e. Health Sector – provision of health services. The Policy Framework is also skewed to capital projects. Although PPP was implemented (until 2011) by outsourcing Antiretroviral (ARV) services from disease management companies to manage all elements of health patient care including actual delivery of health services and coordination within the private sector, there is need for a specific framework or guideline for the implementation of PPP in the health sector. Not much information is available on how to go about the exercise in order to archive the right results. Therefore, training on PPP is required for health workers. |
| Rationalization of IHS | *Currently, efforts are in place to explore the possibilities of relocating the Institutions of Health Sciences (IHS) to the Ministry of Education Skills Development (Institutional Rationalization to the Benefit of MoESD, Jan 2016) . It is expected that the quality of education will be enhanced as well as archieving training which is relevant to the human resource development needs in the country. |

## 3.5 RECOMMENDATIONS

A number of human resource development (HRD) issues emanated from the above mentioned drivers of change. In the overall, it has been indicated that there is serious

shortage of health professional in the health sector and as such there is need for training in different areas. The issues have been presented and discussed in the next chapter.

# CHAPTER 4: FACTORS DETERMINING THE DEMAND FOR SKILLS

## 4.1 INTRODUCTION

The previous chapter provided indicators of skills demand within the health sector. This chapter, therefore, provides an analysis of the demand for skills as it identifies the skills gaps. Different approaches and techniques were used in order to understand the demand for skills.

## 4.2 METHODS USED FOR UNDERSTANDING DEMAND

Methods used to determine the demand for skills are presented in Table 17. The modelling approach was also used to inform the sector on the skills in demand.

*Table 17: Sources of Skills Demand Information*

| **Data Collection Method/Approach** | **Source** | **Description** |
|---|---|---|
| Labour Market Analysis | Census, household survey and labour force survey<br>Modelling Approach | Analysis was made using information from census, household survey and labour force survey |
| HRDC Job Vacancy Database | Job advertisements for private and public sector | Job Opportunity Index was employed by collecting information from the HRDC Job Vacancy database |
| Analysis of Work Permits | Statistics Botswana | Information on occupational areas, i.e. foreign workers employed |
| Stakeholder Input | Interviewing different stakeholders | Information obtained from stakeholders to determine the demand for skills within the sector |
| PESTEL Analysis Information | Literature, Interviewing different stakeholders | signals on the human resources in demand was derived from qualitative analysis |

## **4.3** LABOUR MARKET APPROACH

### 4.3.1 Modelling Approach

The investigation of demand for skills was grounded in the use of labour market analysis methods and signalling tools to inform the planners of the type of skills required and the critical changes in skills and competencies necessary to sustain and grow the human resources for health in Botswana. In pursuit of such intentions, scarce skills were identified in the health sector, mitigation responses for the identified skills were recommended and therefore, implementable initiatives were derived from the technical report that supports the development of the plan, and recommend methodologies for their implementation. The methodology that was used included literature/desk review, secondary institutional quantitative data, and statistical modelling.

#### 4.3.1.1 Modelling Results of Demand for Skills

The required staff cadre in the new establishment model was determined as part of the “Integrated Health Service Plan: A Strategy for Changing the Health Sector for Healthy Botswana 2010-2020”. The considerations that were made in determining the human resources needs by cadre and type of facility include population-based norms which followed WHO recommendations and the low population density of Botswana. These

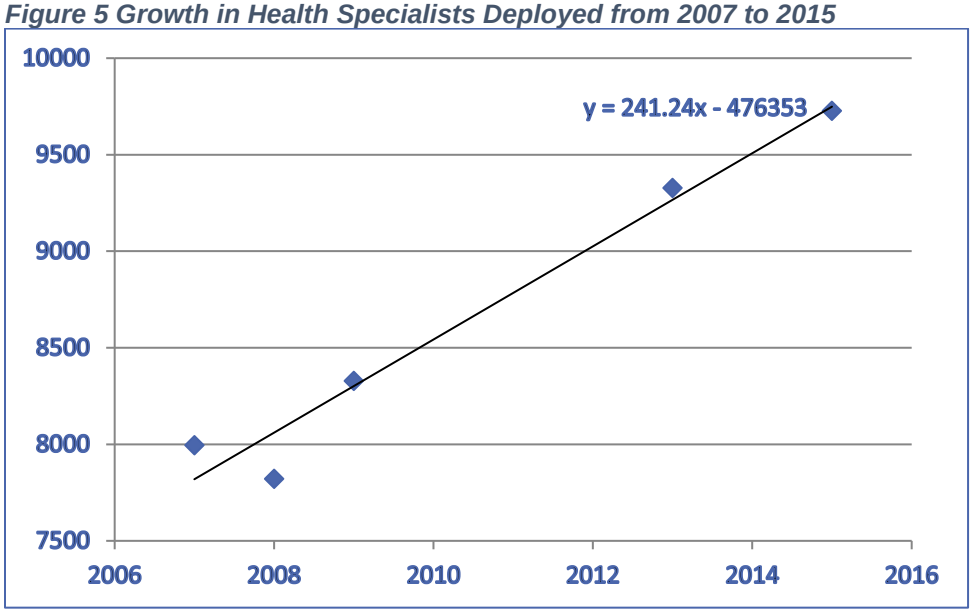
considerations recognized the comprehensive inclusiveness of the entire public and private health sector. These population norms were used to determine the number of community and clinic-based staff cadre. Staffing requirements for hospitals and facilities with beds were based on standardized staff norms, taking into account issues such as the number of beds per nurse, shifts work, cadre required to perform various services such as diagnostic, treatment and care services at the facility.

The new establishment figures were determined to cover a 10-year horizon from 2010 to 2020. Furthermore, it was envisaged that during the period of implementation, the nomenclature and categorization of health facilities in Botswana would change from current hierarchical system that ranges from Health Post, clinic with and without maternities (or beds), primary, district and referral hospitals to one based on a new five-tier system comprising; Individual/family/community, Primary health care clinic/centre, Primary hospital, District hospital and referral hospital.

These changes have not taken place, hence it became difficult to use current facility level data to make projections by cadre and facility. Instead, it was assumed that the total stock of medical practitioners and support staff would be an increase in the same proportions over the short to medium term. Furthermore, the growth in demand in the short term was also taken to be proportional to a population growth rate of 1.9% as per the 2011 census.

As shown in Figure 5, the health specialists[10] employed grew steadily from 2008 to 2015. The fitted trend line indicates an annual growth of 241 per year. When the unusual value for 2007 is excluded, the growth rate becomes 264 net additions per annum.

*Figure 5 Growth in Health Specialists Deployed from 2007 to 2015*




Source: Ministry of Health, Statistical Database (various years)

From the 2011 population census, the population is expected to grow at an annual rate of about 1.9%. If the current establishment for the new model is to keep pace with the

[10] Health Specialists include Pediatricians, Cardiologists, Neurologists, Orthopedic Surgeons, Ophthalmologists, Endocrinologists, Hematologists, Radiologists, epidemiologists etc.

population growth, then the total projected required heath personnel are as shown in column 2 of Table 18. Assuming that the net recruitment and retention rate shown in Figure 5 persists, then the expected numbers at post based on the two growth models are shown in column 3 of Table 18. Column 4 is now the difference between columns 2 and 3.

*Table 18: Projected growth of total health cadre and gaps in next five years based on current establishment of public and private health institutions*

| Year | Projected Establishment to keep pace with population growth | At post assuming current rate of growth (2007-2015) is maintained | Gaps assuming current rate of growth in appointment and retention is maintained |
|---|---|---|---|
| 2015 | 13404 | 11738 | 1666 |
| 2016 | 13659 | 11979 | 1680 |
| 2017 | 13917 | 12220 | 1697 |
| 2018 | 14179 | 12461 | 1718 |
| 2019 | 14448 | 12702 | 1746 |
| 2020 | 14723 | 12943 | 1780 |

(MoH Statistical Database, 2014)

#### 4.3.1.2 Projections by Cadre

Following on the same assumptions that the establishment shall keep pace with population growth of 1.9%, then the projected number of health human resource professionals required in the next 5 years are shown in Table 19. To generate the projected levels for each of the cadres the new establishment figure was multiplied by the annual population growth rate to generate the projected staffing levels for the successive years. For example, the new establishment for doctors is 1,427. The required staffing levels for doctors for 2016 therefore equals [(1,427 *1.9%) + 1,427 = 1,455]. All remaining figures in this table should be interpreted in a similar way.

*Table 19: Projected demand for health professionals by cadre assuming fixed ratio of population to 1 cadre*

| | | New Establishment | Assuming Establishment growing at same rate with general population 1.9% | | | | |
|---|---|---|---|---|---|---|---|
| | **Cadre** | | **2016** | **2017** | **2018** | **2019** | **2020** |
| 1 | Doctors | 1427 | 1455 | 1483 | 1512 | 1541 | 1571 |
| 2 | Administrative Doctors | 116 | 119 | 122 | 125 | 128 | 131 |
| 3 | Dentists | 48 | 49 | 50 | 51 | 52 | 53 |
| 4 | Public Health | 24 | 25 | 26 | 27 | 28 | 29 |
| 5 | Pharmacy | 85 | 87 | 89 | 91 | 93 | 95 |
| 6 | General Nurse | 6834 | 6964 | 7097 | 7232 | 7370 | 7511 |
| 7 | Specialist Nurses | 2676 | 2727 | 2779 | 2832 | 2886 | 2941 |
| 8 | Administrative nurses | 260 | 265 | 271 | 277 | 283 | 289 |
| 9 | Technicians | 3100 | 3159 | 3220 | 3282 | 3345 | 3409 |
| 10 | Technologists/Scientists | 366 | 373 | 381 | 389 | 397 | 405 |
| 11 | Environmental Health | 2934 | 2990 | 3047 | 3105 | 3164 | 3225 |
| 12 | Medical Assistants* | 0 | 0 | 0 | 0 | 0 | 0 |
| | **Total** | **17870** | **18210** | **18556** | **18909** | **19269** | **19636** |

(MoH Statistical Database, 2014)

* It should be noted that the post of medical assistant existed in the actual staffing data that was provided for the years 2007 to 2015 by the Ministry of Health. In the coding system developed herein, the following categories were grouped together under the post of medical assistant: E.C.G. Attendant, Medical assistants, Medical Laboratory Assistant, Senior Medical Attendant and Senior Medical Record Assistant.
However in the new establishment, the post of medical assistant did not exist. This explains why there is a zero in Table 19 in the new establishment as well as zero in the rest of the projections. This is due to the inconsistency between the new establishment cadres and the actual staffing cadres.

#### 4.3.1.3 Projection Models – (See Annexure 1 for details)

The purpose of the modelling section was to determine the expected gaps that would need to be budgeted for and filled for various health human resources cadre. A gap is the difference between the desired staff level and the projected numbers based on current trends and any other assumptions.

Estimation of the Desired Establishment
Various data sources were used in an attempt to determine the desired staffing levels by cadre. Only the data from the new establishment model for health in Botswana from 2010-2020 was found to be appropriate and up to date. Although many components of the Integrated Health Service Plan are yet to be implemented, the methodology used was sound and very comprehensive and took into account the peculiar situation of Botswana. While it is important to take account of epidemiological changes when making long-term projections of demand for health human resources, short-term projections will usually be met if the population to staffing ratio is maintained. Thus projected demand for the next 5 years was assumed to be the demand required to maintain population to staff ratio envisaged in the new establishment model. The official growth rate based on the 2011 census data is 1.9% per annum.

##### 4.3.1.3.1 Model 1 – Assuming Current Population Growth and Human Resources Trend

Model utilizes the trends in the staffing levels by cadre from 2007 to 2014 to estimate the expected number of staff at post each year from 2015 to 2020. Where accurate data are available and a good functional relationship exists between the number at post and year, this model can provide very good estimates.

The limitation of this model is that, for many cadres, there was no noticeable consistent growth or decline in the staffing levels, leading to unreliable estimates using the projection methods. The strength of this model is based on aggregate staffing levels that already takes into account retirements, resignations, recruitments etc. Hence the model incorporates the net attrition from one year to another.

##### 4.3.1.3.2 Model 2 – Assuming that Net Attritions Shall Continue at Current Rate

Model 2 utilizes data for the most current year that includes the date on which each staff was recruited. The distribution of the number of current staff by year in which they were hired is then determined and compared with the corresponding number that was in establishment in that year. The trends in these attrition rates are then used to forecast the

expected attrition for the next 5 years. The advantage of the model is that given the current number at post, we can determine how many of them would be expected to still be at post in each given year if attrition rates for that cadre remained constant. Hence it can more readily be used for planning. The main limitation is that two different data sets that are not readily comparable are used to determine attrition rates for each year.

##### 4.3.1.3.3 Model 3 – Projections Based on the Population Ratios Guided by WHO

This model utilized WHO average health personnel density for each cadre, defined as a number for that cadre per 1000 of the population. The average is based on data from all reporting countries in the WHO database. To apply this model to Botswana we used the 2011 census population and the annual population growth rate of 1.9% per annum given the (Botswana Statistics Report for the 2011 , 2014) census to obtain the projections from 2015 to 2020.

The advantages of this model are that it includes all health cadre whether or not they are available in the country. It also provides comparable data between countries and does not require any assumptions. A limitation is that the model does not take the peculiar requirements of a given country into consideration. Furthermore, it assumes that across the world, the current staffing levels of each cadre, such as the stock of nurses in the world, is adequate.

#### 4.3.1.4 Recommended Model

Model 1 is recommended as the primary model. The strength of this model is based on aggregate staffing levels that already takes into account retirements, resignations, recruitments etc. Hence the model incorporates the net attrition from one year to another

#### 4.3.1.5 Data Limitations on the Modelling Approach

The main data sources for health human resources were the annual data sets compiled by the health statistics unit of the ministry of health for the years 2007, 2008, 2009. The data files for 2013 and 2015 were obtained from the Ministry of Health (MOH. These files provided various information for each health worker for the year in question including post-title or position. However, different reporting styles were used for post titles and for position when specified, and even when the names were the same, the relative number of personnel corresponding to a cadre sometimes varied highly.

### 4.4 Job Advertisements for Health Sector

Table 20 gives the distribution of the 70 jobs advertised in the health sector for the period January- June 2016. The majority of the advertised health sector jobs were for professionals (44.3%), followed by technicians'/associate professionals (35.7%) and legislators/administrators/managers (14.3%).

*Table 20: Top Ten Job Advertisements for Health Sector, January - June 2016*

| Occupation Classifications | Number | Percent |
|---|---|---|
| Additional categories | 0 | 0 |
| Legislators, Administrators & Managers | 10 | 14.3 |
| Professionals | 31 | 44.3 |
| Technicians & Associate Professional | 25 | 35.7 |
| Clerks | 4 | 5.7 |
| Service Workers, Shop & Market Sales Workers | 0 | 0 |
| Skilled Agricultural & related Workers | 0 | 0 |
| Craft & Related Trade Workers | 0 | 0 |
| Plant Machine Operators & Assemblers | 0 | 0 |
| Elementary Occupation | 0 | 0 |
| Total | 70 | **100** |

**Source: HRDC (2016), Job Advertisement Data Bank**

## 4.5 Analysis of Work Permits in Health Sector

Table 21 provides information on the trend of foreign workers employed in the health sector over the period 2005 – 2012 and how it has changed over time[11]. The results suggest that generally there has been a negative trend in the work permit holders in the health sector falling from 528 in 2005 to 297 in 2012. Over the entire period, the average annual growth rate of work permit holders in the health sector was -4.2%. This may be reflective of the increasing local capacity development within the health sector, hence less need for expatriate workers.

*Table 21: Work Permits for Health Sector, 2005 - 2012*

| Year | No. of Permit Holders | Annual growth rates |
|---|---|---|
| 2005 | 528 | - |
| 2006 | 275 | -47.9 |
| 2007 | 382 | 38.9 |
| 2008 | 394 | 3.1 |
| 2009 | 436 | 10.7 |
| 2010 | 377 | -13.5 |
| 2011 | 391 | 3.7 |
| 2012 | 297 | -24.0 |

**Source: Statistics Botswana (2015), Work Permit Holders, Fourth Quarter 2012**

## 4.6 Stakeholder Input

### 4.6.1 Stakeholder workshop to inform this section

Stakeholders raised several issues at the national platform level. While the report gives cognisance to the issues raised and mentioned by stakeholders, they have to be considered within the broader findings of the plan. The issues raised include:-

[11] Available statistics on work permit holders do not give a break down by occupational category within each sector

Given the prevailing view that the public service is already over inflated, greater attention should be given to developing the existing workforce, rather than training and hiring more. This could include training existing cadres for new occupations or training them to be able to accomplish new tasks within their existing professions (Task-shifting and Task-sharing). In addition ICT should be used to increase the reach of specialist medical officers without necessarily employing more. A study by the African Regulatory Collaboration in Botswana shows that there is more task-sharing than shifting, but those who engaged in either want to be so acknowledged and compensated as necessary. A workable plan is needed to accomplish this.

Some services such as safe male circumcision are cheaper when provided at clinics than at hospitals. A unit cost analysis of services that can be offered at both clinic and hospitals would inform more efficient use of resources.

Although emphasis has been placed on the primary health care system, curative services are still highly required, as high costs are currently being incurred by referring patients to South Africa. Perhaps this is an area when the government can create an enabling environment for private sector investment so that local capacity to provide excellent specialist health services are localized and referrals are done within the country.

With regards to the role of traditional doctors, preference for the MoH is that the first point of contact for any patient should be a modern health facility. Where that does not happen, it is hoped that traditional medical practitioners will recognize the need for early referrals.

It is important to ensure that important health cadres that are not currently in the system, and hence have zero frequencies should not be missed out during projections. Details of how such cadres were included are in the full report. Models appear to use data generated during recession (2008/09) when there were many unfilled posts. Similarly many more health facilities are now available – including the UB medical hospital, that was not available during the study period. Furthermore, some of the data used are not very accurate. All these factors affect the projected numbers. It is also important to include per capital income since this may have a bearing on the required staff numbers.

Nevertheless, data problems and limitations are not unique to this study. Similar problems have been observed in the agriculture sector. ICT, notably use of cell phones, has been used to reduce need of some cadres such as extension workers, and similar approaches should be considered for health workers.

Developing the Botswana Public Health institutes require sophisticated level of training that goes beyond basic qualifications and includes local research on diseases and causes of morbidity and mortality.

Members of the Botswana Health Professionals Council need to be capacitated to enable them act more proactively rather than reactively in planning and resolving problems related to the registration and regulation of health professionals. Although it might be desirable to regulate every health cadre, in practice this is not possible especially for those that have not been adequately trained (e.g. paramedics). The Council usually

regulates any new cadres that it feels need regulating, and remove obsolete cadres from the books.

A draft document to register traditional doctors exists, but there are problems in implementation, because many traditional doctors want to keep their treatments secret for fear of losing the intellectual property. Furthermore, their medications do not usually go through the same rigorous clinical trial practice that is compulsory for modern medicine. A way forward would be to conduct more indigenous research, form partnerships with traditional healers and assist them obtain patents for their remedies.

In interpreting the percent of population that is within a specified distance to a health facility, it should be noted that patients could be near a health facility, but that facility does not provide the services that the patient requires. It may be useful to determine what services each health facility offers and disaggregate populations by the distance to health facility in terms of services demanded.

### 4.6.2 Interviews

Diseases on the rise in Botswana include HIV/AIDS, Non-Communicable Diseases such as hypertension, diabetes, cancer, and cardiovascular attacks. The following challenges were indicated and recommendations were therefore made:

- There is need to re-tool Medical Doctors towards General medical Practice e.g.. Establishing a 3yrs post-graduate fellowship for general medical practice.
- The Medical schools should provide training on family welfare
- Private Sector facilities are managed better than public sector. For Patients admitted in Public Sector facilities,' cost of hospital stay are not fully monitored. Hospital management is provided by clinicians in most cases who lack management training. There is need for training in professional managed care and supply chain management
- AFA has no such relationship with the traditional doctors, the cover that is provided is small and for the person to claim from medical aid, the traditional doctor ought to have gone through some training. Therefore, there is a need for training of traditional doctors.
- Facilities not utilised by Government should be outsourced, for instance, dialysis services and chronic medication should be outsourced.
- Private practitioners are skewed towards urban areas, for example, Gaborone and Francistown.
- Government's issuing of licences for private sector health facilities do not emphasise on equitable distribution around the country, hence the saturation in cities and towns. Saturation leads to private practitioners being innovative in their costing, for example the current observation is that there are some inefficiencies as sometimes prices are escalated. There is a need for regulations to be revised.

### 4.6.3 Employer's Representation

The Health Sector Committee's input (as obtained from the HRDC indicative skills in demand booklet) also formed part of the stakeholder input as the Committee represents the employer, thus the skills requirements and the identified gaps that can be directly related to the employment opportunities in the national market. The below skills are, therefore, in demand:

- Health Economist
- Health Informatics
- Epidemiology
- Health / Hospital Management
- Health Statistics
- Pharmacy – Economics
- Health Risk Management
- Monitoring and Evaluation

## 4.7 PESTEL Analysis Information

The following signals on the human resources in demand were derived from the qualitative analysis provided in the previous chapter:

### 4.7.1 Human Resource Development Recommendations

1.1 While the World Bank considers Botswana's public service to be over-inflated, there is an urgent need for the health sector to produce more qualified and competent staff in order to address the challenge of shortage of human resource. This should take cognisance of government's policy move from curative to preventative service delivery. The following should be emphasised:

1.2 Health training institutions need to train more nurses with specialisation (e.g. paediatrics, theatre). Institutions should also specialize in areas of training rather than attempting training in all areas.

1.3 Institute of Health Sciences should be rationalised and relocated to the MoESD

1.4 To enhance the practice of task shifting and task sharing, provision for extensive training with incentives for general nurses (who are the cadres most involved) should be made.

1.5 There is need to intensify practicals for health professionals which is benchmarked globally. It is also important to capitalise on the variations between the theoretical training received from the University of Botswana against the practical training obtained from the IHS.

1.6 Partnership between training institutions and health facilities (public, private hospitals) and other health organizations (e.g. NGOs, Medical Aids etc.) will provide opportunity for student internships and make graduates ready for work. Doctors, nurses and other health officers are to be assigned training responsibilities through their job descriptions.

1.7 First aid and emergency lifesaving skills and health and safety competencies are also necessary for support staff working in the health sector.

2. Monitor and evaluate the plans and programmes in Health Training Institutions.

2.1 Conduct research that will contribute towards improving teaching and student learning that in the long run improves the quality of life of the public.
2.2 Conduct tracer studies for graduates. Tracer studies give feedback on the performance of graduates at work. The feedback will among others contribute to improving curriculum relevance, improve teaching and learning methodologies

3. Review of pre-service and in-service training to ensure standardisation of curricula across institutions that enhances the performance of health workers across all cadres.

4. The recruitment process should be reviewed to ensure that the right skills are engaged to the health sector. The use of a recruitment agency should be considered for this in both the public and private sectors. Health professionals trained outside the region should undergo induction/orientation training provided by the relevant regulatory body (Health Professionals Council or Nursing and Midwifery Council of Botswana) as a quality assurance measure. This induction orientation should include language and cultural appreciation. The regulations on training should also be reviewed to ensure a connection between HRDC, BQA, MOH, the Health Professionals Council (BHPC), and Nursing and Midwifery Council of Botswana (NMCB).

5. Promote workplace learning (this includes on-going training, continual professional development) in the following areas:
   5.1 Monitoring and Evaluation training is necessary for different areas e.g. the use of technology.
   5.2 Upgrading of health facilities is an ongoing exercise, there is a need for continuous training in maintenance of facilities.
   5.3 Before the trainees are equipped with technical skills on how to operate the different instruments, it is important that they have basic health skills in order for them to appreciate the workings of the instruments.
   5.4 Training should be provided in supply chain management and health facility management.
   5.5 There is a need for facility managers

6. The use of technology such as telemedicine, mobile technology and Geographic Information Systems should be leveraged for improved delivery of health services where scarce skills are predominant.

7. There is need to create appropriately skilled, highly motivated, client-focused health workforce for Botswana to attain its ambition of ensuring an enabling environment. Collaborate with institutions to offer work ethics training for the health workforce.

8. There is need to train traditional doctors / Health practitioners in primary health care and register them according to their specialties.

9. There is need to empower communities to take responsibility for their own health. – providing them with basic health skills.

10. Support PPPs to augment Government's efforts on health care delivery. This is an innovative way of addressing system capacity constraints and as such human resource will be enhanced through couching, knowledge sharing and transfer.

### 4.7.2 Human Resource Management Issues

This section gives an overview of the key human resource challenges experienced in Botswana's health sector as identified from the situational analysis report. These problems form the basis of the Human Resource Development Plan (HRDP) to address those identified challenges through the various strategies.

#### Shortage of Staff

Shortage of trained and qualified staff remains one of the major bottlenecks towards the availability of quality health care in Botswana. Respondents observed that the high turnover of health professionals is more pronounced among the doctor cadre. Botswana is currently losing a lot of doctors to neighbouring countries such as Namibia[1] citing low wages, unconducive working environment, inflation, costing of living. Validation of this will require additional resources to visit Namibia for verification. It was observed that expatriate doctors from Zambia and Zimbabwe were resigning to go back to their countries because the relative wages were now better as compared to Botswana. Though Government is spending much on training Batswana health workers, the retention rate is low due to the above issues. Low wages in the public sectors has resulted in migration to private, parastatal and non-governmental sectors. Despite the fact that government had developed a retentions strategy that incorporates both the monetary and non-monetary rewards, only the non-monetary rewards (such as recognition for excellent performance) have so far been implemented. The health sector workers suggested a number of measures to improve their pay structure such as delinking the health sector workers from the Department of Public Service Management (DPSM) and linking the pay to the cost of living.

#### Challenges of Working Environment for Health Workers

Evidence suggests that lack of adequate institutional accommodation for health workers is one of the demotivating factors to health workers. Concerns were raised over renting private accommodation at high prices, travelling long distances to rented private accommodation which eats deep into their meagre salaries.

[1] In the past one year alone, it was reported that Botswana lost 50 doctors to Namibia

Quality and Quantity of Health Skills

The health skills training is undertaken by the various Institutes of Health Sciences and University of Botswana (Faculty of Health Sciences and School of Medicine). A new private institution has also received licence to train medical doctors.

Evidence from Situational Analysis indicates that the current training plans are not aligned to the health sector requirements (i.e. is not matching demand and supply). Given the acute staff shortages, it was recommended that IHS institutions need to train more nurses with speciality (e.g. paediatrics, ENT, ophthalmology, intensive care, trauma and orthopaedic, theatre, anaesthetist, etc.) and also to enhance the practice of task shifting and task sharing. In line with this school of thought, the IHS institutions need to specialize in areas of training rather than training on all areas. This will result in the rationalization of the existing human resources engaged in training institutions so as to produce high quality output. In addition, the number of student enrolments in the speciality programmes need to be scaled up to meet the demand.

Inadequate Management Capacity

Management capacity must be developed to overcome basic deficits in existing management and to meet future needs (Botswana Human Resources Strategic Plan Development Overview, 2010). Evidence from Situational Analysis alluded to the fact that promotion to management positions within the health sector is based on length of service (or experience) without taking into account possession of requisite management skills (such as leadership, effective teamwork, collaboration, innovation, delegation, problem-solving, implementation of continuous quality improvement programmes and negotiation and communication). Other specific capabilities to enable health managers to perform effectively in new management functions include: financial management skills, human resources management skills, and information management expertise.

Inadequate Data for Human Resource Planning

Human Resource administration and management at all levels in Botswana's health sector face challenges with up to date management information system that provides accurate data such as leave status, training (completed and needed), promotions, transfer history, and vacancies.

Inequitable Distribution of Health Professionals in Remote Areas

The key human resource challenge is that some of the health facilities are located in very remote areas with very limited infrastructure (such as tarred roads, electricity, banking services, internet connectivity, educational institutions), which makes attraction and

retention of health professionals in remote areas very difficult. The implication of the model of universal health care coverage is that there must be equity in health care provision even in remote and hard to reach areas.

Technology and Non-Functional Medical Equipment

Evidence from Situational Analysis suggests that as much as the government has invested in high-tech equipment, the servicing and maintenance arrangements are poor which lead to a breakdown of most of the equipment.

Challenges with Financing of Health Care Delivery

Though Botswana has one of the most comprehensive and proactive public health care systems in Africa whose stated objective is to provide all its citizens with primary health care at subsidized rates, the issue of long-term sustainability of government funding of health care is of critical importance.

Human Resource Management Recommendations

Policies and strategies within the health sector informed the recommendations. These include:

Government should prioritize the construction of institutional staff houses as part of the overall long-term development of the health infrastructure in Botswana. Adequate budgetary provisions should be made over a period of time.

a. Delink health professionals' salaries from the Department of Public Service Management (DPSM) structure so that health professional's salaries can be reviewed independently of the government scale, which is limiting. Create a new controlling body specifically for health professionals (such as a Health Service Commission).
b. RASA should be regularly reviewed to match the opportunity cost of serving in the remote areas. As a long-term strategy, the development of basic infrastructure in the remote areas should continue to be high in government development agenda. Additional incentives for health workers willing to serve in remote areas should include receiving priority in training and access to soft loans for personal development.
c. The criteria for payment of scarce skills allowances should be reviewed in light of the task shifting and task sharing arrangements geared to overcome acute staff shortages.
d. The transfer policy guidelines should be transparently and uniformly applied to staff without any favouritism to alleviate the prevailing anxiety about transfers and enhance staff motivation.

e. Psycho-social support services should be made available to all health workers (especially those in remote areas) who go through traumatic experiences of the death of patients which in turn affect them.
f. A monitoring system should be developed to track the number of people sponsored for health training abroad; the countries where the training is domiciled; the specializations being undertaken; the duration of the training; and the number that actually return to the country.
g. A comprehensive assessment of the root causes of poor quality of health care delivery be undertaken and appropriate measures are undertaken to improve the quality of health care delivery
h. Alternative public health care financing be explored through review of existing user fees and the introduction of national health insurance.
i. The laws that govern medical practice should be reviewed and synchronized with the scope of practice. For example, the Nursing Act should be amended to allow nurses to administer infusions to patients, which is consistent with the new model of task shifting and task sharing.
j. Introduce policy of flexi working hours which allows skilled health professionals (specialists) working for the public sector to engage in private practice outside their official working hours (e.g. multiple part time jobs in the sector to utilise rare skills across multiple employers). This policy reform will minimize the high turnover of doctors as they will be able to supplement their earnings from private practice.
k. Public Private Partnership should be enhanced to utilize available skills in the private sector to improve the quality of health care delivery.
l. A policy and a law governing traditional medicine practice needs to be developed to regulate such practice.
m. There is need to decentralize training institutions to all areas within the country, i.e. remote areas.

# CHAPTER FIVE: FACTORS AFFECTING THE SUPPLY OF SKILLS

## INTRODUCTION

This chapter discusses the factors influencing the supply of labour in the market. It presents Botswana education system starting from early childhood stage up to tertiary level. It is important to note that at lower levels of a formal education system, specific health subjects are not taught. However, health-related subjects are covered in other related subjects like integrated science at junior secondary schools, biology and chemistry subjects at senior secondary schools. Health related courses and specific health courses are, therefore, offered in health institutions.

## 5.1 POTENTIAL SUPPLY OF LABOUR WITHIN THE SECTOR

In Botswana, education is provided through both formal and non-formal education system. Formal education is provided through a formal classroom set up, i.e. teacher – student set up. Non-formal education is therefore provided through correspondence and in some cases limited classroom set up.

Formal Education System

### 5.1.1 Early Childhood Care And Development

Pre – Primary curriculum framework for Botswana covers the following areas which cuts across different areas: physical fitness and health, language, early mathematics, self and society, science and technology as well as arts. Health related topics at this level cover hygiene issues. Cumulative enrollment for the age between 1 and 6 years during 2012 and 2013 stood at 23 650 and 29 150 respectively for all the pre-primary schools in Botswana (Statistics Botswana, 2013).

### 5.1.2 Primary Education

Primary Education enrolment for the period 2012 and 2013 stood at 335 830 and 340 065 respectively for all the primary schools in Botswana (Statistics Botswana, 2013). The subjects covered include Mathematics, English, Social Studies, Science, Setswana, Agriculture, Religious Education, Special Education and Arts. Additional subjects are therefore provided by private schools like French, Music, and Swimming. Health related topics at this level cover among others hygiene issues, nutrition, oral health and general prevention methods.

### 5.1.3 Junior Secondary Education And Senior Secondary

Curriculum for secondary schools cover the following subjects; Setswana, Mathematics, Additional Mathematics, English, Biology, Physics, Chemistry, Agriculture, Accounting, Home Economics, Fashion and Fabrics, Art, Design and Technology, Technical Drawing, Religious Education, Moral Education, Development Studies and Special Education. Private schools provide additional subjects such as French, Swimming, Economics, Commerce and Music. Secondary Education enrolment for the period 2012 and 2013 stood at 172 669 and 175 509 respectively for all the secondary schools in Botswana (Statistics Botswana, 2013). Health related topics under this level cover among others HIV and AIDS, nutrition, oral health, reproduction, human body anatomy and micro-biology. These are mainly covered under integrated science at junior school level. For

senior schools, the topics are covered under Biology, Physics, Home Economics and Chemistry subjects.

### 5.1.4 Tertiary Education

Figure 6 and 7 provide enrolment in health-related programmes at tertiary education level for the period 2014/15. These figures exclude students studying outside Botswana.

***Figure 6 Health Institutions Enrollment 2014/15***

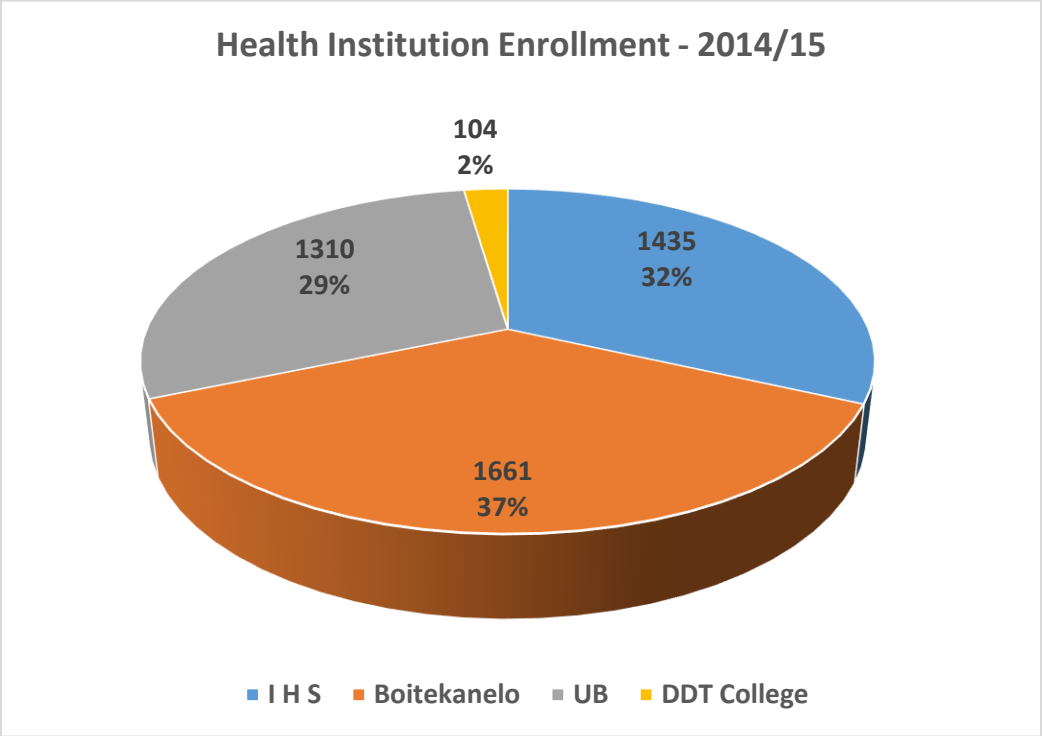
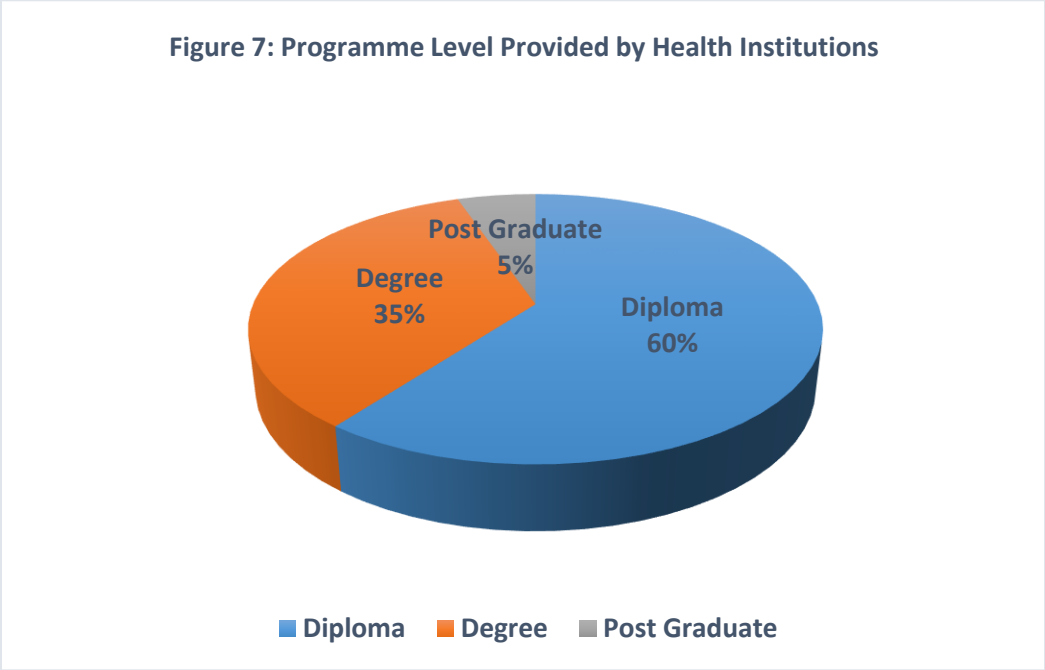


*Figure 7 Programme Level Provided by Health Institutions*




**Source: HRDC (2015), Tertiary Education at a Glance**

The diagrams reveal the following findings:

- During the period 2014/15 about 4, 510 students were enrolled on health-related programmes in Botswana.
- 37% of the students were enrolled at Boitekanelo Training Institute, 32% at Institutes of Health Sciences, 29% at the University of Botswana and 2% enrolled at DDT College of Medicine.
- 2 814 (62%) students enrolled in health-related programmes were females while 1 696 (38%) were males.
- There were 2,720 students (60%) enrolled for health-related diploma programmes, 1,553 students enrolled for degree programmes (35%) and 237 students enrolled for post-graduate programmes (5%).

**Note for Pre-Medical Programme:** The University of Botswana enrolled its first class of 36 medical students in 2009 and all the 36 graduated in 2014. All the graduates joined the one-year medical internship programme and had since been deployed to the various health facilities around the country. Another group of 44 medical students graduated in 2015. Preparations are on-going for the University to start specialist training in surgery, obstetrics and gynaecology.

Non - Formal Education

There are no health-related programmes offered by the Botswana College of Distance and Open Learning (BOCODOL). However, the College offers short courses on Occupational Health and Safety.

*Table 22: Analysis of Programmes Offered in Health Institutions*

| Diploma | Degree | Post-Graduate |
|---|---|---|
| Clinical Technology | Counselling | Anatomic Pathology |
| Emergency Care Technology | Nursing Science – Completion | Emergency Medicine |
| Health Education and Promotion | Nursing Science – Generic | Family Medicine |
| Health Care Management | Psychology | Internal Medicine |
| Occupational and Health Safety | Environmental Health | Paediatrics and Adolescent Health |
| Pharmacy (HND) | Medical Laboratory Sciences | Public Health |
| General Nursing | Radiation and Health Physics | Nursing – Science |
| Dental Therapy | Medicine / Surgery | Counselling and Human Services (Masters) |
| Medical Laboratory Technology | Doctor Assistance | Counselling and Human Services (PhD) |
| Pharmacy Technology | Physiotherapy | |
| Midwifery | Pharmacy | |
| Family Nurse Practitioner | Dental and Hygiene Therapy | |
| Environmental Health | Medical Laboratory Sciences | |
| Health Education | Emergency Medical Care | |
| | Health Promotion and Education | |
| | Health Service Management | |
| | Nutrition and Dietetics | |
| | Occupational Health and Safety | |
| | Pre-Medicine | |

**** A list of programmes offered in Tertiary Institutions is attached in the Appendix.**

Conclusion

After analysing the skills in demand and comparing it with the supply from the Institutions, a list of priority skills was developed.

Priority Areas for Skills Development

This section identifies critical health skills as derived from research, IHSP and EHSP. These have been identified as skills in shortage and are therefore required. Table 23 presents a list of critical skills identified as critical health skills as derived from research, IHSP and EHSP.

*Table 23: List of Critical Health Skills for Botswana*

| Specialisation | Specific Skills Shortage | Priority |
|---|---|---|
| Medicine | Cardiologists, Neurologists, Nephrologist,<br>- Gastroenterologists, Oncologists, Endocrinologists, Dermatology, Intensivists, Pulmonologists, General Physician, Rheumatologists | Long term |
| Surgery | General Surgeons, Cardiothoracic Surgeons, Urologists, Orthopaedic Surgeons, ENT Surgeons Ophthalmologists, Anaesthetics, trauma surgeons, surgical oncologists | Long term<br><br>Mid-term |
| Obstetrics and Gynaecology | Obstetric Oncologist, reproductive endocrinology, maternal-fetal specialists, pelvic reconstructive surgeons, | Mid-term |
| Paediatrics | Paediatric Surgeons, Neonatologists, Paediatric Nephrologist, Paediatric Cardiologist, Paediatric | Mid-term |

| Specialisation | Specific Skills Shortage | Priority |
|---|---|---|
| | Endocrinologist, Paediatric Infectious Disease, Paediatric ICU, Paediatric Oncologist, Adolescent Health, General Paediatrician | |
| Psychiatry | Psychiatrists, Paediatric Psychiatrist, Clinical Psychologists, | Short to Mid-term |
| Pathology | Immunologists, Histologists, Haematologists, Anatomists, Medical Biochemists, Parasitologists, Virologists, Forensic Pathologists, Chemical Pathologists | Long term |
| Radiology | Radiologists, Radiation Oncologist, Radiation Biologists, Radiographers | Short-Mid term |
| Public Health | Family Practitioners, Epidemiologists, Occupational Health Specialists, Community Health Specialists, Environmental Health Specialists | Short-Mid term |
| Pharmacy | Ambulatory care, Critical care, Nuclear pharmacy, Nutrition Support, Oncology, Pediatric, Pharmacotherapy, Psychiatric pharmacy, Pharmaceutics, Pharmacognosy, Pharmacology | Short term |
| Nursing | Nursing Specialists, Nursing Trainers, Community Health Nurses, Hospice and Palliative Care Nurses, Midwives, Family Nurse Practitioners, Rehabilitative nursing | Short term |
| Laboratory Science | Clinical biochemistry, hematology, microbiology, virology, parasitology, immunology, histology, histopathology, etc. | Short term |
| Other Allied Health Professions | Physiotherapists, Occupational therapists, Social Workers (Clinical and non-clinical), Speech Therapists, Audiologists, Opticians, Counsellors (clinical and non-clinical) | Short term |
| Procurement Supply Chain and Logistics | Supply chain management; supply chain distribution staff; material and inventory management etc. | Short term |
| Dentistry | Oral and Maxillofacial Surgeons, Prosthodontists, Paedontists (pediatric dentists), Periodontists, Endodontists, Oral Pathologists, Oral Biologists, Public Health Dentists, Orthodontists | Long term |
| Health Management Information Systems | Medical Records Specialists, Health Communication Specialists, Computer Programmers, Health informatists | Short term |
| Health Administration / Management | Programme Managers, Healthcare Managers [Hospital Superintendents/ Nurse Managers], Health Policy Experts, Hospital Administrators, Human Resource Planners | Short term |
| Economists | Health Economists, Pharmaco – Economists, Development Economists, etc. | |
| Health Risk Management | Actuarist, Health Insurance specialists | Long Term |
| Monitoring and Evaluation | Monitoring and Evaluation specialists, demographers, statisticians, data managers, epidemiologists, etc. | Medium Term |
| Biomedical Engineering and Technology | Mechanical engineers, chemical engineers, electrical engineers, civil engineers, architects, etc. | Medium term |

The above table indicates twenty (20) specialization skills areas that are required within the health sector. Most of the skills are to be acquired through the medium to long term training. For the skills that are urgently required, the sector could explore the possibilities of recruiting expatriates in the short term with a view of training Batswana during the same period. This is expected to benefit the sector as the short term skills shortage challenges will be addressed in the specified skills areas.

In summarizing these critical skills areas needed for the health sector, it is clear that there is a general shortage of medical doctors and accompanying specialists. Over 50 percent of the workforce in this area is currently manned by expatriates and more of these will still be required in the short to medium term to meet this shortfall. Students being trained at the newly created medical schools will require another 5-10 years before their numbers will begin to meaningfully address this shortfall. Dentists will appear to have been produced in sufficient numbers to meet population needs though this cadre still has a shortage of specialists in many sub-specialty areas. The case is also similar for pharmacists and these sub-specialty areas are critical to be addressed in the mid to long-term if the country is to develop a drug manufacturing capacity for self-sufficiency in drug production as currently all drugs used in the health system are procured from outside the country.

The health sector is currently anchored on a base of nurses who are being produced in sufficient numbers. Indeed it is their sufficiency in numbers that is leading to initiatives such as task-shifting and task-sharing to enable them take on more responsibilities occasioned by the significant shortage of doctors and to a lesser degree pharmacists. It should be noted however, that while in absolute numbers nurses may appear to be sufficient, there are definite shortages in the pool of specialist nurses to complement medical doctors in the provision of specialist care in many health specialties. Of special mention in this area will be mental health, pediatric care, oncology and emergency medical care.

The health sector also has a very significant shortage in supply of support staff such as specialist laboratory scientists, biomedical engineers and hospital and public health administrators as well as defined cadres of community health workers and health promoters.

# CHAPTER 6: STRATEGIC PLAN

## Introduction

There are several choices available for Human Resource Development in health. These choices are influenced by the policy choices made by the country to either focus on a predominantly preventive health service delivery due to limitations in availability of resources to fund health services or at the other extreme a focus on curative health services of the highest quality as a means of promoting medical tourism and contributing significantly to the country's foreign exchange earnings. Many countries make choices that sits somewhere between these two extremes.

It is instructive to note that if a choice is made to focus on prevention, then the spectrum of health care workers that will be required to deliver these services effectively will consist of public health specialists, family practitioners, community health extension workers and health promoters, community health nurses and social workers, environment health specialists, specialists in occupational health, field epidemiologists etc. The bulk of the investment here will be on large numbers of readily trained and low cost community based health workers and the type of services provided will largely be centered around primary health care. This type of services ensures that every single person within the country has access to the same quality of equitable health services that helps minimize the need for advanced curative care. More serious cases will tend have to be referred to specialist care centers either within or outside the country.

If the policy choice made by the country is to provide curative health services as a means of diversifying the economy to become a service based economy and to promote the country as a hub for medical tourism, then the spectrum of health workforce required will drastically change to an emphasis on the recruitment of clinical specialists in the selected specialty areas of interest as well as the accompanying specialist dentists, nurses, pharmacists, laboratory scientists and diagnosticians, biomedical engineering specialists and technicians, communications and marketing experts, Information technology experts etc. With this policy choice, it is certain that these services are not targeted to the entire populace but to the upper echelons of society and those seeking quality care from outside the country. Government's investments in this area will be to promote greater private sector participation and well as create financial safety nets for the rest of the population to enable acceptable access by the majority of the population to these services. Such financial safety nets could include the strengthening of existing health insurance co-payment risk pooling schemes (medical aids), or the introduction of community health insurance schemes. Government may also invest in establishing special health funds to cater for the extremely indigent. With this policy choice government, corporations and individuals will save significant amounts of resources currently associated with seeking specialist medical care in South Africa, India, the middle-east, Europe and the United States.

Irrespective of the policy choice made whether preventive, curative or a mixture thereof, the health sector will always need a pool of good monitoring and evaluation specialists, health planners and administrators, health economists and policy makers, good information technology and communications specialists, appropriate educators and trainers for the training institutions, trained legal persons in health to support health

regulatory institutions, and specialist architects and engineers to design, build and maintain appropriate health facilities to meet the needs and demands of the selected policy choice.

## Human Resource Development Plan

With the aforementioned in mind, this Human Resource Development Plan for the Health Sector is as structured according to four broad objectives/ strategic objectives, each with a specific objective and a number of activities to address five (5) broad objectives as follows:

1. Improve Human Resource Management Planning
2. Improve Curriculum Relevance to the Needs of the Health Labour Market
3. Develop Work Plan for Health Professionals (Work – Place Learning)
4. Develop Career Guidance
5. Create partnership of Tertiary Institutions and Employers in the Health Sector

*Table 24: Human Resource Development Plan for the Health Sector*

| No | Objectives | Activities | Outcomes | Means of Verification | Parties (*lead) |
|---|---|---|---|---|---|
| | **Broad Objective 1: Improve Human Resource Management Planning** | | | | |
| 1.1 | Conduct Skills Audit | • Identify existing skills capacity<br>• Identify skills gaps in demand<br>• Design strategies to address the skills needed | Improved HR capacity<br><br>Strengthened HR Planning | A skills audit report containing;<br>• existing capacities in HR planning at all levels<br>• identified gaps<br>• Proof of implementation of recommendations | MoH, DPSM, *HRDC, Private Sector, Training Institutions |
| 1.2 | Develop an efficient integrated Information Management System | • Collect and analyse information on service needs in the health sector (public and private)<br>• Develop additional demand side indicators<br>• Design online HR information system and provide training to relevant field staff<br>• Disseminate information to all policy development | Strengthened Human Resources Information System | • Evidence-based Health Workforce plan | MoH, DPSM, HRDC, Professional bodies, *Statistics Botswana |

| No | Objectives | Activities | Outcomes | Means of Verification | Parties (*lead) |
|---|---|---|---|---|---|
| | | platforms for informed decision making.<br>• Create an interface between IPMS and INFINIUM HR data information management systems<br>• Create linkages between MoH HR information systems and systems of private sector | | • Up-to-date reports based on the two systems | |
| 1.3 | Train Health HR Officials on HR Planning | • Develop capacity and establish/institutionalize planning mechanisms<br>• Develop Health Workforce Plan that will determine the HR requirements | Improved HR development planning that will promote evidence based decision making | Training reports | |
| | **Broad Objective 2: Improve Curriculum Relevance to the Needs of the Health Labour Market** | | | | |
| 2.1 | Align production of health professional (training) to the health labour market | • Establish joint planning structure between health & education stakeholders<br>• Collect and analyse data on current production of skills (graduates of health training institutions)<br>• Collect and analyse data on current market skills needs both in public and private sector<br>• Produce the right skills number of health professionals | Improved HR with required skills | Up-to-date reports produced by the joint structure (Education & Health)<br><br>Reports on the graduates employed | MoH, DPSM, HRDC (BQA), *MOESD, health training institutions, health professional's councils, HRDC |

| No | Objectives | Activities | Outcomes | Means of Verification | Parties (*lead) |
|---|---|---|---|---|---|
| | **Broad Objective 3: Develop Work Plan for Health Professionals (Work – Place Learning)** | | | | |
| 3.1 | Conduct training needs assessments for employees in the health sector | • Identify mechanisms for in-service training and mentoring including continuing professional development of trained health workers to assure maximum service delivery and performance<br>• Train and orientate Non-Health support staff<br>• Use BQA accredited programmes for training | The right quality of health professionals produced | Reports | *MoH, Health Professional Bodies, NGO's, HRDC, Private Sector, BQA |
| | **Broad Objective 4: Develop Career Guidance** | | | | |
| 4.1 | Develop and Implement Career Guidance Strategies and Plans | • Collect and review information (disaggregated) on job preference and job seeking behaviour<br>• Review labour market information including wage surveys in the region for both public and private establishments in health and non-health sectors<br>• Revise and update the attraction and retention study for the health workforce (incorporate the regional labour market information). | Career Guidance Strategies and Plans produced | An up-to-date report on career guidance developed and shared with all career guidance providers. | MoH, *DPSM, MoESD, BQA, HRDC, Professional Bodies, Training Institutions, Statistics Botswana, Private Sector |
| | **Broad Objective 5: Create partnership of Tertiary Institutions and Employers in the Health Sector** | | | | |

| No | Objectives | Activities | Outcomes | Means of Verification | Parties (*lead) |
|---|---|---|---|---|---|
| 5.1 | Develop policy framework for stakeholder partnership between employers, Institutions, government agencies and community groups to respond to sector and local training needs | *Develop policy implementation framework for education institutions to promote stakeholder partnerships<br>*Develop guidelines and training interventions to support the development and management of partnerships developed and measured<br>*the number, type and outputs of partnerships by education Institutions evaluated and recorded | Policy framework developed<br><br>*Guidelines and training interventions frameworks in place | Implementation reports | *HRDC, Training Institutions, Employer bodies, Labour Unions, Community Groups, Government Agencies, Development Partners, NGO's, Training Institutions, Private Sector |
| 5.2 | Establish relationships between stakeholders | *Hold workshops to inform stakeholders of different partnership modalities and develop successful partnerships in all districts | Up to date Memorandum of Understanding entered into between stakeholders | Progress reports | |
| 5.3 | Disseminate relevant information to all stakeholders | *Communicate to all stakeholders on all HRDC information and sector committee's activities & Health HRD Plan | Informed stakeholders | Implementation reports | |

## Human Resource Management Plan

This Human Resource Management Plan was informed by key informant interviews and focus group discussions of key health personnel from both the public and private health sectors. The Human Resource Management Plan for the Health Sector is presented in detail in the Annex.

This management plan is structured into thirteen (13) broad strategic objectives as summarized below:

1. Improve Staff Retention
2. Improve Service Delivery in Remote Areas
3. Identification of New Areas for Task Shifting & Sharing
4. Improve Management of Recruitment (Effectiveness & Timeliness
5. Optimize Deployment Processes for Best Health Outcomes
6. Defining Clear Roles and Responsibilities for Health Workers
7. Setting Performance based Standards for Health Care Managers
8. Ensure Effective Reward and Sanction System in Place
9. Improve Work Ethic

10. Create an Enabling Work Environment for all Health Workers
11. Promote Team Work Among Health Workers
12. Adequacy of Human Resource Policies and Legislation
13. Institute Effective Coordination Mechanisms for Improved Service Delivery

1. Improve Staff Retention

Seven sub-objectives are outlined in the plan as to how staff retention in the health sector can be improved. First on the list is that there needs to be a review of the current Remote Area Service Allowance (RASA). The actual base amount of this allowance was found to be out of touch with the real cost of living in Botswana today, as such RASA must be reviewed frequently to take account of ongoing inflationary changes in the economy. In addition to the allowance there is need for broader benefits to be allotted to personnel posted in rural areas that extend beyond direct financial incentives. This could include educational and school benefits and advancement for not only the staff but to legal dependents to ensure that they have long term sustained compensation for living in under developed locations.

A deeper understanding is needed of what drives labour both away and towards the health sector. This is to be done through periodic audits of push and pull factors with disaggregated details against variables like sex, cadre, income status and location. Other retention activities include a review of placement policy and guidelines, a review of the retention scheme, adequate induction and monitoring of new staff, development of resource mobilization strategies ad intergovernmental planning processes to support staff placed in remote areas.

2. Improve Service Delivery in Remote Areas

Service delivery in remote areas should be improved through Public, Private Partnerships that have a well-equipped civil society. This concept will explore the outsourcing of facility management to non-state actors who are capacitated in a private sector approach to deliver services with an efficient business-like approach as opposed to a public sector approach. This will require the development to contracts for out-sourcing by the health ministry to hold the service delivery agent accountable to government. The use of mobile technology, improved diagnostics, Global Positioning Systems, improved HRMIS and health and logistics information systems, telemedicine technology could be added tools to improve service delivery in remote areas.

3. Identification of new areas for Task Shifting and Sharing

A review and conduct analysis of scarce skills and key shortages must be undertaken. This will include a workload and job analysis for all health professional jobs and appropriate mechanisms for the compensation of tasks shifted and shared.

4. Improve Management of Recruitment

An assessment of the present recruitment processes and systems must be undertaken to identify bottlenecks that are inherent in the recruitment process and be removed. This

will result in a strengthened contracting system upon which the human resource needs as identified in this plan can be fulfilled.

5. Optimise Deployment Processes for Best Health Outcomes

To enhance the functionality of expatriate health personnel, a comprehensive induction programme that gives specific recognition to Botswana culture and language should be strengthened. In addition, to enhance rotation of staff between rural and urban areas the implementation of existing policy of transfers should be strictly adhered to. The transparency in the implementation of these transfer guidelines need to be enhanced so that some health workers cease to have the opinion that others have preferential treatment in terms of placement.

6. Defining Clear Roles and Responsibilities for Health Workers

Refresher training in Performance Management Systems (PMS) need to be regularly provided to staff. This will help them to relate their set performance targets to outputs which can then be appropriately linked to incentives. This will enhance the staff motivation to perform and deliver on their mandates.

7. Setting Performance based Standards for Health Care Managers

There is a need to periodically review the performance agreements for health managers so as to reflect the set performance targets. The in-service leadership programmes for health managers should also be periodically reviewed so as to incorporate any emerging issues.

8. Ensure Effective Reward and Sanction System in Place

There is a need for periodic review of the labour laws to ensure appropriate linkage between the rewards and sanction system. The review should provide an opportunity for health workers to provide effective feedback on the fairness of the systems.

9. Improve Work Ethic

The good work ethic training should be introduced at all levels of society right from primary, secondary and tertiary education institutions. Appropriate good work ethics training should also be offered to all health workers at the point of recruitment and subsequent refresher trainings.

10. Create an Enabling Work Environment for all Health Workers

An enabling work environment for a health worker includes proper and functional equipment, adequate budgetary provisions for all logistical operations, and an efficient / simplified procurement systems. Appropriate policy measures should be put in place to address all these work environment issues.

11. Promote Team Work among Health Workers

Team building is a critical ingredient in enhancing the performance of health workers. To this end appropriate team building training and resources should be devoted to achieve this goal (including conflict resolution).

12. Adequacy of Human Resource Policies and Legislation

The human resource policies for the health sector need to be regularly reviewed to address any emerging issues. Adequate resources need to be mobilized to support the review process and the implementation of the revised policies.

13. Institute Effective Coordination Mechanisms for Improved Service Delivery

The implementation of the well-conceived idea of decentralization of health service delivery to the districts needs to be fast tracked

## CONCLUSIONS

- Without appropriately trained and motivated workforce, good quality services cannot be offered
- For the health sector, non-health trained workers are also essential for the delivery and management of health services
- Vision for sector and policy prescriptions determine what skills are critical
- Specialists should be trained in teams of occupational cadres
- Good data management systems are essential for effective human resource development planning

## REFERENCES

*HRD Fund database, HRDC.*
(2015). *Statistics Botswana, Labour Statistics Report 2011.*
(*World Health Statistics Part II Global Health Indicators .*
(2010). *Integrated Health Plan: A Strategy for Changing the Health Sector for Healthy Botswana 2010-2012.*
(March,2015). *A Framework for a Long Term Vision for Botswana – Vision 2036.*
(May, 2016). *AFA, Medical Practitioners in the Private Sector.*
*BHRSP, 2008-2016.*
(2010). *Botswana Human Resources Strategic Plan Development Overview .*
(1999). *Botswana National Drug Policy.*
*Botswana National Strategic Framework II for HIV and AIDS (2010 - 2016).*
(2014). *Botswana Statistics Report for the 2011 .*
(2015). *2008 BISIC Revision 4.*
*Education and Training Sector Strategic Plan (ETSSP).*
(2009). *Health Statistics Report .*
Health, M. o. (2009 - 2022). *The National Human Resource Development Strategy (NHRDS).*
(2010). *IHSP.*
*ISHP, 2010-2020.*
(September 2015). *Key Policy Paper for NDP 11, MFDP.*
*Ministry of Education and Skills Development's (MoESD) Strategic Plan.*
(2010). *Ministry of Health , Integrated Health Plan: A Strategy for Changing the Health Sector for Healthy Botswana 2010-2012.*
*MoH Staffing Data.*
*National Development Plan 11 (NDP).*
(2013). *National Heath Quality Standards and Guidelines .*
(n.d.). *National Human Resource Development Strategy (NHRDS, 2009 - 2022.*
(1997). *National Population Policy .*
(June,2009). *PPP Policy and Implementation Framework, MFDP.*
(2014). *SHOPS Project.*
(2012). *Ministry of Health , Master Health Facility List .*
(2015). *Statistics Botswana, 2008 BISIC Revision 4.*
(2015). *Statistics Botswana, Labour Statistics Report 2011 Population and Housing Census.*
(2011). *The National Health Policy .*
(2002). *The Public Health Act (Chapter 63:01) .*
(2012). *The recruitment and retention guidelines; transfer guidelines; and disciplinary procedures (MoH).*
(2007). *UNDP .*

**ANNEXTURE**

MODELLING APPROACH

Quantitative secondary data was used for projections of demand and supply of skills for the health sector over the next five years. For the demand of skills analysis, secondary data was collected from the Ministry of Health (which provided the staffing levels for the different cadres in the health sector for the years 2007; 2008; 2009; 2013 and 2015) and Statistics Botswana publications. These institutional[12] data sources captured different types of information which included number of staff by skill and citizenship; staff attrition (resignation, death); staffing gaps; and staff salaries which constituted the demand side. Since the data sets had not been uniformly collected over the years, the data had to be coded for comparability. District Health Management Teams (DHMTs) also provided data on current staffing level, staff vacancies and anticipated need (demand) for various cadres over the next five (5) years.

For the supply of skills analysis, secondary data was collected from HRDC data bases which captured the following information from the local[13] heath training institutions: number of student enrolment by skill; number of graduates by skill; student dropout rates; current staffing levels by skill; staffing gaps by skill; and staff salaries by skill. Despite the recognition that training of health professionals is also done abroad, it was not possible to get any information from the Department of Tertiary Education Fund (DTEF) (on the number of health professionals trained abroad by skill, the number who returned after training, the cost of training, the planned future training) on account of the fact that the system was locked for auditing purposes.

Model for Skills Demand

Model Inputs and Outputs:

Let

$X_{ij}$ denote the current number of cadre $j$ staff at facility $i$

$Y_{ij}(t)$ denote the required number of cadre $j$ staff at facility $i$ after $t$-years

$R_{ij}(t)$ denote the net number of cadre $j$ staff that have facility $i$ after $t$-years due to deaths, retirements, transfers, etc. This number could be adjusted for any new staff hired to replace those that left. In that case, it denotes the net decline in cadre $j$ staff at facility $i$ in $t$-years .

$t_j$ denote expected time to train a cadre $j$ staff

$$D_{ij}(t) = Y_{ij}(t) - X_{ij} + R_{ij}(t) \qquad \text{Eq1}$$

[12] The institutional data sets lacked uniformity in that they did not capture the same type of information over the years. However, these were the only available data sets and so we had to make every effort to make the most use of them

[13] The local training institutions include the Institutes of Health (both public and private) and University of Botswana (Faculty of Health Sciences and School of Medicine).

$D_{ij}(t)$ is the additional number of cadre $j$ staff needed at facility $i$ after $t$-years given that there are currently $X_{ij}$ deployed.

The value of $R_{ij}(t)$ can be projected from institutional data based on total staff who have quit over the last 5 years. Alternatively, let $\delta_{ij}$ denotes the expected attrition rate per year of cadre $j$ staff at facility $i$, i.e. the number who leave as a proportion of the existing number. Then if $\delta_{ij}$ is known or can be reliably estimated:

$$R_{ij}(t) = \delta_{ij} t \qquad \text{Eq2}$$

The number of cadre $j$ staff required at facility $i$ after $t$ years can be expressed as

$$Y_{ij}(t) = \rho_{ij} N_i(t) \qquad \text{Eq3}$$

Where $N_i(t)$ is the total population to be served at facility $i$ after $t$ years and $\rho_{ij}$ is the proportion of the population to be served at facility $i$ by 1-cadre $j$ staff. Thus if 1-cadre $j$ staff can serve a population of 10,000 in a year at the facility, then $\rho_{ij} = 0.0001$. This rate may be constant within districts or even nationally depending on official policy and assumptions regarding the prevailing morbidity and mortality rates. $N_i(t)$ could be obtained from the most recent population projections by Statistics Botswana.

An appropriate value for $\rho_{ij}$ depends on assumptions to be made. Two scenarios are presented below:

Assume that the current ratio of population to medic at facility will be maintained in the future –i.e. if there are currently 10,000 persons to medic at the facility today, then we want to keep this ratio in $t$ years. Then

$$\rho_{ij} = \frac{X_{ij}}{N_i(0)} \qquad \text{Eq4}$$

Where $N_i(0)$ is the current population being served at the facility.

Assume that the population to medic ratio shall change, due perhaps to need for better service delivery, expected increase in the number of facilities, expected changes in morbidity and mortality patterns etc. then $\rho_{ij}$ could be based on a combination of expert opinion and national policy informed by results from analysing morbidity and mortality data at the facility.

Forecasting Demand $D_{ij}(t)$

The demand $D_{ij}(t)$, for cadre $j$ staff at facility $i$ after $t$ years is thus given by

$$D_{ij}(t) = Y_{ij}(t) - X_{ij} + R_{ij}(t) \qquad \text{Eq5}$$

$$Y_{ij}(t) = \rho_{ij} N_i(t) \qquad \text{Eq6}$$

$$R_{ij}(t) = \delta_{ij} t \qquad \text{Eq7}$$

If we wish to maintain the status quo, then

$$\rho_{ij} = \frac{X_{ij}}{N_i(0)}$$ Eq8

or it could be replaced by a value based on expert opinion, public policy and evidence from analysis of morbidity and mortality data.

Model for Forecasting Training Needs (Supply)

Suppose that all those who complete training will take up the jobs for which they are trained for including those trained abroad. Then the additional number of cadre $j$ staff needed at facility $i$ after $t$-years that is required to meet demand given that there are currently $X_{ij}$ such cadre, is equal to the demand given above. That is

$$S_{ij}(t) = D_{ij}(t) = Y_{ij}(t) - X_{ij} + R_{ij}(t)$$ EQ9

Where $S_{ij}(t)$ = Labour supply

In reality, training of a staff will usually take several years, with duration depending on type of cadre, training institution, and entry qualification among others. Thus if the expected duration to train a cadre $j$ staff is $t_j$ then from year 1 to year $t_j$, no such staff would be supplied from the cadre that starts training in the base year. Hence any shortages can only be met through recruitment

Thus in specifying a model to meet demand, we need to incorporate information on those currently undergoing training, and in particular, the numbers expected to complete training in years 1, 2,…., $t_j - 1$.

Let $Z_{ij}(t)$ denote the total number of cadre $j$ staff that are expected to have been trained and available for deployment at facility $i$ after $t$ years, $E_{ij}(t)$ be the number enrolling in year $t$ and $G_{ij}(t)$ denote the expected number to graduate and be available for deployment at facility $i$ in the $t^{th}$ year, then

$$Z_{ij}(t) = Z_{ij}(t-1) + G_{ij}(t)$$ EQ10

The base values, $Z_{ij}(0)$ denotes the number who graduating in the base year, $G_{ij}(1)$ denotes the number in their final year of program who are expected to graduate at the end of the base year. Since each cadre $j$ staff is expected to take $t_j$ years to graduate from the date of enrolment, then those graduating in year $t$ correspond to the cohort that enrolled in year $t - t_i$, thus

$G_{ij}(t)$ can be obtained from enrolment data via the formula:

$$G_{ij}(t) = \lambda_{ij} E_{ij}(t - t_i)$$ EQ11

Where $\lambda_{ij}$ is the proportion of those who enrolled in year $t - t_i$ that is expected to complete after the expected $t_i$ years. These data should be available from annual education statistics.

Clearly, such figures of enrolment and graduation are not related to the facility. So further assumptions shall be required to determine how many graduates are being deployed to which facilities historically and this information used to disaggregate the data to district and facility level. A likely scenario is that facilities with high number of shortages will receive proportionately more new graduates than those with fewer shortages. Thus the supply model shall be used primarily to forecast national supply, and different assumptions shall be required to determine how the supply is disaggregated to districts and facilities.

*Model 1: Assuming Current Population Growth and HR Human Resources Trends*

Table 26 shows the distribution of the total staff by cadre type from 2007 to 2015. The number of doctors including specialists grew steadily from 2007 till 2009 and then appears to have stagnated between 2010 and 2013, and then had a big jump by 2015 to 901 doctors. The number of doctors in administrative positions followed a similar pattern but with a high drop between 2009 and 2013 (from 74 in 2009 to 19 in 2013). Almost no public health specialists were reported in the 2008 to 2009 data sets – reflecting some of the problems encountered when attempting to harmonize the different data sets. Overall, the number of administrative nurses, doctors, general nurses and public health specialists increased steadily over the time period from 2007 to 2015, while the number of technologists followed a strong decreasing trend. The numbers for the other cadres did not follow any persistent increasing or decreasing trend (from 600 in 2007 to 145 in 2015).

Regression analysis was used to determine the annual rate of increase/decrease for each cadre. The results are shown in Table 27. If a negative growth rate is derived from the regression analysis, the project number of staff will continue to decline over a period of time and may even reach the zero level. For example, the technologists/scientists have a negative growth rate of 63.3 the numbers drop to 82 in 2016, 19 in 2017 and zero in subsequent years. This does not mean that the technologists are not required, but it is a reflection of the high negative growth rate that emerged from the staffing data. It also showed that if current trends persist, then on average the number of doctors will grow at about 28 per year, public health specialists by 4, general nurses by 188 and administrative nurses will increase by 47 per year. By contrast, the number of technologist will be decreasing over the time period by an average of 63 per year. There is no predictable pattern that the other cadres will follow since their regression coefficients are not statistically significantly different from zero (p-value > 0.1).

*Table 25: Total staff at Post by year and cadre*

| | TOTAL STAFF AT POST (HR (DATA) | | | | | |
|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2013 | 2015 | Establishment |
| **Doctors** | 599 | 665 | 693 | 692 | 901 | 1427 |
| **Administrative Doctors** | 27 | 61 | 74 | 19 | 33 | 116 |
| **Dentists** | 32 | 18 | 55 | 23 | 76 | 48 |
| **Pharmacy** | 96 | 133 | 107 | 74 | 144 | 85 |
| **Public Health** | 1 | 0 | 0 | 26 | 25 | 24 |
| **General Nurse** | 5696 | 5463 | 5710 | 6988 | 6777 | 6834 |
| **Specialist Nurses** | 47 | 81 | 86 | 0 | 0 | 2676 |
| **Administrative Nurses** | 18 | 72 | 20 | 278 | 382 | 260 |
| **Technicians** | 780 | 755 | 890 | 1067 | 914 | 3100 |
| **Technologists/Scientists** | 600 | 506 | 573 | 155 | 145 | 366 |
| **Environmental Health** | 19 | 28 | 32 | 0 | 324 | 2934 |
| **Medical Assistants** | 79 | 39 | 87 | 5 | 6 | 0 |
| **TOTAL** | 7994 | 7821 | 8327 | 9327 | 9727 | 17870 |

Source: Ministry of Health Statistical Database (various years)

As previously explained the post of medical assistant existed in the actual staffing levels for the previous years and has been declining especially from 2013 and this cadre is not in the new establishment, hence accounting for the zero in the new establishment column.

*Table 26: Annual rate of increase/decrease of each cadre from 2007 to 2015 based on regression analysis*

| Cadre main Cadre | Annual change | t-ratio | P-value |
|---|---|---|---|
| **Doctors*** | 28.4 | 2.93 | 0.061 |
| **Administrative Doctor** | -3.0 | -0.84 | 0.465 |
| **Dentists** | 3.8 | 1.11 | 0.346 |
| **Pharmacy** | 1.3 | 0.27 | 0.806 |
| **Public Health*** | 3.8 | 5.02 | 0.015 |
| **General Nurse*** | 188.0 | 4.1 | 0.026 |
| **Specialist Nurse** | -10.1 | -2.53 | 0.085 |
| **Administrative Nurse*** | 47.0 | 7.04 | 0.006 |
| **Technicians** | 26.9 | 1.92 | 0.151 |
| **Technologists*** | -63.3 | -5.75 | 0.01 |
| **Environmental Health** | 27.8 | 1.7 | 0.188 |
| **Medical Assistant** | -9.4 | -2.57 | 0.083 |

Source: Ministry of Health Statistical Database (various years)

Table 27 gives the results of the regression analysis for each of the cadres for the period 2007 to 2015. From these regression results the annual changes in the number of staff for each cadre was generated. For some cadres the annual change in the staffing levels is positive which is indicative of a positive trend. For such cadres the projected staffing levels based on the positive growth rates will be increasing. Whereas for some cadres the annual growth rates based on the regression results is negative implying that the projected numbers for those will keep falling over a period of time. For example, under the post of doctor the estimated annual growth rate is 28.4 doctors per annum. Hence in Table 28 the number of doctors increased from 901 in 2015 to 929 in 2016. For the rest

of the years the number of doctors keep increasing at this constant rate of 28.4. Similarly, the estimated annual change in the technologists is minus 63.3 which explains the fall in the numbers from 145 in 2015 to 82 in 2016. Following this negative annual change the projected number of technologists becomes negative in 2018 to 2020, hence reflected here by zeros. This should not be interpreted to mean that technologists are not needed but rather that there was a significant negative trend from 2007 to 2015. The negative trend may be accounted for by factors such as high turnover of staff among the technologists over the period 2007 to 2015. The projected number of staff for each cadre in table 28 should be interpreted similarly.

*Table 27: Projected health HR professionals in next 5 years assuming current trends persist*

| | | | **Projected Number at post based on annual growth rate from 2007 to 2017** | | | | |
|---|---|---|---|---|---|---|---|
| Cadre | At Post in 2015 | Estimated Annual Change | 2016 | 2017 | 2018 | 2019 | 2020 |
| **Doctors** | 901 | **28.4** | **929** | **957** | **985** | **1013** | **1041** |
| **Administrative Doctors** | 33 | -3.0 | 30 | 27 | 24 | 21 | 18 |
| **Dentists** | 76 | 3.8 | 80 | 84 | 88 | 92 | 96 |
| **Public Health** | 25 | 1.3 | 26 | 27 | 28 | 29 | 30 |
| **Pharmacy** | 144 | **3.8** | **148** | **152** | **156** | **160** | **164** |
| **General Nurse** | 6777 | **188.0** | **6965** | **7153** | **7341** | **7529** | **7717** |
| **Specialist Nurses** | 0 | -10.1 | 0 | 0 | 0 | 0 | 0 |
| **Administrative nurses** | 3 | **47.0** | **429** | **476** | **523** | **570** | **617** |
| **Technicians** | 914 | 26.9 | 941 | 968 | 995 | 1022 | 1049 |
| **Technologists/ Scientists** | 145 | **-63.3** | 82 | 19 | 0 | 0 | 0 |
| **Environmental Health** | 324 | 27.8 | 352 | 380 | 408 | 436 | 464 |
| **Medical Assistants** | 6 | -9.4 | 0 | 0 | 0 | 0 | 0 |
| Total | **9727** | | **11998** | **12260** | **12566** | **12891** | **13216** |

Source: Ministry of Health Statistical Database (various years)

The inconsistencies in the data reporting limit the reliability of some of the projections such as those for public health specialists and specialist nurses. Furthermore, we are unable to project the possible numbers of several cadres with any accuracy, since the projected values have very high variability and as such are not significantly different from 0 – statistically at 5% level. The statistical insignificance can be inferred from the p values presented in Table 28 such that where the p value is greater than 0.05 it is statistically insignificant at the 5% level.

*Model 2: Assuming That Net Attritions Shall Continue at Current Rate*

In this model framework, we use the 2013/2014 data that include the year of employment of each staff who is still working in 2013/2014 to estimate annual attrition rates.

Table 29 shows the 2013/14 numbers disaggregated by year in establishment. Thus, of the 692 doctors, 173 were employed by 2009 and 348 were employed by 2010, meaning that 348-173 = 175 joined in 2010. Of the 19 administrative doctors, 17 were employed by 2009, one joined in 2011 and one more in 2013. Thus the attrition rate for this cadre is negligible. Similarly, the dentists at post almost doubled between 2009 and 2010, and have remained the same people since 2012. That is none of the current dentists was employed after 2012, and if any dentist has left, then they were employed after 2012. Based on this employment history data, the number of pharmacists increased steadily between 2009 and 2014.

*Table 28: Staff at post in June 2014 by main cadre year joined - Cumulative*

| Cadre | Total number who have remained since | | | | | | Total 2013/14 |
|---|---|---|---|---|---|---|---|
| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | |
| **Doctors** | 173 | 348 | 498 | 610 | 664 | 692 | 692 |
| **Administrative Doctors** | 17 | 17 | 18 | 18 | 19 | 19 | 19 |
| **Dentists** | 11 | 19 | 20 | 23 | 23 | 23 | 23 |
| **Pharmacy** | 43 | 56 | 62 | 65 | 70 | 74 | 74 |
| **Public Health** | 15 | 19 | 19 | 22 | 25 | 26 | 26 |
| **General Nurse** | 2718 | 4964 | 6072 | 6496 | 6922 | 6988 | 6988 |
| **Administrative Nurses** | 179 | 229 | 249 | 259 | 271 | 278 | 278 |
| **Technicians** | 472 | 720 | 872 | 941 | 1046 | 1067 | 1067 |
| **Technologists/Scientists** | 89 | 119 | 135 | 140 | 153 | 155 | 155 |
| **Environmental Health** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Medical Assistants** | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| **TOTAL** | **3722** | **6496** | **7950** | **8579** | **9198** | **9327** | **9327** |

Source: Ministry of Health Statistical Database (various years)

*Table 29: Cumulative Percent of current staff by number of years in employment*

| | Number of years | | | | |
|---|---|---|---|---|---|
| **Cadre** | 5 | 4 | 3 | 2 | 1 |
| **Doctors** | 25.0 | 50.3 | 72.0 | 88.2 | 96.0 |
| **Administrative Doctors** | 89.5 | 89.5 | 94.7 | 94.7 | 100.0 |
| **Dentists** | 47.8 | 82.6 | 87.0 | 100.0 | 100.0 |
| **Public Health** | 57.7 | 73.1 | 73.1 | 84.6 | 96.2 |
| **Pharmacy** | 58.1 | 75.7 | 83.8 | 87.8 | 94.6 |
| **General Nurse** | 38.9 | 71.0 | 86.9 | 93.0 | 99.1 |
| **Specialist Nurses** | | | | | |
| **Administrative nurses** | 64.4 | 82.4 | 89.6 | 93.2 | 97.5 |
| **Technicians** | 44.2 | 67.5 | 81.7 | 88.2 | 98.0 |
| **Technologists/Scientists** | 57.4 | 76.8 | 87.1 | 90.3 | 98.7 |
| **Environmental Health** | | | | | |

| | Number of years | | | | |
|---|---|---|---|---|---|
| **Medical Assistants** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Total** | **39.9** | **69.6** | **85.2** | **92.0** | **98.6** |

Source: Ministry of Health Statistical Database (various years)

The results in Table 30 show that 25% of doctors listed in 2013/14 were already in employment 5 years ago, and 96.0% were in employment a year ago. The differences can be interpreted as the gap that needs to be filled by new staff after the given number of years. Thus if same trends continue, then 75% of doctors would have left after 5years, and would therefore need to be replaced by new doctors, just to maintain the current establishment.

For all cadres, a plot of the cumulative number of staff in 2013/14 against number of years that they have been in service was mainly linear; hence the regression used to estimate the annual attritions had R-squared statistics of 90% or more.

*Table 30: Required numbers to replace departing staff per year*

| | New Establishment | At Post 2014 | Average Annual additions 2007-2014 | t-ratio | P-Value |
|---|---|---|---|---|---|
| **Doctors** | 1427 | 692 | 91.6 | 13.2 | .000 |
| **Administrative Doctors** | 116 | 19 | 0.5 | 5.4 | .006 |
| **Dentists** | 48 | 23 | 1.9 | 5.4 | .006 |
| **Public Health** | 24 | 26 | 2.3 | 7.6 | .002 |
| **Pharmacy** | 85 | 74 | 5.1 | 24.8 | .000 |
| **Nurses** | 9510 | 6988 | 767.2 | 9.6 | .001 |
| **Administrative nurses** | 260 | 278 | 18.8 | 15.7 | .000 |
| **Technicians** | 3100 | 1067 | 107.4 | 14.6 | .000 |
| **Technologists/Scientist** | 366 | 155 | 12.4 | 16.0 | .000 |
| **Environmental Health** | 2934 | 0 | 0 | | |
| **Medical Assistants** | 0 | 5 | 0 | | |
| **Total** | **17870** | **9327** | **1007** | | |

Source: Ministry of Health Statistical Database (various years)

As shown in Table 31, we compare current staff at post with the total that were at post a year ago, then the difference is found to be 91.6 for on average for doctors, 0.5 for administrative doctors, almost 2 for dentists, 767 for nurses, and essentially 0 for environmental health specialists and medical assistants. Using these to make 1 step a-head projects as to what how many of the current staff shall remain in employment a year from now, two years from now, etc. we get the data in table project what would happen to the current number a year, 2years, etc. from now.

*Table 31: Required new staff to meet establishment under model 2*

| Cadre | New Establishment | At Post 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| **Doctors** | 1427 | 901 | 646 | 765 | 885 | 1005 | 1126 |
| **Administrative Doctors** | 116 | 33 | 86 | 89 | 92 | 95 | 98 |
| **Dentists** | 48 | 76 | 0 | 0 | 0 | 0 | 0 |
| **Public Health** | 24 | 25 | 2 | 5 | 8 | 11 | 14 |
| **Pharmacy** | 85 | 144 | 0 | 0 | 0 | 0 | 0 |
| **Nurses** | 9510 | 6777 | 954 | 1854 | 2756 | 3661 | 4569 |
| **Administrative nurses** | 260 | 382 | 0 | 0 | 0 | 0 | 0 |
| **Technicians** | 3100 | 914 | 2352 | 2520 | 2689 | 2859 | 3030 |
| **Technologists/Scientists** | 366 | 145 | 240 | 260 | 280 | 300 | 320 |
| **Environmental Health** | 2934 | 324 | 2666 | 2723 | 2781 | 2840 | 2901 |
| **Medical Assistants** | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **17870** | **9727** | **6946** | **8216** | **9491** | **10771** | **12058** |

Source: Projected using models

As reported from the analysis of the census data on health Human resource professionals, a high promotion of the population trained as health professionals are currently working in non-health related sectors. This provides part of the pool from which the required personnel can be drawn. The remainder would have to be trained while some would have to be recruited externally. These considerations shall be taken into account when costing the gaps shown above.

*Model 3: Projections Based On the Population Ratios Guided by WHO*

Model 3 is based on the health worker per 1,000 population ratios obtained from WHO. The data base used here is based on the mean ratio per 1,000 for the 136 countries in the WHO database. The mean ratios were computed for each of the health cadres and this was applied to Botswana's projected population to generate the required health cadres over the period 2016 to 2020. The base for the population being the 2011 Population Census which gave a figure of 2,024,904 and the projected population growth rate of 1.9% per annum (this is shown in the top part of table 17). To compute the required health cadre, the projected population was divided by 1,000 and multiplied by the mean ratio.

| **Staffing Requirements Based on WHO Population Ratio**Year | | **2016** | **2017** | **2018** | **2019** | **2020** |
|---|---|---|---|---|---|---|
| Botswana Projected Population 2016 to | | 2,224,720 | 2,266,989 | 2,310,062 | 2,353,953 | 2,398,678 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2020 (Base year 2011 census) and population growth rate of 1.9% per annum | | | | | | |
| Projected Demand for Health Professional Cadre based on mean WHO worker per 1000 ratio | Mean | 2016 | 2017 | 2018 | 2019 | 2020 |
| Physicians density (per 1000 population) | 1.71 | 3,804 | 3,877 | 3,950 | 4,025 | 4,102 |
| Nursing and midwifery personnel density (per 1000 population) | 3.77 | 8,387 | 8,547 | 8,709 | 8,874 | 9,043 |
| Dentistry personnel density (per 1000 population) | 0.35 | 779 | 793 | 809 | 824 | 840 |
| Pharmaceutical personnel density (per 1000 population) | 0.43 | 957 | 975 | 993 | 1,012 | 1,031 |
| Laboratory health workers density (per 1000 population) | 0.22 | 489 | 499 | 508 | 518 | 528 |
| Environmental and public health workers density (per 1000 population) | 0.23 | 512 | 521 | 531 | 541 | 552 |
| Community and traditional health workers density (per 1000 population) | 0.45 | 1,001 | 1,020 | 1,040 | 1,059 | 1,079 |
| Other health workers density (per 1000 population) | 1.46 | 3,248 | 3,310 | 3,373 | 3,437 | 3,502 |
| Health management & support workers density (per 1000 population) | 0.84 | 1,869 | 1,904 | 1,940 | 1,977 | 2,015 |

**Source: WHO Health Worker Density**

Based on this table a total of 4,102 physicians will be required by the year 2020. This number is higher than the projections that were based on the new establishment. The

physicians in Table 33 that amount to 4,102 for 2020 are categorized in Table 33 as doctors (1,571) and administrative doctors (131) which total 1,702. Clearly the population based ratio give a higher required number for the physicians that may mirror the situation on the ground more closely. Similarly, the required numbers for the other health cadres based on population ratios by 2020 are as follows; nurses and mid-wives 9,043, dentists 840, and pharmacists 1,031. The projected staffing requirements for all the cadres except for nurses and mid-wives are higher than the projections that we based on the new staff establishment model.

PRE – PRIMARY, SECONDARY AND SENIOR SECONDARY SCHOOL ENROLLMENT

1. Pre-Primary Education Enrollment

*Table 32: Pre-Primary Enrollment Age and Sex - 2012-2013*

| Year | Sex | < 1 | 1 | 2 | 3 | 4 | 5 | 6 | 6 < | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 2012 | Boys | 9 | 84 | 705 | 2,437 | 3,590 | 3,939 | 1,067 | 80 | **11,911** |
| | Girls | 5 | 86 | 711 | 2,477 | 3,503 | 3,901 | 991 | 65 | **11,739** |
| | **Total** | **14** | **170** | **1,416** | **4,914** | **7,093** | **7,840** | **2,058** | **145** | **23,650** |
| 2013 | Boys | 21 | 123 | 1,108 | 3,155 | 4,627 | 4,712 | 1,043 | 48 | **14,837** |
| | Girls | 12 | 100 | 1,013 | 3,203 | 4,299 | 4,692 | 9,52 | 42 | **14,313** |
| | Total | **33** | **223** | **2,121** | **6,358** | **8,926** | **9,404** | **1,995** | **90** | **29,150** |

**Source: Statistics Botswana (2015): Pre and Primary Education Statistics Brief - 2013**

## 2. Primary Education

*Table 33: Primary School Enrollment by Sex and Standard Sex - 2012-2013*

| Year | Sex | STD 1 | STD 2 | STD3 | STD 4 | STD 5 | STD 6 | STD 7 | SPED | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 2012 | Boys | 29,329 | 25,328 | 24,077 | 24,305 | 23,267 | 22,695 | 21,509 | 813 | 171,323 |
| | Girls | 27,053 | 24,058 | 22,878 | 22,904 | 22,372 | 22,679 | 21,863 | 700 | 164,507 |
| | **Total** | **56,382** | **49,386** | **46,955** | **47,209** | **45,639** | **45,374** | **43,372** | **1,513** | **335,830** |
| 2013 | Boys | 29,322 | 27,066 | 24,777 | 24,276 | 23,146 | 22,949 | 21,732 | 747 | 174,015 |
| | Girls | 26,589 | 25,670 | 23,786 | 23,049 | 22,345 | 22,060 | 22,028 | 523 | 166,050 |
| | **Total** | **55,911** | **52,736** | **48,563** | **47,325** | **45,491** | **45,009** | **43,760** | **1,270** | **340,065** |

**Source: Statistics Botswana (2015): Pre and Primary Education Statistics Brief - 2013**

***Note: SPED:*** *Enrolment in Special Education Needs Units/ Special Education Schools*

## 3. Junior Secondary Education and Senior Secondar

*Table 34: Secondary School Enrollment by Sex and Form - 2012-2013*

| Year | Sex | Form 1 | Form 2 | Form 3 | Form 4 | Form 5 | Form 6 | SPED | Total |
|---|---|---|---|---|---|---|---|---|---|
| 2012 | Male | 20,593 | 19,743 | 19,499 | 11,965 | 11,354 | 188 | 84 | 83,426 |
| | Female | 20,921 | 19,896 | 19,755 | 14,466 | 13,986 | 164 | 55 | 89,243 |
| | **Total** | **41,514** | **39,639** | **39,254** | **26,431** | **25,340** | **352** | **139** | **172,669** |
| 2013 | Male | 21,022 | 19,844 | 19,308 | 12,432 | 12,021 | 184 | 49 | 84,860 |
| | Female | 21,438 | 20,297 | 19,253 | 15,154 | 14,271 | 193 | 43 | 90,649 |
| | **Total** | **42,460** | **40,141** | **38,561** | **27,586** | **26,292** | **377** | **92** | **175,509** |

**Source: Statistics Botswana (2015): Secondary Education Statistics Brief - 2013**

***Note:*** *Form 1 – Form 3 is Junior/lower Secondary while Form 4 – Form 6 Senior/Upper Secondary*

***SPED:*** *Enrolment in Special Education Needs Units/ Special Education Schools*

## 4. Tertiary Institutions Enrolment – Health Institutions

*Table 35: Institutes of Health Sciences Current Enrollment by Programme 2014/15*

| Programme (Diploma) | Male | Female | Total |
|---|---|---|---|
| General Nursing | 425 | 557 | 982 |
| Health Education | 22 | 33 | 55 |
| Dental Therapy | 12 | 12 | 24 |
| Medical Laboratory Tech | 19 | 15 | 34 |
| Pharmacy Technology | 42 | 48 | 90 |
| Midwifery | 43 | 118 | 161 |
| Family Nurse Practitioner | 14 | 30 | 44 |
| Environmental Health | 19 | 26 | 45 |
| **Total** | **596** | **839** | **1435** |

Source: HRDC (2015), Tertiary Education at a Glance 2015

*Table 36: Boitekanelo Health Institute Current Enrollment by Programme 2014/15*

| Programme (Diploma & Degree) | Male | Female | Total |
|---|---|---|---|
| Clinical Technology (National Diploma) | 1 | 10 | 11 |
| Emergency Care Technology (Diploma) | 94 | 209 | 303 |
| Emergency Medical Care (Degree) | 18 | 26 | 44 |
| Health Education and Promotion (Diploma) | 53 | 136 | 189 |
| Health Promotion & Education (Degree) | 34 | 59 | 93 |
| Health Service Management (Degree) | 32 | 67 | 99 |

| | | | |
|---|---|---|---|
| Health Care management (Diploma) | 69 | 178 | 247 |
| Nutrition & Dietetics (Degree) | 4 | 12 | 16 |
| Occupational Health & Safety (Degree) | 51 | 73 | 124 |
| Occupational Health & Safety (Diploma) | 118 | 301 | 419 |
| Pharmacy (Higher National Diploma) | 51 | 65 | 116 |
| **Total** | **525** | **1136** | **1661** |

Source: HRDC (2015), Tertiary Education at a Glance, 2015

*Table 37: University of Botswana Current Enrollment by Programme 2014/15*

| PROGRAMME (Degree, Masters & PhD) | MALE | FEMALE | TOTAL |
|---|---|---|---|
| Bachelor of Education (Counselling) | 66 | 286 | 352 |
| Bachelor of Nursing Science (Completion) | 2 | 8 | 10 |
| Bachelor of Nursing Science (Generic) | 130 | 146 | 276 |
| Bachelor of Psychology | 3 | 8 | 11 |
| Bachelor of Science (Environmental Health) | 46 | 48 | 94 |
| Bachelor of Science (Medical Laboratory Sciences) | 24 | 28 | 52 |
| Bachelor of Science (Radiation and Health Physics) | 32 | 16 | 48 |
| Bachelor of Medicine/Surgery (M.B.B.S) | 119 | 111 | 230 |
| Master of Medicine (Anatomic Pathology) | 2 | 1 | 3 |
| Master of Medicine (Emergency Medicine) | 4 | 0 | 4 |
| Master of Medicine (Family Medicine) | 9 | 5 | 14 |
| Master of Medicine (Internal Medicine) | 10 | 6 | 16 |
| Master of Medicine (Paediatrics and Adolescent Health) | 4 | 13 | 17 |
| Master of Medicine (Public Health) | 3 | 2 | 5 |
| Master of Nursing (Science) | 15 | 39 | 54 |
| Master of Philosophy (Counselling and Human Services) | 0 | 4 | 4 |
| Masters of Education (Counselling and Human Services) | 10 | 36 | 46 |
| Pre-Medical Programme | 41 | 31 | 72 |
| Doctor of Philosophy (Counselling and Human Services) | 0 | 2 | 2 |
| **TOTAL** | **520** | **790** | **1,310** |

**Source: HRDC (2015), Tertiary Education at a Glance 2015**

**Note for Pre-Medical Programme:** The University enrolled its first class of 36 medical students in 2009 and all the 36 graduated in 2014. All the graduates joined the one-year medical internship programme and had since been deployed to the various health facilities around the country. Another group of 44 medical students graduated in 2015. Preparations are on-going for the University to start specialist training in surgery, obstetrics and gynaecology.

## The DDT College of Medicine

*Table 38: DDT College of Medicine Current Enrollment by Programme (2015/16)*

| PROGRAMME (Degree) | MALE | FEMALE | TOTAL |
|---|---|---|---|
| Bachelor of Doctor Assistance | 18 | 9 | 27 |
| Bachelor of Physiotherapy | 14 | 10 | 24 |
| Bachelor of Pharmacy | 10 | 16 | 26 |
| Bachelor of Dental and Hygiene Therapy | 0 | 0 | 0 |
| Bachelor of Medical Laboratory Sciences | 13 | 14 | 27 |
| **TOTAL** | **55** | **49** | **104** |

Table 39 presents the human resource management issues that need to be attended to.

*Table 39: Human Resource Management Plan for the Health Sector*

| No | Objectives | Activities | Outcomes | Means of Verification | Parties |
|---|---|---|---|---|---|
| | **Broad Objective 1: Improve Staff Retention** | | | | |
| 1.1 | Review & Implement Strategies (RASA) | Review RASA (Remote Area Service Allowance) to be commensurate with current inflation levels and cost of living<br><br>Review, revise, implement and monitor career benefits related to rural posting and transfers | RASA reviewed<br><br>Benefits related to rural posting and transfers reviewed<br><br>Benefits related to rural posting and transfers implemented | An up-to-date implementation report | MoH, *DPSM, MFDP, MLGRD |
| 1.2 | Conduct pull and push factors audit | Conducting periodic assessments of the push and pull factors, disaggregating these for women, cadre, income status and locations | Assessments conducted | Implementation report | MoH, *DPSM, MFDP, MLGRD |
| 1.3 | Review existing placement policy/guidelines | Ensure the transparent implementation of a compulsory placement policy for health workers in remote and hard to reach areas | Transparent, unbiased implementation of transfer policies | Implementation report | *MoH, DPSM |
| 1.4 | Review retention scheme | Review existing retention schemes across the sector, including in the private and NGO sectors, and identify the most appropriate and | Existing retention schemes reviewed | Progress report | *MoH, Private Sector, Professional |

| No | Objectives | Activities | Outcomes | Means of Verification | Parties |
|---|---|---|---|---|---|
| | | effective schemes and incentives | | | Bodies, DPSM, |
| 1.5 | Induct new staff and conduct monitoring visits | Provide job and posting orientation including mentoring after recruitment<br><br>Strengthen mechanisms to ensure that health workers posted to remote areas receive regular supportive supervision and mentoring support | Job and posting oriented conducted<br><br>Mechanisms to ensure that health workers posted to remote areas receive regular supportive supervision and mentoring strengthened | Progress report | MoH |
| 1.6 | Develop resource mobilization strategies at local level | Strengthen functioning of health facility/hospital management committee (e.g. local level resource mobilization for improving living and social conditions for health workers) | Hospital management committee functioning strengthened. | Functional resource mobilization strategies in place | MoH |
| 1.7 | Conduct joint planning | Promotion of intergovernmental planning processes to support remote areas | Intergovernmental planning processes to support remote area staff promoted | Plans in place | MoH (HQ & DHMT's) |
| | **Strategic Objective 2: Improve Service Delivery in Remote Areas** | | | | |
| 2.1 | Civil Society capacity building on Public Private Partnerships (PPP) | Capacitate civil society to further capacitate the communities.<br><br>Prepare modalities for PPPs that includes civil society and expand PPPs for the management of health facilities | PPPs (including civil society) for the management of health facilities strengthened | Implementation reports | *MoH, MLGRD |
| 2.2 | Develop financing and Human Resource strategies | Explore the feasibility of using SIBs to address challenges of financing and HR mobilisation for provision of services in remote and hard to reach locations | Feasibility of using SIBs to address challenges of financing and HR mobilisation for provision of services in remote and hard to reach locations assessed | Implementation reports | MoH |
| 2.3 | Develop outsourcing framework | Facilitate the development of outsourced contracts for the private sector which could include management of services in a facility, mobile services etc. | Outsourcing contracts (legal framework) for the private sector developed | Implementation reports | MoH |
| | **Broad Objective 3: Identification of New Areas for Task Shifting & Sharing** | | | | |

| No | Objectives | Activities | Outcomes | Means of Verification | Parties |
|---|---|---|---|---|---|
| 3.1 | Audit skills, shifted and shared tasks | Review and conduct analysis of key shortages and scarce skills<br><br>Conduct workload and job analysis for all health professional jobs /posts<br><br>Develop mechanisms to compensate for the tasks shifted and shared | Scare skills analysis conducted<br><br>Workload and job analysis for all health professional jobs conducted<br><br>Mechanisms for the compensation of tasks shifting and tasks sharing developed | Implementation report | MoH |
| 3.2 | Review System | Review the performance management system (PMS) to recognise the tasks shifted and shared | Performance management system (PMS) reviewed (to recognise the tasks shifted and shared). | Progress report | MoH |
| | **Broad Objective 4: Improve Management of Recruitment (Effectiveness & Timeliness)** | | | | |
| 4.1 | Audit Recruitment Process & Implement recommendations | Assess current recruitment processes and systems, identify problems and bottlenecks, and use findings to streamline and strengthen the systems to ensure that these systems are transparent and that appropriately skilled staff are being hired<br><br>Review and strengthen contracting systems and practices<br><br>Use HR projections to guide recruitment of staff according to job requirements | Current recruitment processes and systems assessed<br><br>Problems and bottlenecks identified<br><br>Recruitment systems strengthened<br><br>Contracting systems strengthened<br><br>HR projections applied in recruitment of staff | Progress reports | MoH |

| No | Objectives | Activities | Outcomes | Means of Verification | Parties |
|---|---|---|---|---|---|
| 4.2 | Research on the unemployed health workers & Recruit | Determine the number of trained unemployed health workers available for work and implement procedures to attract and recruit<br><br>Explore alternative recruitment and employment arrangements | Number of trained unemployed health workers available for work determined<br>Procedures to attract and recruit unemployed health workers implemented<br><br>Alternative recruitment and employment arrangements explored | Implementation reports | MoH, *DPSM, MLHA |
| | **Broad Objective 5: Optimise Deployment Processes for Best Health Outcomes** | | | | |
| 5.1 | Develop Expatriate Induction Programme | Design appropriate orientation programmes for expatriate health workers | Orientation programmes for expatriate health workers designed | Progress report | *MoH, DPSM, MoFAIC, MLHA |
| 5.2 | | Review and strengthen existing internship programmes for home trained health professionals | Internship programmes for home trained health professionals reviewed<br>Internship programmes for home trained health professionals strengthened | | |
| 5.3 | Review transfer guidelines | Assess current deployment processes and systems, identify problems and bottlenecks, and use findings to streamline and strengthen the systems to ensure that these systems are transparent and that appropriately skilled staff are being deployed<br><br>Use WISN (Workload Indicator of Staffing Needs) to guide posting of staff according to job requirements | Current deployment processes and systems assessed<br><br>Staff posted according to job requirements | Progress report | MoH, *DPSM |
| | **Broad Objective 6: Defining Clear Roles and Responsibilities for Health Workers** | | | | |
| 6.1 | Train Health Care Workers on Performance Management System (PMS) | Build the capacity of health care workers to strengthen the implementation of performance appraisal/management systems | Capacity of health care workers to implement performance management systems improved | Submitted PDPs of staff reviewed | MoH |

| No | Objectives | Activities | Outcomes | Means of Verification | Parties |
|---|---|---|---|---|---|
| 6.2 | Align Job descriptions | Review job descriptions for staff at all levels in collaboration with facility managers<br><br>Update and introduce performance appraisal/management system for individuals and health facilities in line with service delivery programmes (link with performance based incentives) | Job descriptions reviewed<br><br>Performance appraisal/management system for individuals and health facilities aligned | Up-to-date job effectiveness descriptions (JEDs) | MoH, *DPSM |
| | **Broad Objective 7: Setting Performance based Standards for Health Care Managers** | | | | |
| 7.1 | Review performance agreements | Periodic reviews of the performance agreements including the process and systems involved<br><br>Review the in-service leadership programmes for managers | Performance agreements reviewed<br><br>Service leadership programmes for managers reviewed | Progress report | MoH |
| 7.2 | Train administrators | Build the capacity of administrators to efficiently and effectively implement the performance management system<br><br>Monitor implementation of annual work plans for institutions/departments and individuals | Administrators capacity to efficiently and effectively implement the performance management system strengthened<br><br>Annual work plans monitored | Up to date reports | MoH |
| | **Broad Objective 8: Ensure Effective Reward and Sanction System in Place** | | | | |
| 8.1 | Review Labour Law Policies | Review labour laws and policies | Labour laws and policies reviewed | | MoH, *DPSM, MHLA |
| 8.2 | Review Performance Reward Guidelines | Link rewards and sanctions, especially promotion to performance<br><br>Put mechanisms in place for health workers to provide feedback on the perceived fairness of reward and sanctions systems<br><br>Ensure that systems are in place to provide supportive supervision and monitor the health workforce at all levels | Linkage between rewards and sanctions reviewed<br><br>Employee satisfaction survey conducted<br><br>Supportive supervision and monitoring systems in place | Progress reports | MoH, *DPSM, MFDP |
| | **Broad Objective 9: Improve Work Ethic** | | | | |
| 9.1 | Provide work ethic training | Orientation training for all health workers at point of | Health workers oriented | | MoH, *MoESD |

| No | Objectives | Activities | Outcomes | Means of Verification | Parties |
|---|---|---|---|---|---|
| | | recruitment and periodically during service | Health workers periodically trained | | , DPSM, BNPC |
| 9.2 | Introduce work ethic learning in schools | Introduction of civic and ethics education at primary and secondary school level<br><br>Include customer service orientation and good work ethics in general education courses at tertiary levels | Civic and ethics education introduced at primary and secondary school level<br><br>Customer service orientation and good work ethics introduced at tertiary level | Progress reports | MoH, DPSM, BNPC, *MoESD , Training Institutions |
| 9.3 | Introduce work ethic learning to the communities | Engage with traditional leaders and institutions to promote the importance of good work ethics to families and individuals in their communities | Traditional leaders and institutions engaged to promote good work ethics | Progress reports | MoH, MoESD, DPSM, BNPC, *Dikgosi , NGO's & Civil Societies, VDC's, Communities |
| | **Broad Objective 10: Create an Enabling Work Environment for all Health Workers** | | | | |
| 10.1 | Develop maintenance of equipment plans and strategies | Put in place mechanisms to ensure regular maintenance and upgrades of equipment and facilities (e.g. service maintenance contracts) | Mechanisms to ensure regular maintenance and upgrades of equipment and facilities strengthened | Progress reports | MoH |
| 10.2 | Resource mobilize | Ensure adequate budgetary provisions for transportation and logistics | Adequate budgetary provisions for transportation and other logistics in place | Progress report | MoH, MTC, *MFDP |
| 10.3 | Develop operational plans for procurement | Simplify procurement systems for greater efficiency | Procurement systems reviewed | Progress reports | MoH, |
| | **Broad Objective 11: Promote Team Work Among Health Workers** | | | | |
| 11.1 | Develop plans for team building exercises | Budget and carry out periodic team building activities | Team building activities conducted | Progress reports | MoH |
| 11.2 | Develop plans/guidelines for conflict resolutions | Build capacity in conflict resolution for health care workers | Capacity in conflict resolution built | Progress reports | MoH |
| | **Broad Objective 12: Adequacy of Human Resource Policies and Legislation** | | | | |

| No | Objectives | Activities | Outcomes | Means of Verification | Parties |
|---|---|---|---|---|---|
| 12.1 | Review health sector HR policies | Review existing health sector HR policies, identify gaps and revise or develop new policies as necessary | Health sector HR policies reviewed<br>New HR policies development<br>○ Ensure appropriate engagement of stakeholders in the review of policies and legislation<br>○ Carry out appropriate dissemination of reviewed policies and legislation | Progress reports | *MoH, DPSM |
| 12.2 | Resource mobilize | Ensure resources are available for implementation of revised policies and legislation | Adequate resources mobilized | Progress reports | MoH |
| | **Broad Objective 13: Institute Effective Coordination Mechanisms for Improved Service Delivery** | | | | |
| 13.1 | Review strategies | Finalize the decentralization and devolution of authority for health service delivery to the districts | The decentralization and devolution of authority for health service delivery to the districts finalized | Progress reports | MoH |