

REPUBLIC OF RWANDA



MINISTRY OF HEALTH

MINISTRY OF HEALTH

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Rwanda Annual Health Statistics Booklet 2014

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ACRONYMS

ACT	Artemisinin-based Combination Therapy
ANC	Ante-natal Care
ARI	Acute Respiratory Infections
ART	Anti-retroviral Therapy
ARV	Anti-retrovirals
BCG	Bacille Calmette Guerin vaccination
CBHI	Community-based Health Insurance
CBNP	Community Based Nutritional Program
CDC	Center for Disease Control and Prevention
CDT	TB Diagnosis and Treatment Centers
CHUB	Centre Hospitalier Universitaire de Butare
CHUK	Centre Hospitalier Universitaire de Kigali
CHW	Community Health Workers
C-IMCI	Community-based Integrated Management of Childhood Illnesses
CPT	Cotrimoxazole preventive treatment
CT	TB treatment centers
CTX	Cotrimoxazole
DHS	Demographic and Health Survey
DHSST	District Health System Strengthening Tool
DOTS	Directly Observed Treatment, Short Course
DTP	Diphtheria, Tetanus, Pertussis vaccination
EDPRS	Economic Development and Poverty Reduction Strategy
EPI	Expanded Program on Immunizations
FBO	Faith-based Organization
FP	Family Planning
FRW	Rwandan franc
GESIS	Gestion du Système d'Information Sanitaire
G-O	Gynecology-obstetrics
HEPB	Hepatitis B vaccination
HiB	Hemophilus Influenza B vaccination
HIV&AIDS	Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome
HFS	Department of Health Financing
HMIS	Health Management Information System
HNP	Health, Nutrition and Population (HNP)
iHRIS	Integrated Human Resource Information System
IRS	Indoor residual spraying (IRS)
ITN	Insecticide Treated Nets
IUD	Intrauterine device
KFH	King Faical Hospital
KMH	Kanombe Military Hospital
KPH	Kacyiru Police Hospital
LLIN	Long-lasting insecticidal nets
MCH	Maternal and Child Health
MOH	Ministry of Health
MMR	Maternal Mortality Ratio
NGO	Non-governmental Organization
NID	National Identity Card
NISR	National Institute of Statistics Rwanda
NRH	National Referral Hospital
NTPM+	New Pulmonary
TB	Tuberculosis
OI	Opportunistic Infections
OPD	Out Patient Days
P0	Polio vaccination, dose zero
PBF	Performance-based Financing
PEPFAR	President's Emergency Plan for AIDS Relief
PIT	Provider-initiated testing
PLHIV	People Living with HIV
PMTCT	Prevention of Mother to Child Transmission (of HIV)
RDHSSF	Rwanda District Health System Strengthening Framework
RH	Referral Hospital
RIDHS	Rwanda Interim Demographic and Health Survey
SAMU	Service d'Assistance Médicale d'Urgence

SCPS	Service de Consultation Psychosociale
SS+	Sputum Smear Positive
TB	Tuberculosis
TPM+	Positive Microscope Pulmonary Tuberculosis
TPR	Test positivity rate
TRAC	Treatment Research and AIDS Center
TTI	Transfusion-transmissible infections
VAT2-5	Vaccination antitoxinetétanique (tetanustoxoidvaccine)
VCT	Voluntary Counseling and Testing
WHO	World Health Organization


FOREWORD

The Ministry of Health welcomes the 7th Rwanda Annual Health Statistical Booklet 2014.

As part of the Government of Rwanda's commitment to becoming a middle-income country we need to produce evidence-based policies and programs. Therefore, it is imperative that we generate and disseminate reliable statistics that can be used by all stakeholders. For that reason, this year's annual health statistical booklet has been developed to provide a summary of key statistics within the health sector for the year 2014.

The RHMIS has made significant improvements in both data quality and systems integration. In data quality, the DHS data 2014 key indicators are similar to RHMIS data, such as assisted deliveries where in DHS the coverage was 91% and 90.8% in RHMIS, Polio zero coverage was 91.3% in DHS and 91% in RHMIS. During 2014 two new systems were integrated into the RHMIS platform: the e-IDSR (electronic Integrated Diseases Surveillance and Response) system and the HIV module.

The annual health statistical booklet enables all stakeholders to track journey of the health sector toward achieving the Millennium Development Goals (MDGs) and attaining Rwanda's Vision 2020. It also provides policy makers, planners, and other interested parties with insight into the current state of the health sector. These statistics provide a basis for improvement of our policies and strategies. It also allows all stakeholders to plan interventions that are based on real status of health sector and to ensure that they are responsive to the needs of our population with a primary focus on addressing priorities aimed at improving the health of all Rwandans.



Dr. Agnes BINAGWAHO
Minister of Health

INTRODUCTION

The Ministry of Health (MOH) published the Rwanda Annual Health Statistical Booklet 2014 in order to provide an overview of the key statistics in the health sector for 2014. This is the seventh year that the booklet has been produced, the MOH now has substantial data from the same data source – the RHMIS for three calendar years, thereby enabling analysis of trends overtime. In addition, the results of the 2014 Rwanda Demographic and Health Survey (RDHS) were released early in 2015 and have allowed the ministry to compare routinely collected service data with key indicators from the population-based survey.

The booklet is divided into four major components: Health Sector Resources, Morbidity and Mortality, Maternal and Child Health and programs. The programs component includes HIV & AIDS, Tuberculosis, Malaria, Non-Communicable diseases (NCDs), Other Epidemic and Infectious, Diseases division (EID) and Blood Bank and Transfusion Center.

The booklet also includes a section on health financing interventions including performance-based financing (PBF) and community-based health insurance. Other macro-level financial information has not been included in this document, as this is covered substantially by the National Health Accounts and other special studies and reports.

This booklet aims at showing key statistics in the health sector for 2014 in a concise, easily accessible manner to ensure that this valuable data is readily available to all interested parties. Comparisons with data from 2013 and earlier periods will help users to understand the evolving health situation in Rwanda.

Data has been extracted from a variety of sources including the Rwanda Health Management Information System (R-HMIS), PBF database for clinical services, the Community Health Worker Information system (SIScom) and several surveys.

HEALTH SECTOR RESOURCES

In this section, the health sector infrastructure covered includes the health facilities and selected resources available within those facilities such as staff, equipment, utilities, and transport. It is important to note that this section draws data from two sources: the Rwanda Health Management Information System (RH MIS) and the MOH's Human Resource Database (iHRIS).

HEALTH FACILITIES

The health facilities in Rwanda are classified as referral hospitals, provincial hospitals, district hospitals, police/military hospital, health centers, health posts, private dispensaries, private clinics, prison dispensaries, community owned health facilities and Voluntary Counseling and Testing (VCT) centers. At the end of 2014, the number of health facilities in Rwanda, including the private facilities, increased up to 1161 from 816 in the previous year (Ref. Tables 1 and 2). This increase was primarily due to the creation of 348 new health posts data from Clinical Services Directorate.

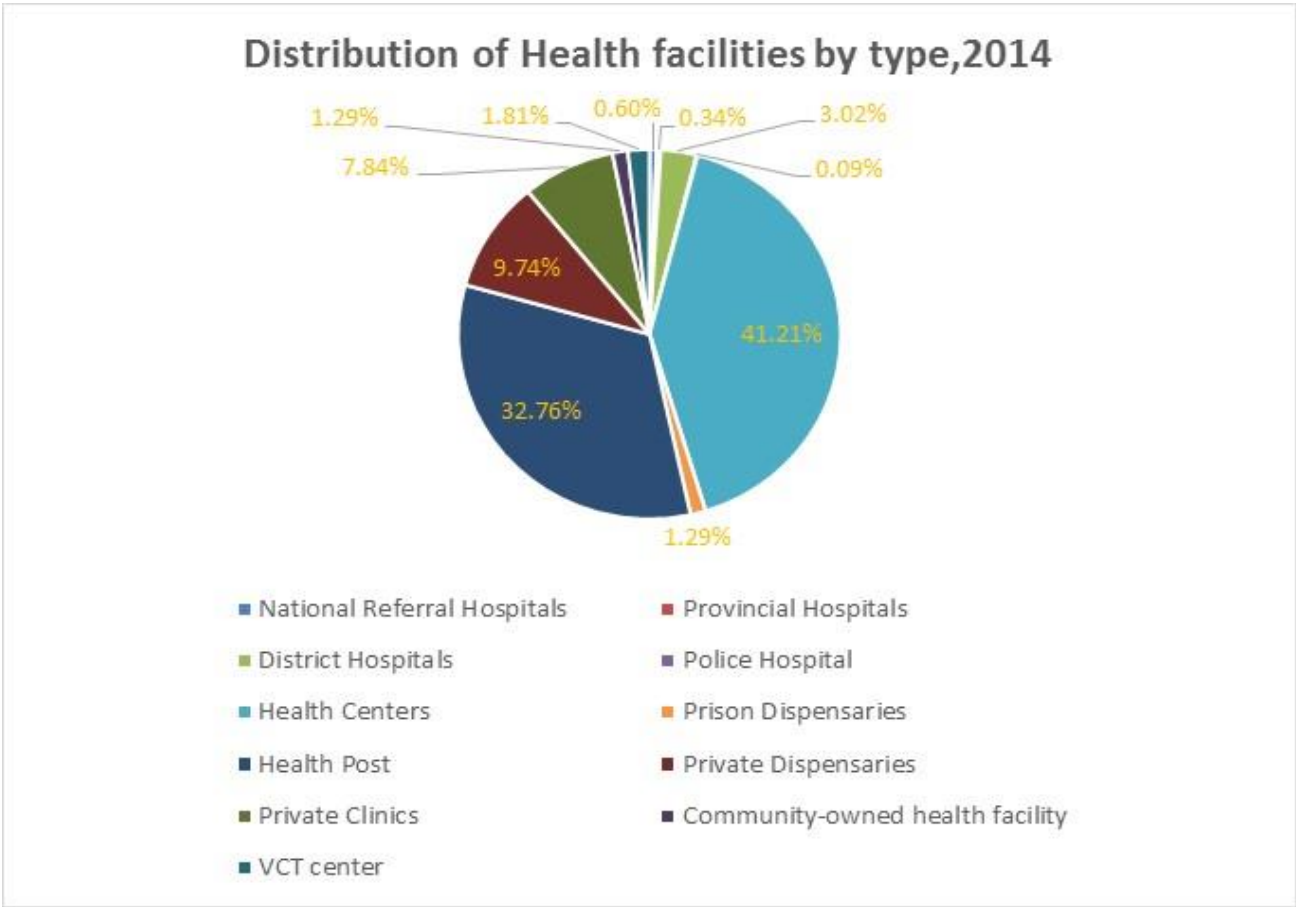
Table 1: Number of Health Facilities, 2013 –2014

Heath Facility type	2013	2014	% 2014	%change (2013-14)
National Referral	5	7	0.60%	40.00%
Provincial	0	4	0.34%	
District Hospitals	42	35	3.02%	-16.67%
Police Hospital	1	1	0.09%	0.00%
Health Centers	465	478	41.21%	2.80%
Prison	15	15	1.29%	0.00%
Health Post	252	380	32.76%	50.79%
Private	137	113	9.74%	-17.52%
Private Clinics	84	91	7.84%	8.33%
Community-owned	15	15	1.29%	0.00%
VCT center	20	21	1.81%	5.00%
Total	1036	1160	100.00%	11.97%

Source: R-HMIS Database, 2014

In 2014, four district hospitals were upgraded to the level of provincial hospitals and three district hospitals were upgraded to the level of National Referral Hospitals as a result the number of district hospitals dropped down to 35. The number of health centers (HCs) increased to 478 and represented 41% of all the facilities. The number of health post were 380 representing 50.79% of all facilities, whereas the Voluntary Counseling and Testing (VCT) centers were 21 representing 2% of all facilities.

Figure 1: Distribution of Health Facilities by type, 2014



Source: R-HMIS Database, 2014

Table 2: Number and type of health facility by district, 2014

District	Referral Hospital	Provincial Hospital	District Hospital	Police Hospital	Health Center	Health Post	Prison Clinic	Private Disp.	Medical Clinic	Community-owned HF	VCT center	Total
Bugesera	0	0	1	0	15	12	1	4	0	0	1	34
Burera	0	0	1	0	18	14	0	1	0	0	0	34
Gakenke	0	0	2	0	21	11	0	1	0	0	0	35
Gasabo	1	0	1	1	16	20	1	22	32	0	3	97
Gatsibo	0	0	2	0	19	14	0	2	0	0	0	37
Gicumbi	0	0	1	0	23	40	1	3	1	0	0	69
Gisagara	0	0	2	0	14	2	0	1	0	0	0	19
Huye	1	0	1	0	16	4	1	0	2	2	3	30
Kamonyi	0	0	1	0	12	17	0	0	2	0	0	32
Karongi	1	0	2	0	22	6	0	1	0	0	0	32
Kayanza	0	0	2	0	15	15	0	2	1	0	1	36
Kicukiro	1	0	1	0	9	3	0	18	6	0	1	39
Kirehe	0	0	1	0	16	8	0	2	0	0	0	27
Muhanga	0	0	1	0	15	16	1	3	4	0	1	41
Musanze	1	0	0	0	14	24	1	2	4	0	1	47
Ngoma	1	0	0	0	12	6	1	0	1	0	1	22
Ngororero	0	0	2	0	13	14	0	0	1	12	0	42
Nyabihu	0	0	1	0	15	12	0	0	0	0	0	28
Nyagatare	0	0	1	0	20	29	1	10	0	1	0	62
Nyamagabe	0	0	2	0	18	5	1	1	0	0	0	27
Nyamasheke	0	1	1	0	19	22	0	3	0	0	1	47
Nyanza	0	0	1	0	16	8	2	2	0	0	1	30
Nyarugenge	1	0	1	0	10	3	1	18	30	0	3	67
Nyaruguru	0	0	1	0	16	11	0	1	0	0	0	29
Rubavu	0	0	1	0	11	20	1	4	5	0	1	43
Ruhango	0	1	1	0	15	8	0	2	1	0	0	28
Rulindo	0	1	1	0	19	7	0	0	0	0	1	29
Rusizi	0	0	2	0	17	18	1	5	0	0	0	43
Rutsiro	0	0	1	0	18	6	0	0	0	0	2	27
Rwamagana	0	1	0	0	14	5	1	5	1	0	0	27
Grand Total	7	4	35	1	478	380	15	113	91	15	21	1160

Source: R-HMIS Database, 2014

Different services are provided in different types of health facilities. The table below provides the classification of health facilities with the allowed minimum package of services delivered by each health facility at that level.

Table 3: minimum package of services in different facilities

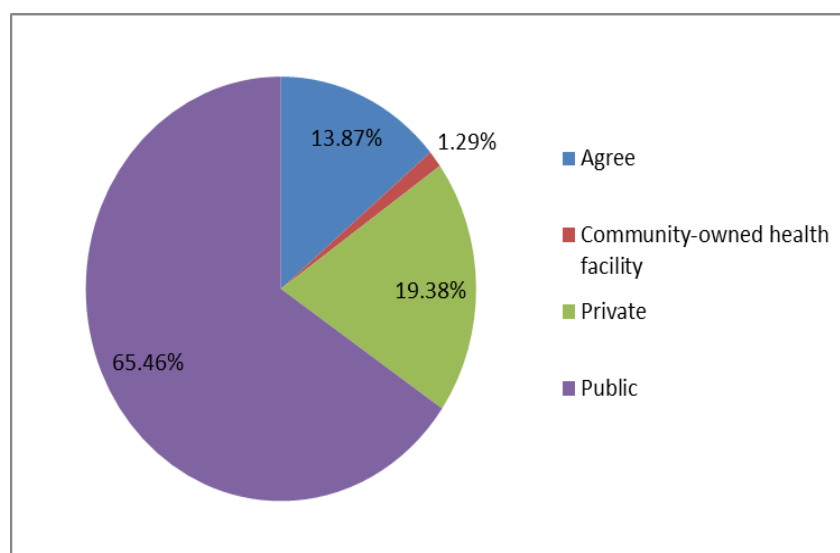
Health Facilities	Minimum Package of Services Provided
National Referral Hospitals	Clinical services, Clinical Support, Training and research, Other Health Services and Leadership & Management services.
Provincial Hospitals	Clinical services, Curative Services, Clinical Support Services, Leadership and Management, Training & research services.
District Hospitals	Clinical services, Clinical support services, Leadership and Management, Training & research services.
Health Centers	Clinical services, Clinical support, Leadership and Management services.
Dispensaries	Clinical services, Clinical support, Leadership and Management services.
Health Posts	Clinical services.
Community Owned HF	Outreach activities (i.e. immunization, family planning, child growth, monitoring, ANC, ...)
VCT Centers	Voluntary testing services

Source: Service package for health facilities at different levels of service delivery, September 2012

The referral hospitals also serve as teaching institutions for nurses, doctors and pharmacists. Ndera hospital is a referral hospital for mental health.

The ownership of Rwanda health facilities can be identified in 4 categories: public, private, community, and faith-based (named “AGRÉÉ” and owned by religious organizations). As shown in the Figure below, the public health facilities represent 65.46% of the total number of health facilities in Rwanda, 19.38% are private facilities, 13.87% are administered by faith-based organizations and subsidized by the government, and 1.29% are community owned health facilities.

Figure 2: distribution of health facility by administrative status, 2014

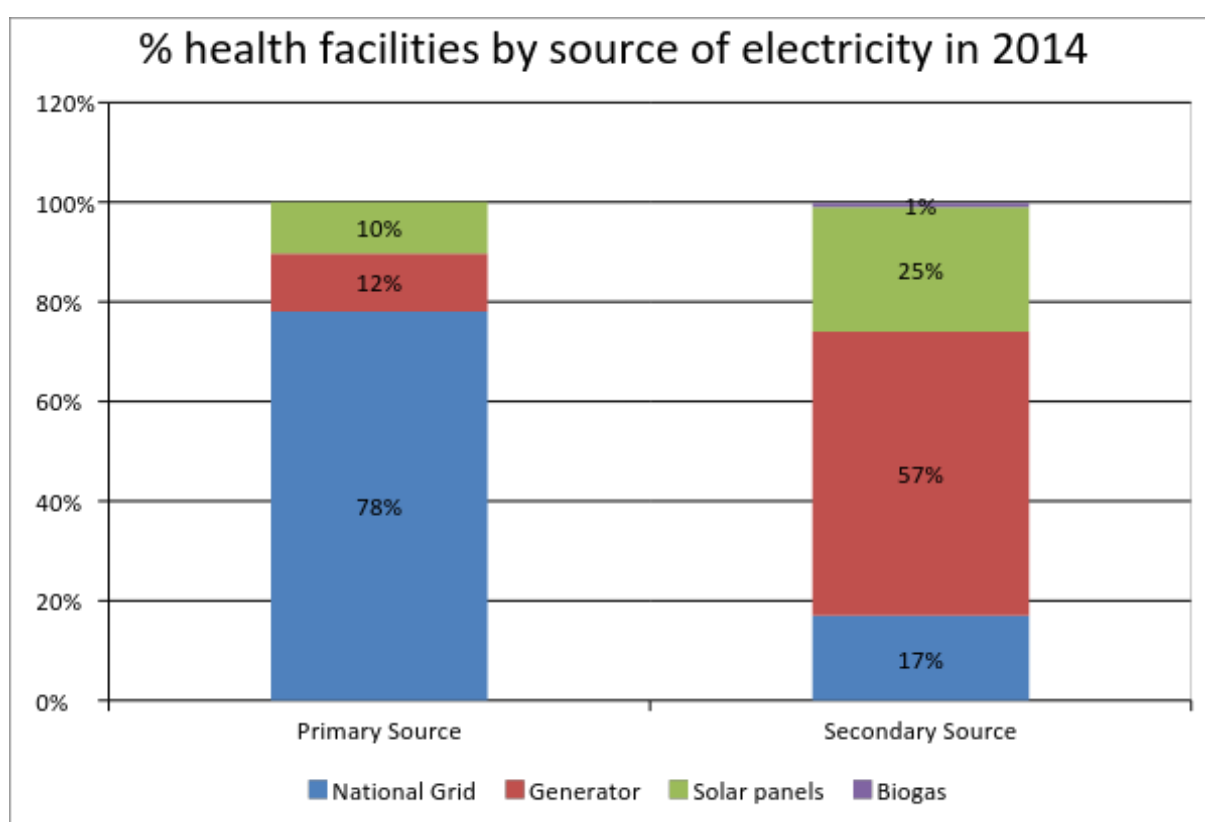


Source: R-HMIS Database, 2014

Since 2012 and on the request of the HMIS unit of the MOH, the health facilities started to complete an Annual Health Facility Infrastructure Report in Rwanda Health Management Information System. The following sections draw mainly from the data on equipment and utilities reported in these annual reports. Certain types of facilities, such as private clinics and health posts, do not submit these annual reports, so they are under-represented in the analysis.

In 2014, a total of 484 health facilities (district hospitals, Provincial hospitals and health centers) reported on their principle (primary) source of electricity and 467 reported on secondary sources of electricity. Access to electricity is generally good as all health facilities reported have a regular source of electricity: 95% have electricity from the national power grid where 78% use it as primary source and 17% as secondary source. 69% also have generator with 12% using it as primary source and 57% as secondary source. Solar energy is available in 35% of the facilities, 10% using it as a principle source while 25% use it as secondary source. 1% use energy from biogas that they use as a secondary source.

Figure 3: primary and secondary sources of electricity in health facilities, 2014

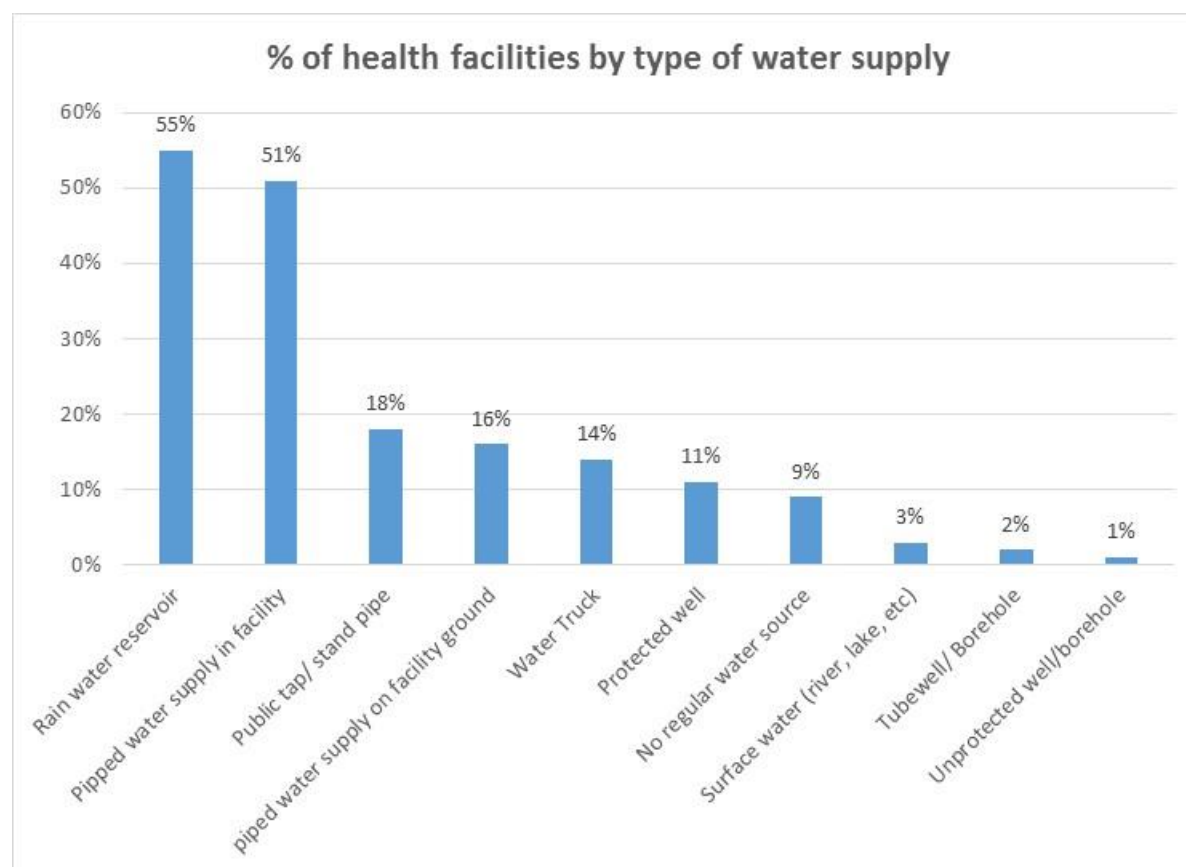


Source: R-HMIS Database, 2014

SOURCES OF WATER

The distribution of water sources (Figure below) is dominated by rain water reservoirs and piped water supply in the health centers and district hospitals (N=499): 55% of the facilities has Rain water reservoir, 51% has piped water supply in facility, 18% has Public tap/stand pipe, 16% has piped water supply on facility ground and 14% has water Truck..

Figure 4: Sources of water in health facilities, 2014



Source: R-HMIS Database, 2014

The distribution of sources of water in the figure above is dominated by rain water reservoirs and piped water within the health centers and district hospitals: 55% of the facilities have water supplied through rain water reservoirs and 51% get water supplied by piped water supply in the facility. Other sources of water account for: 18% for public tap/stand pipe, 16% for piped water supply on facility compound, 14% for water supplied by water trucks, 11% for Protected well, 3% for surface water (river, lake, etc.), 2% for tube well/borehole and 1% for facilities receiving unprotected well/borehole water. Nine percent of facilities report having no regular source of water.

COMMUNICATION

Out of 40 hospitals (district and provincial) that reported on internet access, 50% have Fiber-optic, 60% have a wireless modem and 18% use WIMAX. In the health centers, only 2% have Fiber-optic or WIMAX connections, 90% use a wireless modem and 3% have no internet connection (Ref. Table below).

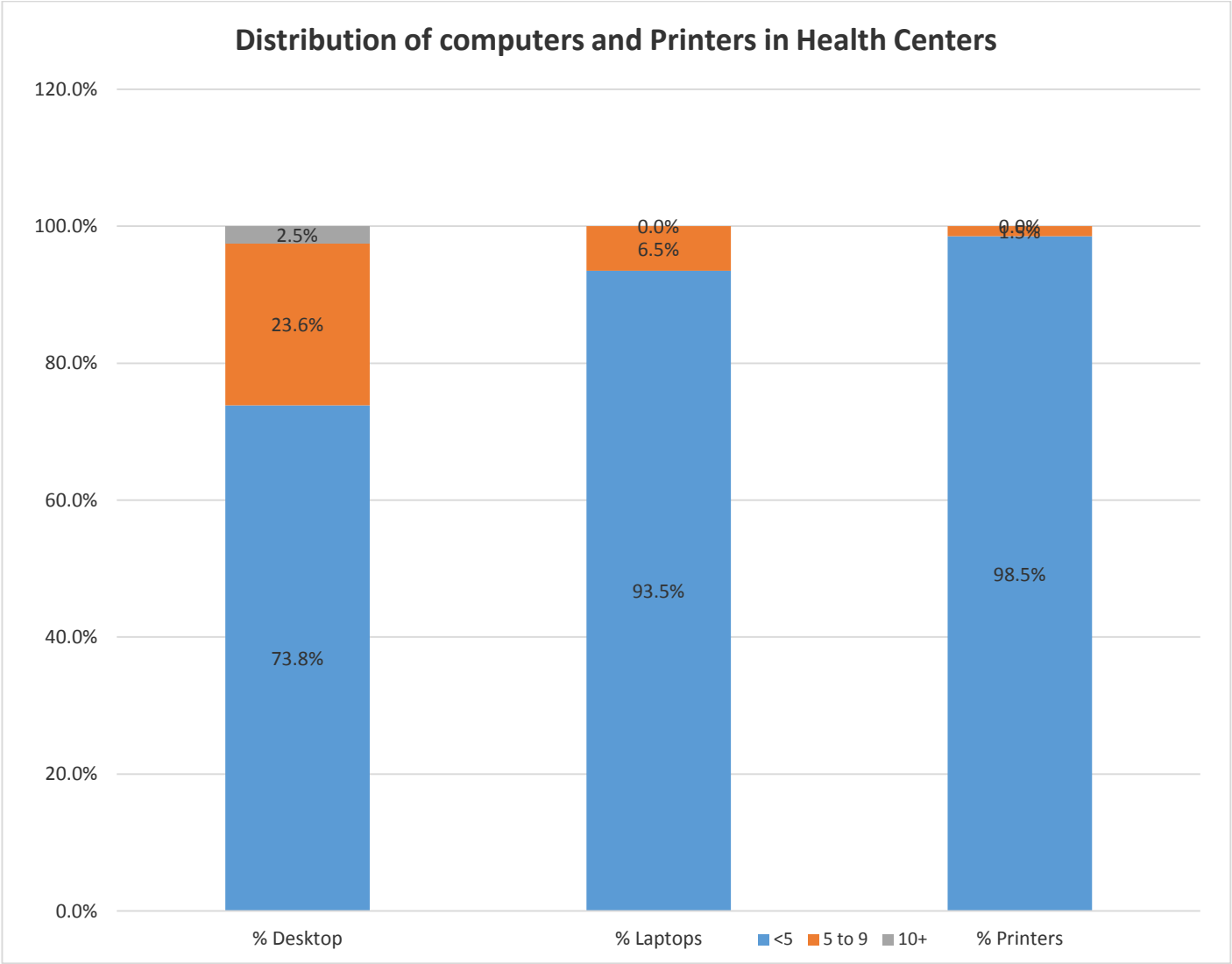
Table 4: Internet access in health facilities, 2014

Internet connection	Hospitals (N=40)	%	Health centers (N=451)	%	Total (N=491)	%
Wired/Fixed Line (ADSL, fiber)	20	50%	11	2%	31	6%
Wireless Modem (MTN, Tigo, etc.)	24	60%	404	90%	428	87%
Wireless (WIMAX)	7	18%	10	2%	17	3%
Satellite (VSAT)	2	5%	4	1%	6	1%
No internet connection	0	0%	14	3%	14	3%

Source: R-HMIS Database, 2014

Among all reporting health centers (N=478), 73.8% had between 1 and 4 desktop computers, 23.6% between 5 and 9 and 2.5% had more than 10. As for laptop computer, 93.5% had between 1 and 4, 6.5% between 5 and 9 while 0% of the health centers had more than 10 Laptops. 98.5% of the HCs had between 1 and 5 printers, 1.5% between 5 and 9 and 0% of those facilities had no printers.

Figure 5: Availability of ICT equipment in health centers 2014



Source: R-HMIS Database, 2014

Details of Desktop and Lap top computer distribution in Health Facilities are presented in table below. The Ministry of Health has set target numbers of 10 computers per Health Center and 37 computers for District/Provincial Hospitals in order to support the roll-out of electronic medical records and other key systems, but those targets have not yet been achieved. 24 district/provincial hospitals (with at least computers) and 12 Health Centers (3%) have achieved the targeted number 2014.

Table 5: Distribution of computers and printers by type of health facility, 2014

Health centers								
# Desktops	# HFs	% HFs	# Laptops	# HFs	% HFs	# Printers	# HFs	% HFs
<5	353	74%	<5	447	94%	<5	471	99%
5 to 9	113	24%	5 to 9	31	6%	5 to 9	7	1%
10+	12	3%	10+	0	0%	10+	0	0%
Total	478	100%	Total	478	100%	Total	478	100%
District hospitals, Provincial hospitals and Referral hospitals								
# Desktops	# HFs	% HFs	# Laptops	# HFs	% HFs	# Printers	# HFs	% HFs
<10	4	8%	<10	19	40%	<10	26	54%
10 to 19	17	35%	10 to 19	23	48%	10 to 19	15	31%
20-34	9	19%	20-34	0	0%	20-34	5	10%
35-49	7	15%	35-49	1	2%	35-49	0	0%
50+	11	23%	50+	5	10%	50+	2	4%
Total	48	100%	Total	48	100%	Total	48	100%

Source: R-HMIS Database, 2014

INPATIENT BEDS

The table below shows the average number of beds by type of health facility types. At provincial hospital level (N=4), the average number of beds in 2014 was 250 - ranging from 124 (minimum) to 408 (maximum) – including the average number of patient beds which was 192 and the average number of maternity beds which was 57. At district hospital level (N=33), the average number of beds in 2014 was 172 - ranging from 73 (minimum) to 410 (maximum) with 129 average number of patient beds and 47 average number of maternity beds. In health centers, the average number of beds was 25 in which the average number of patient beds was 15 while the average number of maternity beds was 8 in these facilities (ref. Table below).

Table 6: Number of inpatient beds by health facility type, 2014

HF Type		# Patient beds	# maternity beds	# beds
Provincial Hospitals (N=4)	Av	192	57	250
	Max	312	96	408
	Min	84	40	124
District Hospitals (N=33)	Av	129	47	172
	Max	346	170	410
	Min	53	20	73
Health Centers (N=445)	Av	16	8	25
	Max	67	42	99
	Min	0	0	2

Source: R-HMIS Database, 2014



Of all the hospitals (district and provincial) reporting at the end of 2014: 100% had more than one ambulance. 45% of these hospitals also had facility owned car/vehicles, 79% had more than one pickup/truck for transport of goods, and 90% had more than one motorcycle (ref. Table below).

At health center level, 15% had at least one ambulance, while 96% of the health centers didn't own a car/vehicle and 98 % had no pickup/truck for transport of goods. 88% of health centers possessed at least one motorcycle and 93% didn't use bicycle as means of transport (ref. Table below).

Table 7: Transport owned by district hospitals and health centers, 2014

Type of Facility	Types of transport	None	%	One	%	> 1	%
Hospitals (District & Provincial) (N=42)	Hospitals (District & Provincial) (N=42)	0	0%	0	0%	42	100%
	Facility owned Car/vehicles	6	14%	18	43%	19	45%
	Pickup/truck for transport of goods	0	0%	10	24%	33	79%
	Motorcycles	0	0%	5	12%	38	90%
	Bicycles	38	90%	4	10%	1	2%
Health centers (N=481)	Ambulances	406	84%	71	15%	3	1%
	Facility owned Car/vehicles	461	96%	18	4%	2	0%
	Pickup/truck for transport of goods	473	98%	8	2%	0	0%
	Motorcycles	56	12%	193	40%	229	48%
	Bicycles	445	93%	26	5%	10	2%

Source: R-HMIS Database, 2014

MEDICAL EQUIPMENT

The availability of basic medical equipment in health facilities varied according to the type of medical equipment (ref. Table below). In the hospitals (provincial and district), 100% had at least one binocular microscope, 97% had at least one refrigerator, 95% have X-ray(s), 93% have electric autoclave(s) (while only one hospital had a non-electric autoclave), and 85% had an anesthesia machine. In the health centers, 100% had at least one binocular microscope, 89% had refrigerator(s), 1% had an X-ray, 55% had an electric autoclave, 17% had a non-electric autoclave, and 1% had an anesthesia machine.

Table 8: Basic medical equipment in district hospitals and health centers, 2014

Type of Facility	Basic medical equipment	None	%	1 to 5	%	More than 5	%
Provincial & District Hospitals (N=39)	Binocular/ Microscope	0	0%	27	69%	9	23%
	Refrigerator	1	3%	8	21%	30	77%
	X-ray	2	5%	36	92%	1	3%
	Autoclave electric	3	8%	35	90%	1	3%
	Autoclave non electric	38	97%	1	3%	0	0%
	Anesthesia machine	6	15%	33	85%	0	0%
Health centers (N=446)	Binocular/Microscope	0	0%	422	95%	3	1%
	Refrigerator	51	11%	390	87%	5	1%
	X-ray	440	99%	6	1%	0	0%
	Autoclave Electric	199	45%	247	55%	0	0%
	Autoclave non Electric	372	83%	74	17%	0	0%
	Anesthesia machine	440	99%	6	1%	0	0%

Source: R-HMIS Database, 2014

In 2014, the health facilities across Rwanda had 17,950 health staff including 709 doctors, 8,898 Nurses and 692 Midwives. The ratio of doctors to population was 1 doctor per 15,510 inhabitants, a slight improvement from 2013 where there was 1 doctor per 15,806 inhabitants. There was 1 nurse per 1,236 inhabitants and 1 Midwife per 15,891 inhabitants (ref. Table below) in 2014. While there was increase in numbers of most staff categories, the number of nutritionists and public health workers remained the same and the number of clinical psychologists and mental health professionals declined.

Table 9: Distribution of health workers by staff category, 2013 and 2014

Staff Category	Health workers in 2013	Population/ health workers in 2013	Health workers in 2014	Population/ health workers in 2014	% change of 2013-14
Medical doctors	684	15,806	709	15,510	4%
Dentists	108	109,204	113	97,318	5%
Pharmacists	99	100,104	108	101,823	9%
Nurses	8,985	1,203	8,898	1,236	-1%
Midwives	622	17,381	692	15,891	11%
Mental Health	151	71,597	149	73,805	-1%
Anesthesia Practitioners	243	44,490	253	43,466	4%
Laboratory Technician	1,513	7,146	1,499	7,336	-1%
Physiotherapists	117	92,403	133	82,683	14%
Orthopedics	20	540,560	21	523,661	5%
Radiologists	110	98,284	116	94,801	5%
Ophthalmologists	42	257,409	43	255,742	2%
Public Health	157	68,861	157	70,044	0%
Nutritionists	199	54,328	199	55,261	0%
Environmental Health Officers	227	47,626	244	45,069	7%
Clinical Psychologists	161	67,150	151	72,827	-6%
Social Workers	1,275	8,479	1,289	8,531	1%
Administrative and Support Staff	3,108	3,479	3,176	3,462	2%

Source: Human Resource for Health Information System (iHRIS)

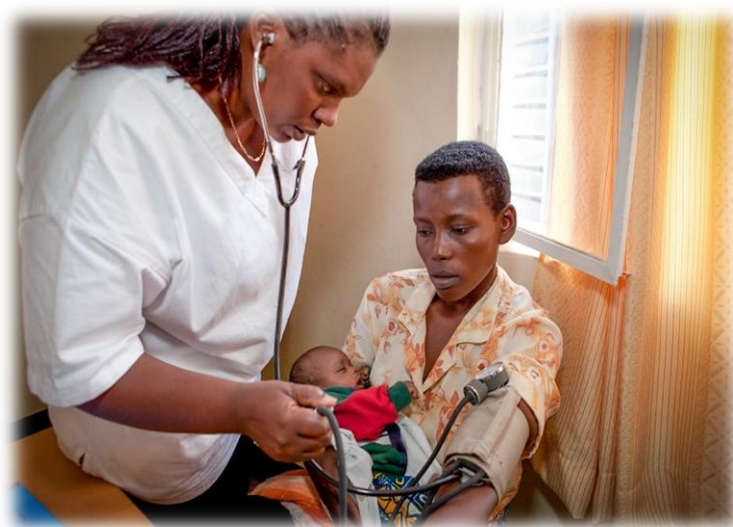
Table 10: Classification of staff categories by qualification

Staff Category	Qualification
Doctors	Doctors, Specialist Doctors
Dentists	Dentist A0, Dentist A1
Pharmacists	Pharmacist A0, Pharmacist A1
Nurses	Nurse (MA), Nurse A0, Nurse A1, Nurse A2, Nurse A3 , Medical Assistant A1, Medical Assistant A2
Midwives	Midwife (MA), Midwife A0, Midwives A1
Mental Health	Mental Health A1
Anesthesia Practitioners	Anesthesia Practitioners A0, Anesthesia Practitioner A1
Radiologists	Radiologist A0, Radiologist A1
Ophthalmologists	Ophthalmologist A1
Lab Technicians	Bio-Chemistry A2, Human Biologist A1, Lab.A0, Lab.A1, Lab A2, Lab A3
Physiotherapists	Physiotherapists(MA), Physiotherapists A0, Physiotherapists A1, Physiotherapists A2
Orthopedic	Orthopedists A1
Environmental Health	Environmental Health(MA), Environmental Health A0, Environmental Health A1, Environmental Health A2
Public Health	Public Health A0, Public Health A1
Nutritionist	Nutritionist A0, Nutritionist A1
Clinical Psychological	Clinical Psychologist A0, Clinical Psychologist A1
Social Workers	Sociologist A0, Sociologist A1, Social Worker A2
Administrative and Support Staff	Administrator A1, Administrator A2, Public Administration A0, Accountant A0, Accountant A1, Accountant A2, Accountant A3, Law A0, Law A1, Law A2, Economist A0, Economist A1, Economist (MA), Finance A0, Finance A1, Management A0, Management A1, Management (MA), Education A0, Education A1, Education A2, Secretary A1, Secretary A2, Secretary A3, Law (MA), Communication A0, Demographer A0, Computer Technician A0, Other Support Staff, drivers, Electrician A1, Electrician A2, Electrician A3, Electromechanical Engineer A0, Electromechanical Engineer A1, Electromechanical Engineer A2, Electrician (A0), Electrician (A1), Electrician (A2),

MORBIDITY AND MORTALITY

Data on morbidity and mortality presented in this booklet are from the R-HMIS Database. The reporting rate of morbidity and mortality data from health centers, district hospitals and provincial hospitals was 99%.

OUTPATIENT CARE



In 2014, health facilities received a total of 12,155,380 new cases. Among them 10,106,261 (83.14%) were patients seen in health centers, 529,461 (4.36%) in district and provincial hospitals, 92,993 (0.77%) in referral hospitals, 701,125 (5.77%) were treated by CHWs practicing community-based integrated management of childhood illness (C-IMCI), while 534,741 (4.40%) attended private facilities.

During the year 2014, the primary health care utilization rate was approximately 1.1 visits per inhabitant (11,724,016 visits/11,002,631 population). This is a significant jump from 0.84 in 2013 with just over 16% more patients cared for across the country. The largest increases in patients seen were in Dispensaries and Medical Clinics, both of which more than doubled. This is likely to be due to increased reporting following training of private health facility staff

to use the RHMIS.

Table 11: Number of new cases among outpatient visit in health facilities 2012-2014

Health facility levels	2012	2013	2014	% change (2013-2014)
Community-owned health facility	29,980	41,230	53,031	29%
Dispensary	29,820	83,563	174,375	109%
Medical Clinic	55,651	154,139	360,366	134%
Prison Clinic	127,735	114,355	118,019	3%
Health Post	7,451	4,971	6,199	25%
Health Center	7,757,135	8,862,174	10,106,261	14%
CHW Home-based care	273,322	252,268	269,761	7%
Police Hospital	9,128	9,030	13,550	50%
District Hospital /Provincial Hospital	457,259	498,999	529,461	6%
Referral Hospitals	114,605	98,334	92,993	-6%
Grand total	8,862,086	10,119,063	11,724,016	16%

Source: R-HMIS Database, 2014

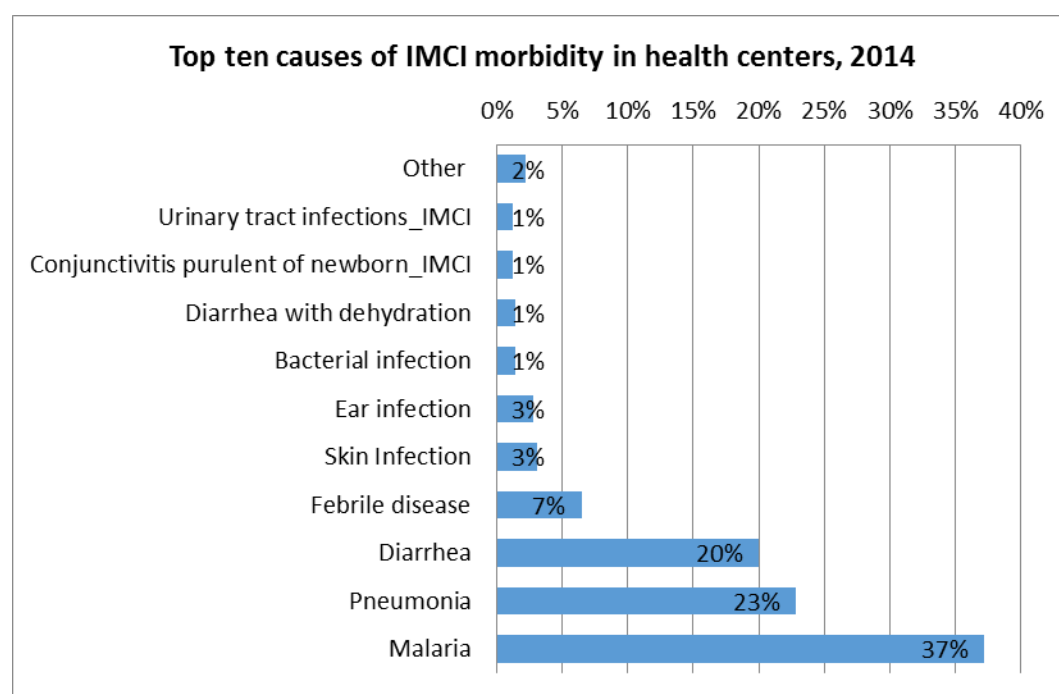
The table below shows that the most frequent causes of under 5 morbidity in health centers (treated using IMCI protocols) are malaria, pneumonia and diarrhea. Together they caused 80% of all IMCI outpatient visits in 2014.

Table 12: Top ten causes of morbidity in IMCI in health centers, 2014

Diseases groups	Number of cases	%
Malaria	192,132	37%
Pneumonia	118,068	23%
Diarrhea	103,044	20%
Febrile disease	33,650	7%
Skin Infection	15,913	3%
Ear infection	14,744	3%
Bacterial infection	7,360	1%
Diarrhea with dehydration	7,276	1%
Conjunctivitis purulent of newborn, IMCI	6,488	1%
Urinary tract infections, IMCI	6,307	1%
Other	11,480	2%
	516,462	

Source: R-HMIS, 2014

FIGURE 6: TOP TEN CAUSES OF IMCI MORBIDITY <5 YEARS IN HEALTH CENTERS, 2014



Source:R-HMIS, 2014

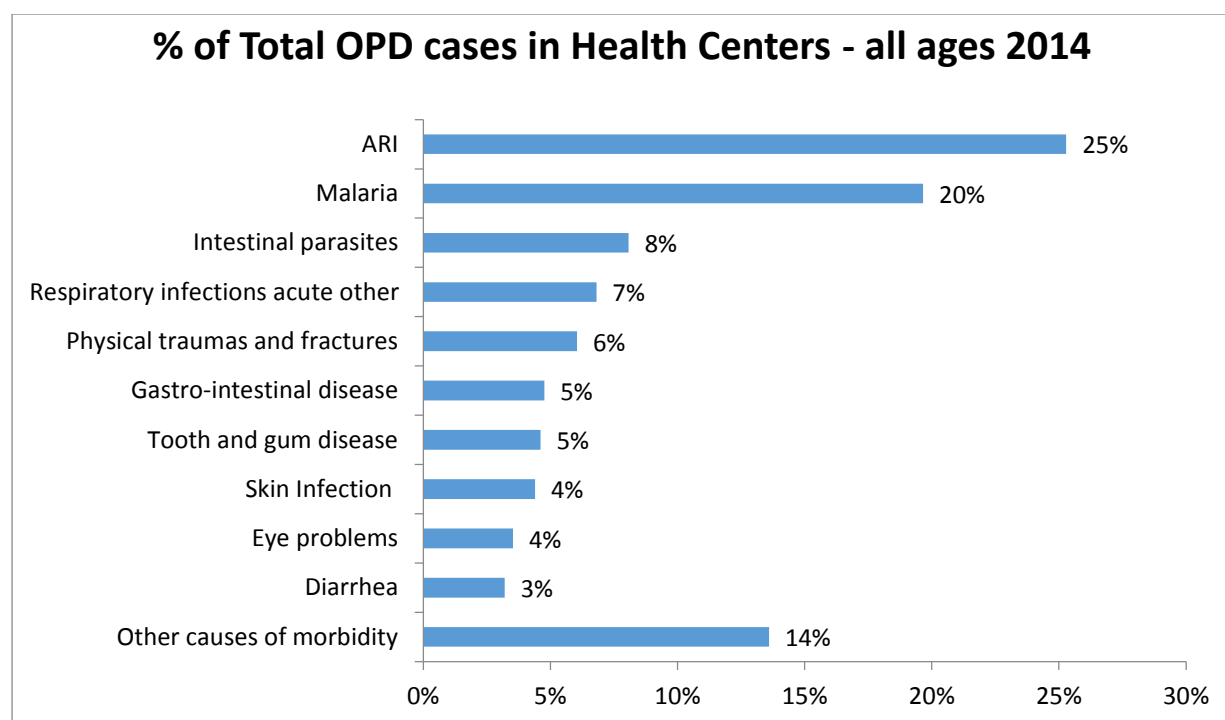
The table below shows the most frequent causes of outpatient visits in health centers for all age groups which are ARI, Malaria and Intestinal parasites. Other diseases represent a significant proportion of new cases (14%).

Table 13: Top ten causes of morbidity in health centers, 2014 (all age groups)

Rank	Cause of Outpatient Visit	New OPD cases	% of total OPD cases
1	ARI	2,051,749	25%
2	Malaria	1,594,708	20%
3	Intestinal parasites	655,416	8%
4	Respiratory infections acute other	552,908	7%
5	Physical traumas and fractures	490,928	6%
6	Gastro-intestinal disease	386,303	5%
7	Tooth and gum disease	374,607	5%
8	Skin Infection	356,812	4%
9	Eye problems	286,332	4%
10	Diarrhea	260,033	3%
	Other causes of morbidity	1,102,970	14%
	Total of new cases OPD	8,112,766	

Source: R-HMIS 2014

Figure 7: Top ten causes of morbidity in health centers, 2014(all age group)



Source: R-HMIS 2014

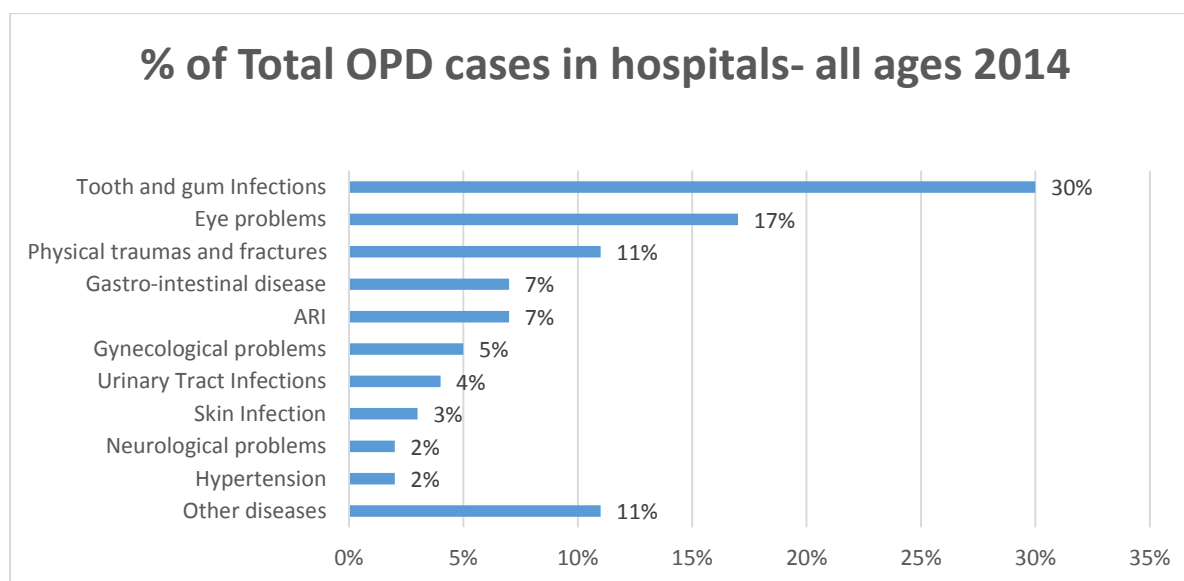
In hospitals, the main causes of all outpatient visits reported are teeth and gum infections (30%), eye problems (17%), physical trauma and fracture (11%), ARI (7%) and Gastro-intestinal disease (7%), (see table below).

Table 14: Top ten causes of morbidity in hospitals, 2014 (all age groups)

	Data	Cases	% of total OPD cases
1	Tooth and gum Infections	127,170	30%
2	Eye problems	74,170	17%
3	Physical traumas and fractures	45,473	11%
4	ARI	31,350	7%
5	Gastro-intestinal disease	30,756	7%
6	Gynecological problems	22,361	5%
7	Urinary Tract Infections	17,273	4%
8	Skin Infection	14,016	3%
9	Hypertension	9,498	2%
10	Neurological problems	8,879	2%
	Other diseases	45,095	11%
	Total	426,041	

Source: R-HMIS, 2014

Figure 8: Top ten causes of morbidity in hospitals, 2014 (all age groups)



Source: R-HMIS, 2014

HOSPITALIZATION AND MORTALITY

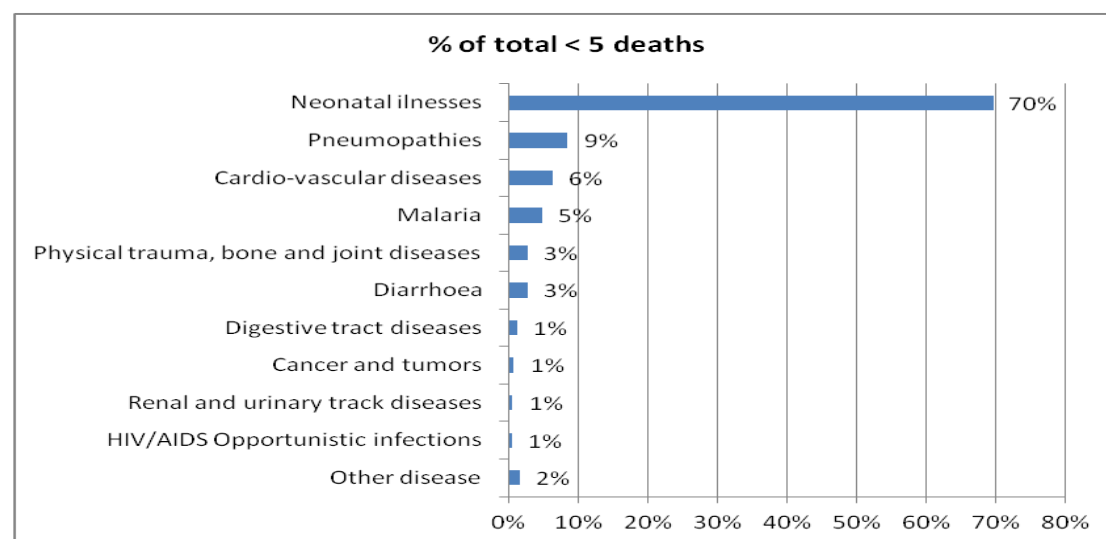
In 2014, the total number of deaths for children under 5 years in health facilities was 3,722. The most frequent causes of death in health facilities were Neonatal illness with 70%, Pneumopathies 9%, Cardio-vascular diseases 6% and Malaria 5%.

The top ten causes of under 5 mortality are displayed in the table below.

Table 15: Top Ten Causes of Under 5 Years Mortality in Health Facilities, 2014

Rank	Data	Total	% of total
1	Neonatal illnesses	2595	70%
2	Pneumopathies	319	9%
3	Cardo-vascular diseases	237	6%
4	Malaria Death	180	5%
5	Physical trauma, bone and joint diseases	105	3%
6	Diarrhea	104	3%
7	Digestive tract diseases	46	1%
8	Cancer and tumors	31	1%
9	Renal and urinary track diseases	23	1%
10	HIV/AIDS Opportunistic	20	1%
11	Other disease	62	2%
12	Grand Total	3722	100%

Source: R-HMIS, 2014



Source: R-HMIS, 2014

Admission and mortality data come exclusively from health facilities through R-HMIS. Deaths that happened in the community are reported only through the Community Health Worker Information system (SIScom), and are notified by CHWs in their monthly reports.

Table 16: Number of deaths in health facilities, 2013-2014 (excludes private)

Health Facility Type	2013	2014	% Change
Health centers	496	396	-20%
District hospitals(including Provincial and Kacyiru Police Hospitals)	8514	8929	5%
Referral hospitals	2355	1760	-25%
Total	11365	11085	-41%

Source: R-HMIS, 2014

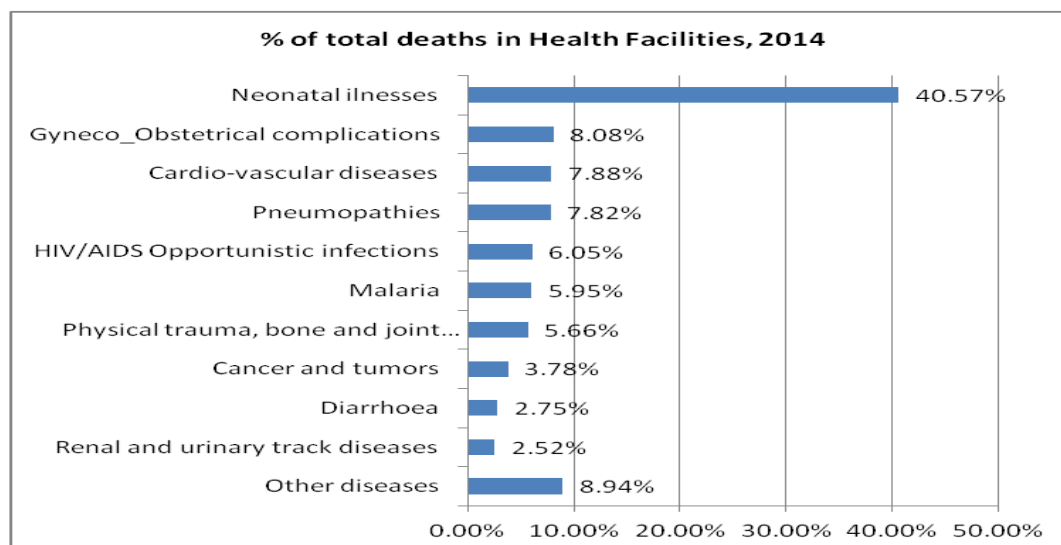
The total number of deaths reported from facilities in 2014 was 11, 085. This represents a decrease of just under 20 %: at health centers, increase of 5% in District hospitals and provincial hospitals (including provincial and Kacyiru Police hospital), and a decrease of 25% in referral hospitals.

Table 17: Top ten causes of death in health centers and district/provincial hospitals, 2014 (all age groups)

Rank	Data	Total	% of total
1	Neonatal illnesses	3825	41%
2	Gyneco_Obstetrical complications	762	8%
3	Cardio-vascular diseases	743	8%
4	Pneumopathies	737	8%
5	HIV/AIDS Opportunistic infections	570	6%
6	Malaria	561	6%
7	Physical trauma, bone and joint diseases	534	6%
8	Cancer and tumors	356	4%
9	Diarrhoea	259	3%
10	Renal and urinary track diseases	238	3%
	Other diseases	843	9%
	Total	9428	

Source: R-HMIS, 2014

Figure 9: Top ten causes of death in health centers and district/provincial hospitals, 2014 (all age groups)



Source: R-HMIS, 2014

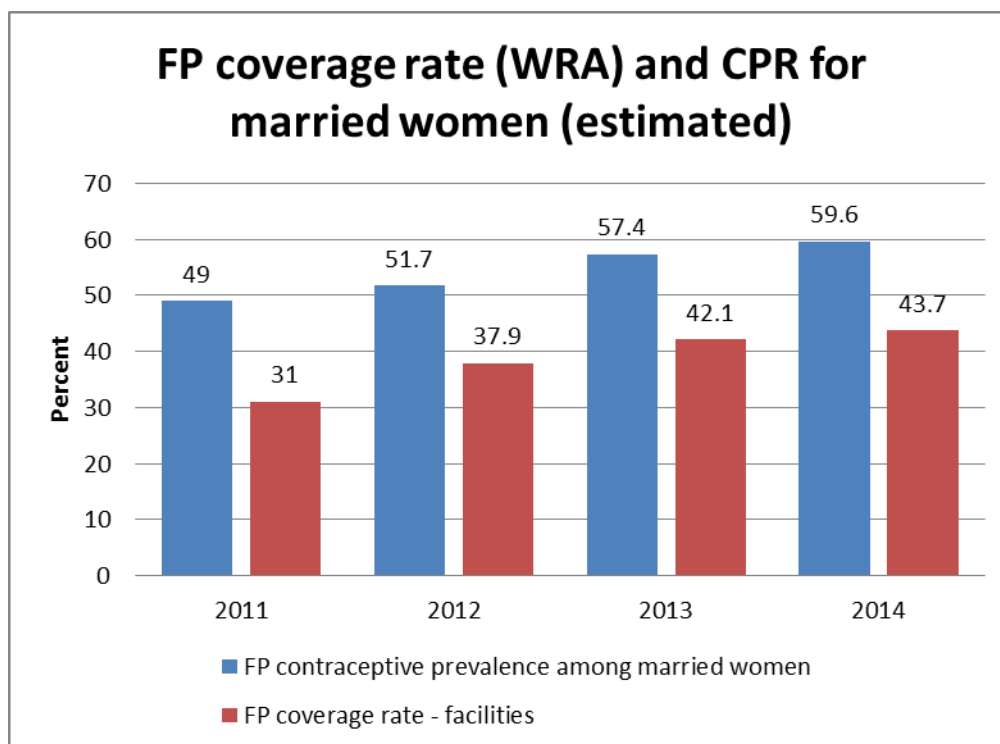
The total number of deaths reported for all age groups in 2014 in health centers and District/provincial hospitals was 9428. The most frequent causes of death in health facilities were Neonatal illness (41%), Gyneco-obstetrical complications (8%), Cardio-vascular diseases and pneumopathies (8% each). Average duration of stay reduced from 4.2 days in 2013 to 3.6 in 2014, with the sharpest reductions at the Referral Hospital level (from nearly 16 days to just over 7 days).

Table 18: Intra hospital mortality and average duration of stay, 2014

Facility type	Admission cases	Death	Discharge d	Number of days for discharge d patients	% intra-hospital mortality	Average duration of stay (days)
Health Center	123,718	396	282,636	685,884	0.32%	2.42
Medical Clinic (private)	10,744	21	14,234	11,619	0.19%	0.81
Hospitals	288,032	8,929	323172	1,407,300	3.10%	4.35
Referral Hospital	28,978	1,760	28,813	205,303	6.07%	7.12

Source: R-HMIS, 2014

FAMILY PLANNING

Figure 10: Family planning in general

Source: R-HMIS, 2014

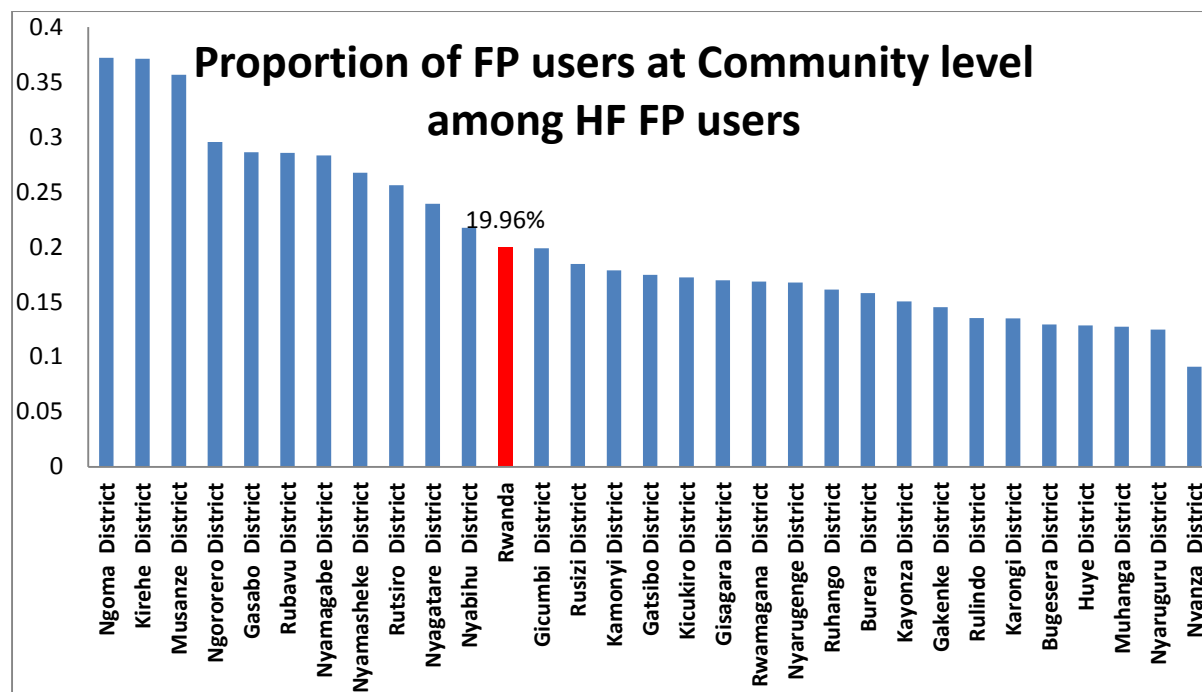
The figure above shows the trend of FP use among women of reproductive Age (WRA) and an estimate of FP use in married women¹. The estimate of almost 60% for coverage of married women is 7% higher than the RDHS 2014 results for CPR of 53%. This is likely due to changes in married women demographics (% of contraceptive users married) since the 2010 survey, and some misreporting from community to facility on continuing FP clients (some health facilities do not systematically remove the numbers of women lost to follow-up). Most of continuing FP clients are being followed by CHWs.

¹ Although facilities do not report women in union separately from other contraceptive users, a special analysis was done to estimate facility based coverage of women in union. For this analysis the proportion of married women 15-49 years encountered during the DHS 2010 sampling was applied to the denominator (women of reproductive age), and the proportion of married women among family planning users encountered to the numerator (users at the end of the month)..

FP IN COMMUNITY

The Family Planning program is implementing new strategies to avail FP services near the population including Community Based Provision (CBP) and outreach strategies supervised by health centers.

Figure 11: Proportion of FP users served by community-based FP by district

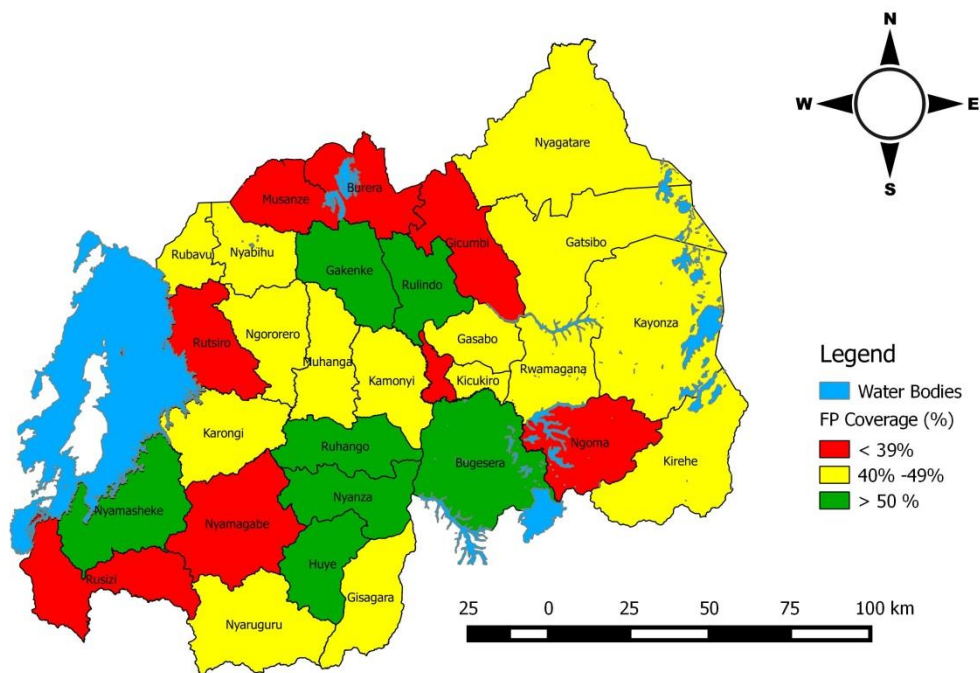


Source: R-HMIS, 2014

By the end of 2014, the Community Based Provision of family planning services was provided countrywide. The graphs above shows the coverage of family planning in CBP compared to the total clients under FP at health facility and the clients covered in CBP in Rwanda.

Map of family planning service coverage rate Dec. 2014

FAMILY PLANNING COVERAGE, WRA 2014



Also the number of clients served by CHWs has increased as the training continues across the country.

The figure shows that the most used are short term contraceptive methods in Rwanda in 84%, while the long and the permanent methods account only 16%.

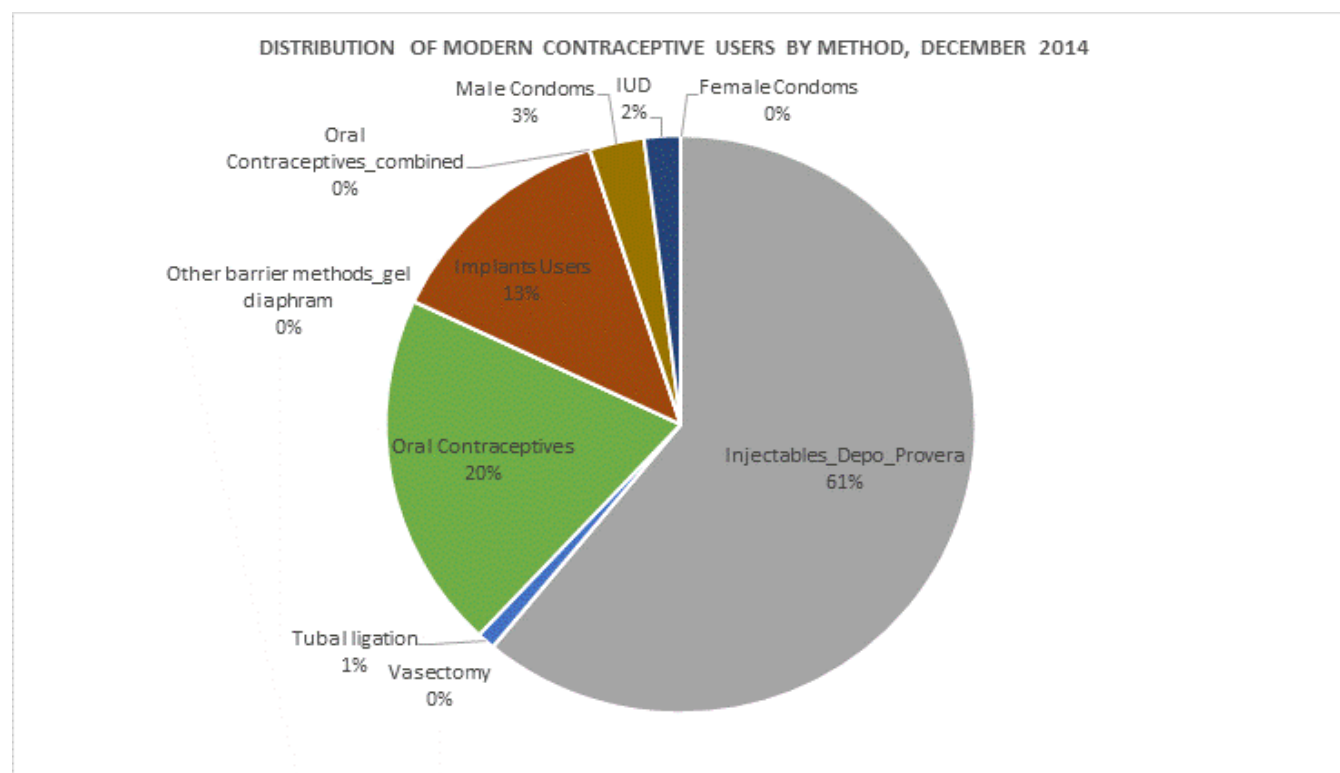
The total number of tubal ligations performed in 2014 was 835 versus 810 in 2013, while 225 vasectomies were performed versus 524 in 2013.

Table 19: Numbers of users at the end of 2014 by method

Family Planning by method	Users at end of year 2014
Female condoms	228
Implants Users	157,237
Injectables_Depo-Provera	725,177
IUD	20,877
Male condoms	38,265
Oral Contraceptives	235,241
Oral Contraceptives_combined	2,124
Other barrier methods_gel diaphragm	382
Tubal ligation	5,025
Vasectomy	3,066
Grand Total	1,187,622

Source: National HMIS Database, 2014

Figure 12: Distribution of modern contraceptive users by method, December 2014



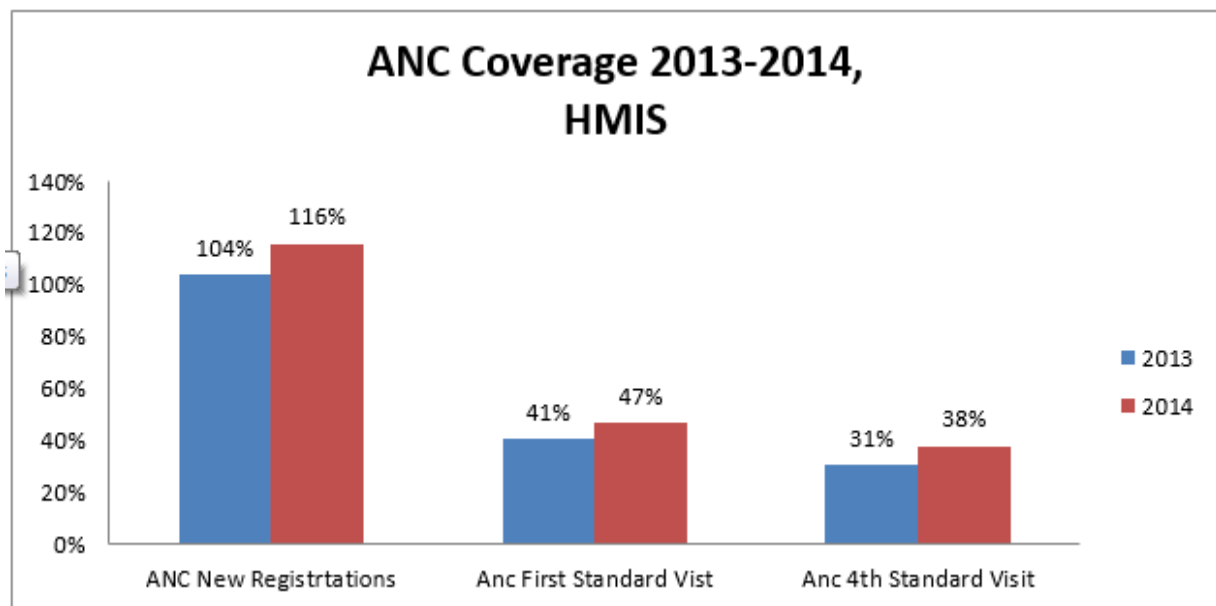
Source: National HMIS Database, 2014

ANTE-NATAL CARE (ANC)

Figure below shows that there is an increase of women attending the first and 4th Standard visits in 2014 compare to HMIS data 2013. However, less than a half of women attended the first standard visit affecting negatively the coverage of women attending the 4th standards visit.

Using the data from the HMIS we see that coverage of ANC remains almost universal, though in some districts it slightly exceeds 100% because of patient roaming.

Figure 13: Percentage of women attending antenatal care (ANC)



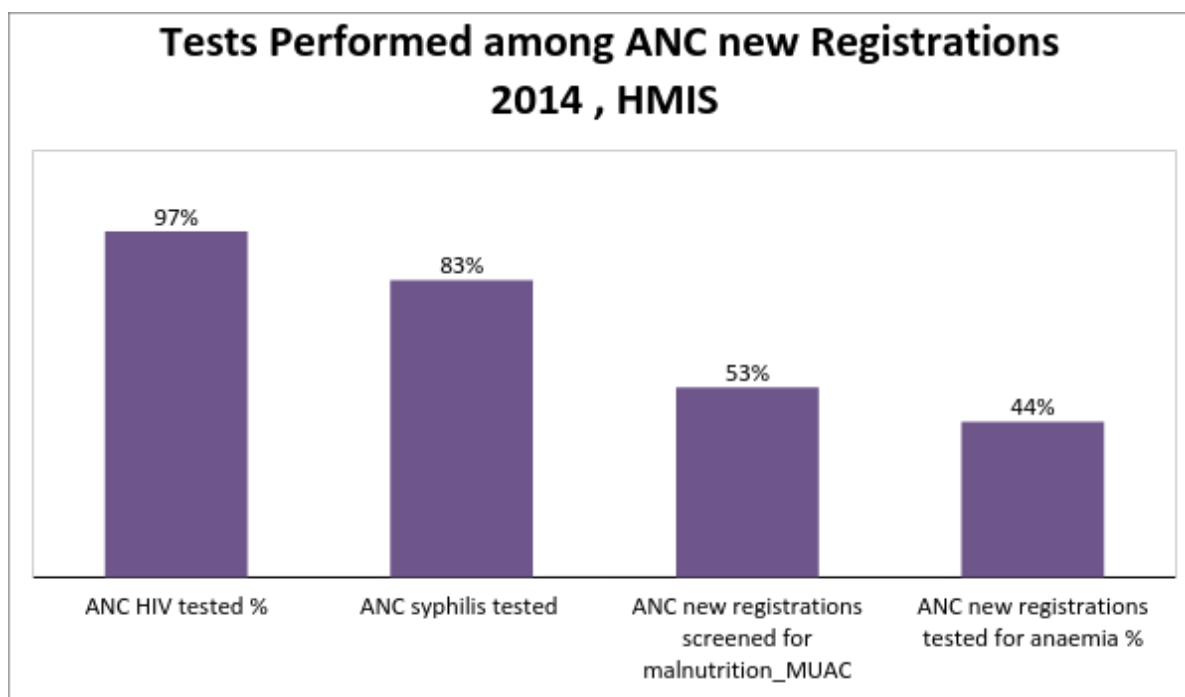
Source: National HMIS Database, 2014

The Quality of Antenatal Services in Health centers

The figure below shows that most women are tested for HIV and Syphilis during their visits.

The standard package of services to be provided during ANC visits is not fully respected across all facilities as the figure shows that less than 50% of women are tested for anemia, and only a half of pregnant women are screened for malnutrition.

Figure 14: Coverage for HIV and syphilis, MUAC and anemia tests performed

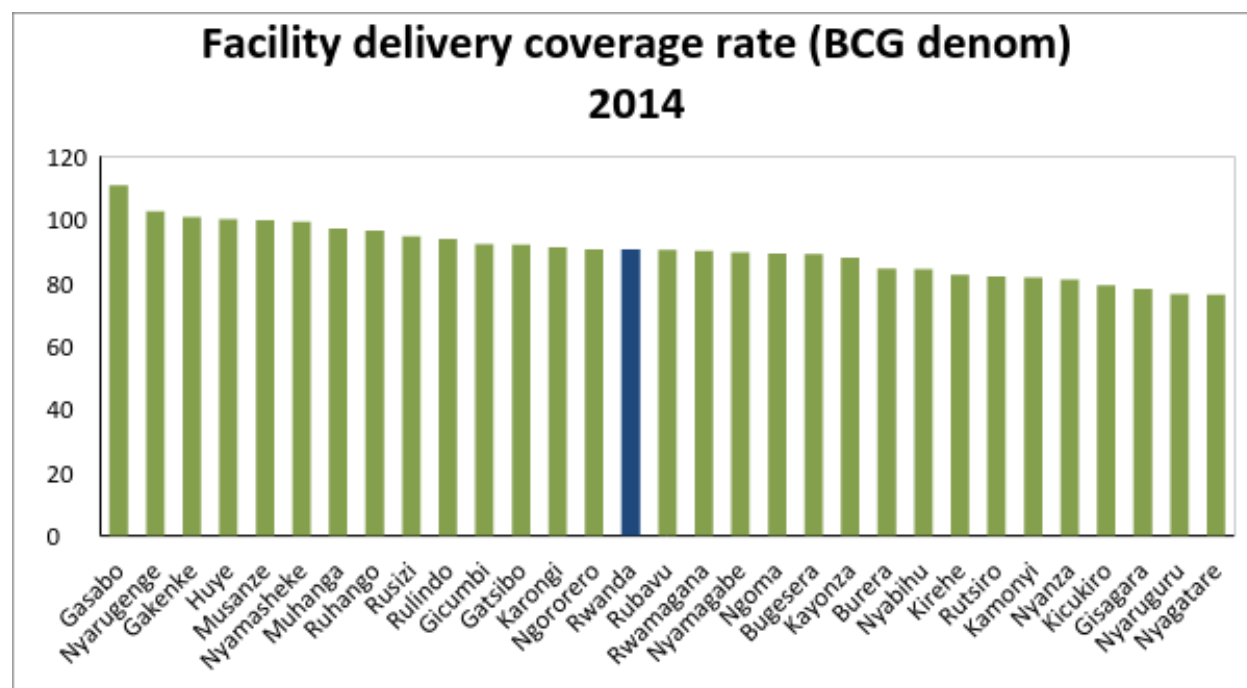


Source: National HMIS Database, 2014

ASSISTED DELIVERIES

Using the denominator for Assisted Deliveries rates based on the number of BCG vaccinations administered to children 0-11 months, the coverage of facility based deliveries is 90.8%. This figure is almost exactly the same as the results of the RDHS 2014 of 91%: The community sensitization on the benefits of delivering at health facilities has been contributed a lot to increase the coverage and should be kept in order to achieve the target of 100% of pregnant women delivering at health facility. 4 districts namely Nyagatare, Nyanza, Kicukiro, and Gisagara are still below 80%.

Figure 15: Assisted deliveries in Health Facilities by district (BCG denominator), 2014

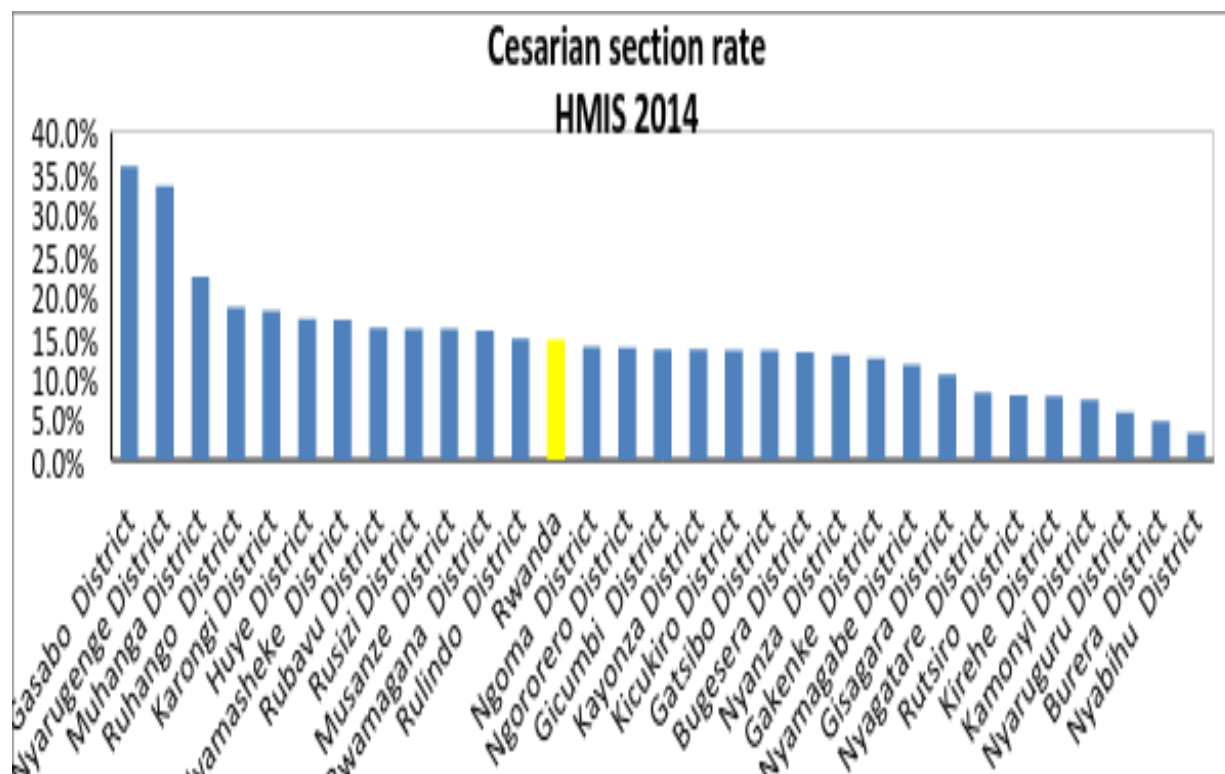


Sources: National HMIS Database, 2014

Caesarian section at hospitals

At the national level the rate was at 14.7 % Gasabo, Nyarugenge and Muhanga districts have the rate which are higher than 20%, this may be due their location in urban areas with referral hospitals where many complicated deliveries are referred.

Figure 16: Caesarean section rate by district, 2014



Source: RHMIS database 2014

Number of maternal death in health facilities

During 2014, a total of 303 maternal deaths were reported from health facilities and 32 by community health workers. This results in a maternal mortality ratio of about 106 per 100,000 live births, which is half the RDHS 2014 estimate of 210. This suggests that their continues to be under-reporting of maternal deaths – especially when they occur in the community.

Maternal death audit

The RDHS from 2005 to 2014 have shown dramatic reductions in the Maternal mortality ratio from 750/100,000 live births (RDHS, 2005) and at 476/ 100,000 live births in 2010 and 210/100,000 live births in 2014). Geographical access has improved with the construction and rehabilitation of 3 new District Hospitals and 14 health centers, but approximately 23% of patients still have to walk for more than one hour or more than 5Km to reach the nearest health facility (World Bank Rwanda, 2009). The rate of skilled birth attendance at delivery is increasing year-by-year, 69% (RDHS, 2010) and more than 90% according to both the RHMIS 2014 and RDHS 2014. However according to RDHS 2014 only 42% of women attended the 4 antenatal care visits (RHMIS reports 37.5%) while only 42% of them come for post-natal care within 2 days (RHMIS reports only 27% within 3 days).

Thus, the Ministry of Health institutionalized maternal deaths audit (MDA) were implemented in each health district hospital. For this purpose, three methods were selected:

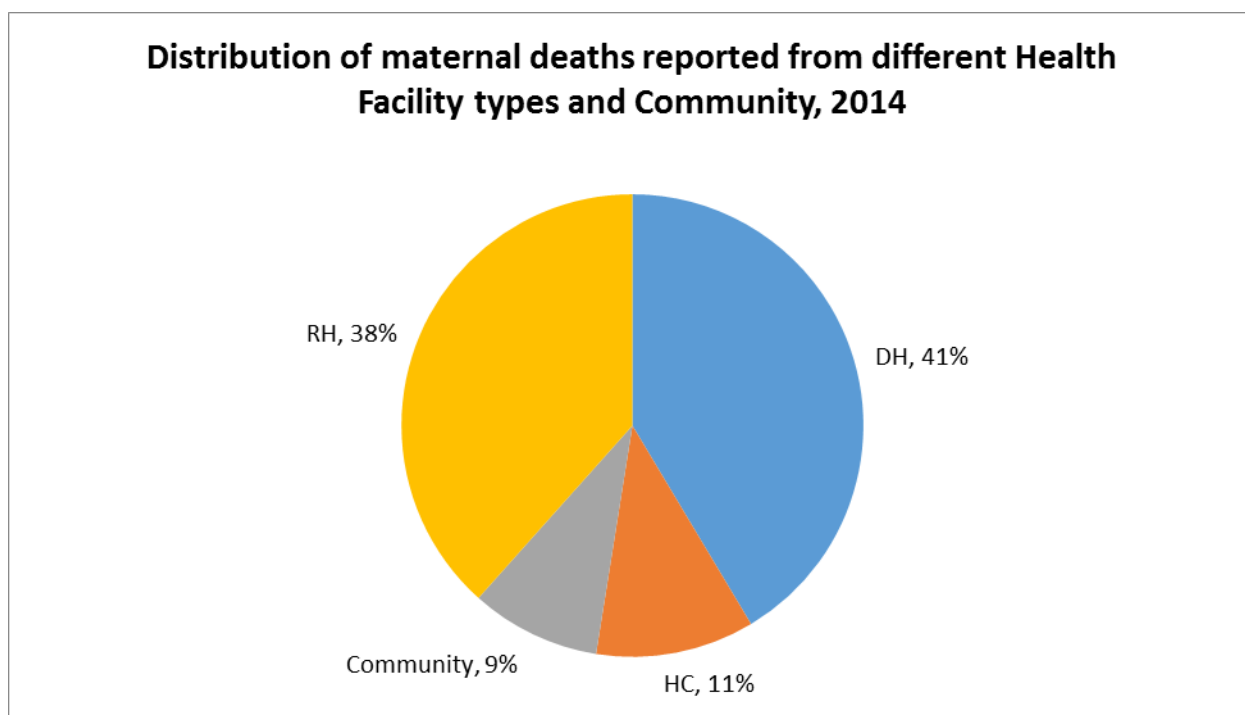
- 1) Facility based deaths audit,
- 2) Confidential enquiry into maternal deaths,
- 3) Verbal autopsy (community based deaths audit).

Since 2009, The Ministry of Health introduced maternal death audits in all public and private health facilities and now MDA is seen as an important approach to get much information about maternal death mortality based on hospital data, which are collected through audit sessions.

The total number of maternal death audited were 303 in 2014, this means that 95 % were audited among all reported health facility maternal death.

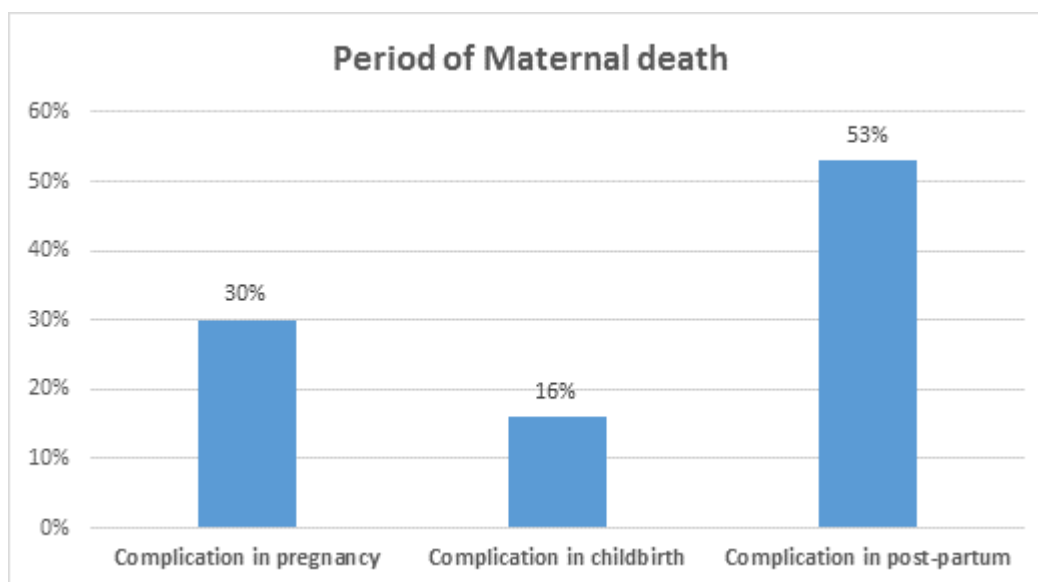
Reports from MDA show that about 41% of the deceased women occurred in District Hospital, 38% in Referral Hospitals, 11% in health centers and 9% in the community as shown above.

Figure 17: Distribution of maternal deaths reported from different health facility types and community, 2014



Source: R-HMIS Database 2014

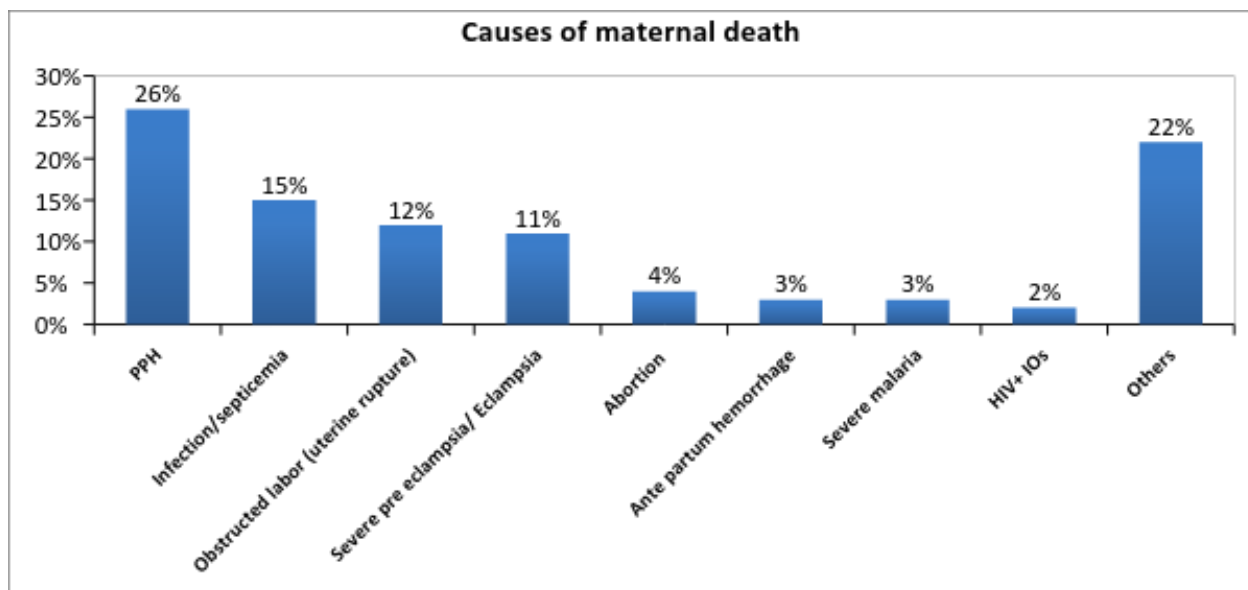
Figure 18: Period of maternal death from maternal death audits



Source: MDA, 2014 MCH Department

As illustrated by the figure above, most of maternal death occurred in post-partum period (53%).

Figure 19: Causes of maternal deaths, 2014

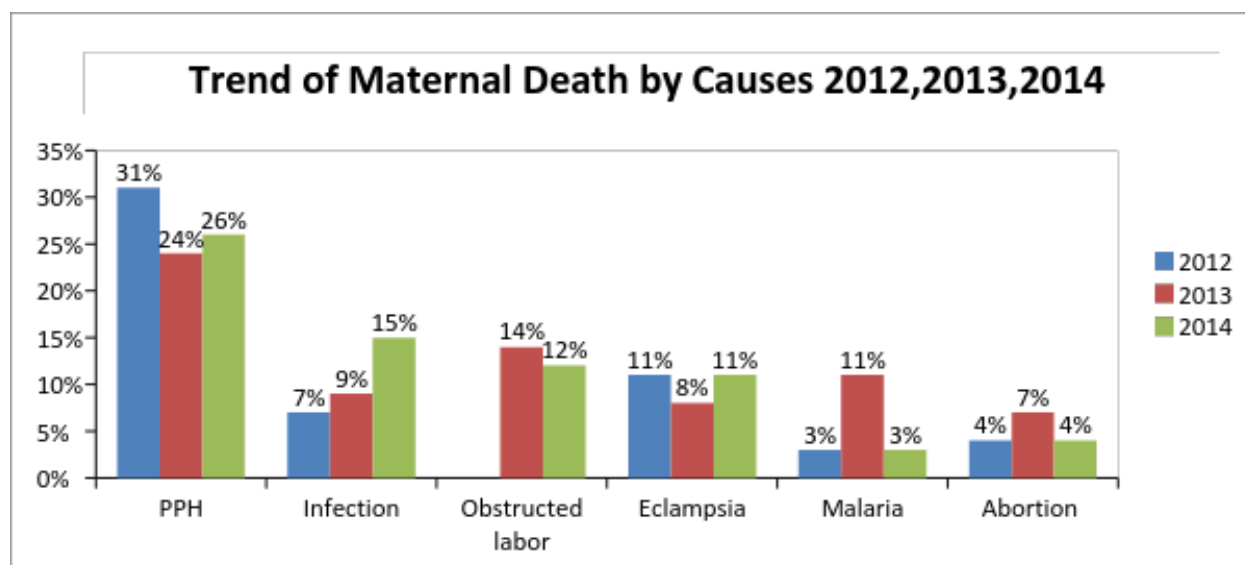


Source: MDA, MCCH Division

The leading cause of maternal death is Post-Partum Hemorrhage (26%) followed by infection in 15%. There are other causes of maternal death which are not common with a total proportion of 22%. These include:

- Cardiopathy on pregnancy
- Pulmonary embolism
- Amniotic embolism
- Tuberculosis
- Pneumonia
- Acute pulmonary oedema
- Cancer on pregnancy
- Meningitis

Figure 20: Trends in maternal death by cause 2014



Source: Maternal death audit (MCCH Department)

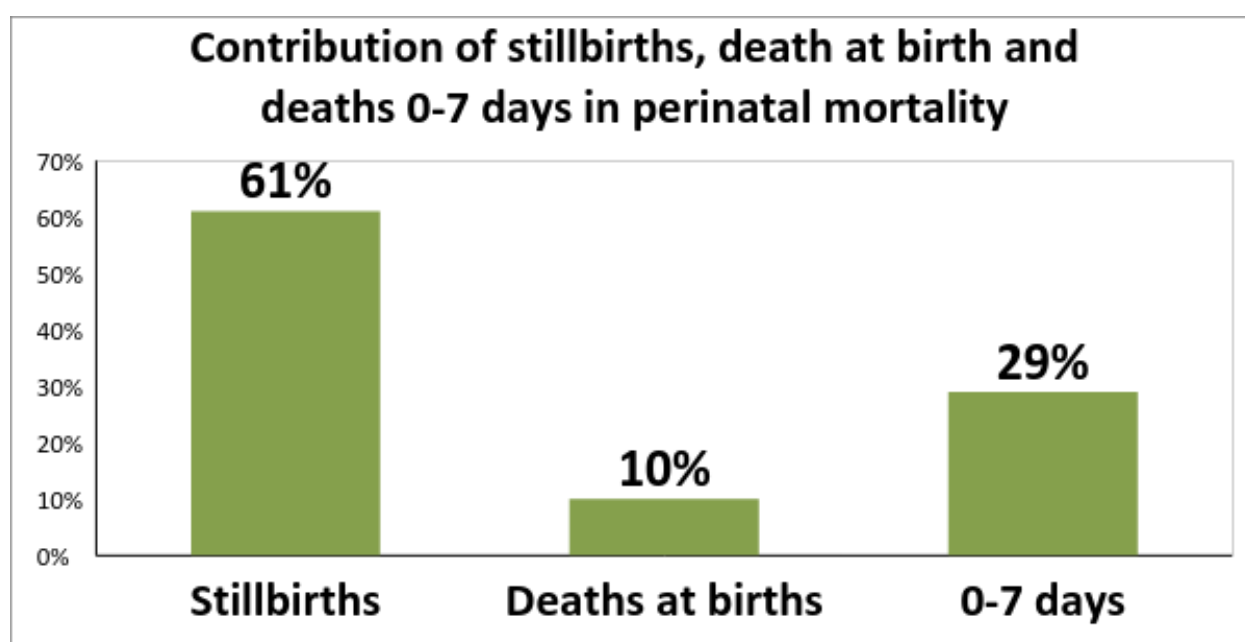
In the figure above, post-partum hemorrhage (PPH) is still the leading cause of maternal death while infection has become the second cause of maternal death in 2014 versus fourth cause in 2013. Maternal deaths from malaria, obstructed labor and abortions have decreased in 2014 compared to 2013.

PERI-NEONATAL HEALTH

Perinatal Mortality rate

The perinatal mortality is 31/1000 of births. This graph shows the contribution of each component in peri neonatal mortality, of the total perinatal deaths 61% are due to stillbirths, justifying much effort required to improve ANC visits and labor surveillance to reduce the stillbirth rate.

Figure 21: Perinatal mortality rate by component, 2014



Source: HMIS 2014

WEIGHT AT BIRTH AND DEATHS OF NEWBORNS

The Table below shows the number of births, perinatal deaths, and low birth weight babies born at health facilities in Rwanda in 2013 and 2014. The proportion of peri-natal deaths increased from 28.6 per 1,000 live births to 31 per 1,000 births in 2014. Low birth weight deliveries were 4.7 % in 2013 and increased to 5.3 in 2014 at district hospitals.

Table 20: Birth and peri-natal deaths in health centers and district hospitals, 2013-2014

Health Facility Type	2013				2014			
	Total Births	Total Deaths	Births < 2.5 kg	% low birth weight	Total Births	Total Deaths	Births < 2.5 kg	% low birth weight
Health Center	190,207	557	6,444	3.35%	199,965	2,175	7,943	4%
District Hospital	104,385	3,048	4,977	4.7%	87,747	4,699	9,564	5.3%
Total	294,592	3,605	11,421	8.05%	204,664	6,874	17,507	9.3%

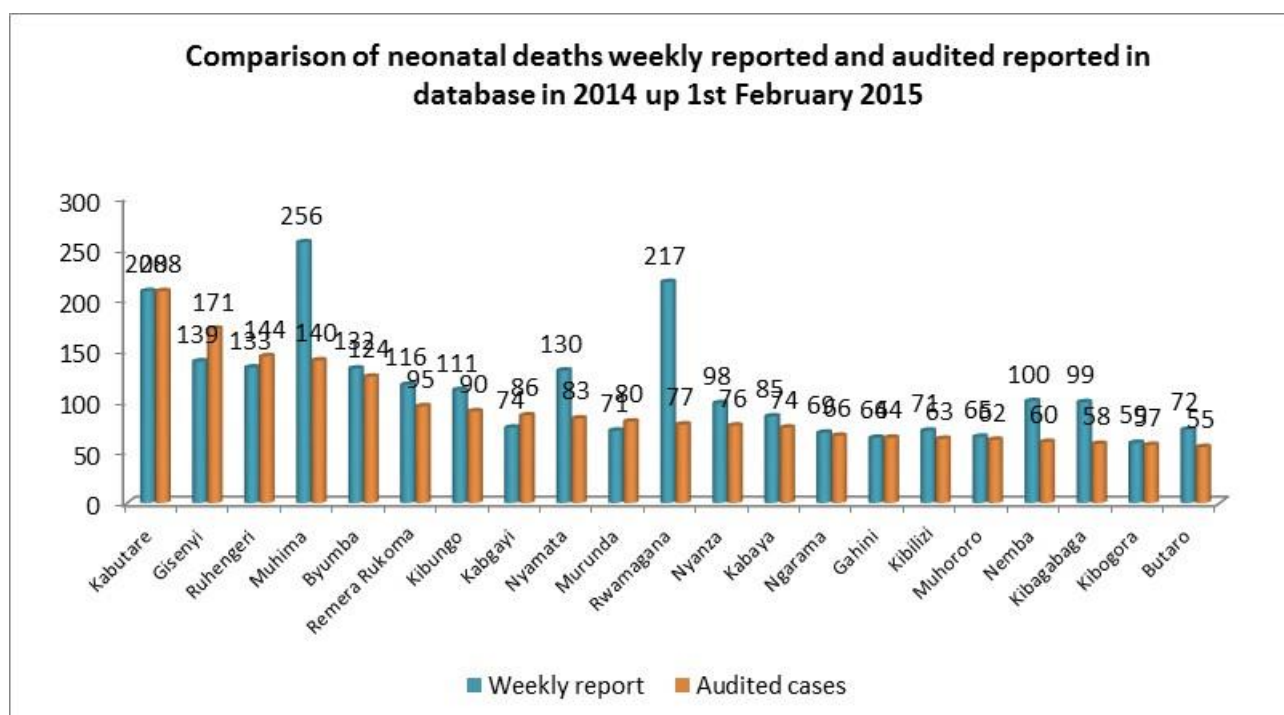
Sources: National HMIS Database, 2013 and 2014

NEONATAL DEATHS AUDIT

In 2014, Hospitals have reported in weekly reports 3,441 neonatal deaths and audited cases entered in database are 2,531 that represents 73.5% of all reported. Considering number of audited cases, District Hospitals and health centers should be grouped in 2 categories:

- **Category I:** These category groups 21 districts hospitals catchment area which have audited 1993 cases that represent 76% of all audited cases and 68% of reported cases.

Figure 22: Comparison of neonatal death reported vs audited



In this category, proportion of audited cases is high in almost all catchment area of Gahini DH, Kibogora DH, Muhororo DH, Ngarama DH, Byumba DH and Ruhengeri DH. In Kabutare catchment area (Kabutare DH and CHUB) the number of reported neonatal deaths coincide with the number of cases audited, but a big difference is observed between number of reported cases and audited cases in Rwamagana DH, Nyamata DH, Nemba DH and Kibagabaga DH. For Muhima catchment area all cases audited are from Muhima Hospital. Any case was audited and entered in database by CHUK. In 2014 for Gisenyi catchment area the number of audited cases is more than reported in weekly reports.

Category II: These category groups 22 district hospitals which have audited 598 cases that represent 24% of all audited cases and 56% of reported cases. In this category, we observe an important difference between reported cases and audited cases entered in database exception for Ruli DH, Gihundwe DH, Mugonero DH , Kibuye DH and Masaka DH. The big difference is observed in Kirehe DH, Mibilizi DH, Kigeme DH and Rwinkwavu DH.

Any cases reported by Bushenge DH, Gakoma DH and Kacyiru in 2014 was audited and entered in database up to 1st February 2015.

Demographic information of deceased newborns

The table below shows 58% of deceased was newborn with low weight at birth while 50 % of deceased were preterm. This means that 8% of term newborn had low birth weight, 92% of newborn died in District hospital while only 65% were born at the district hospital level, this means that 27% of new born who died at district hospital level were referred from health centers, 3% of newborn who died at referral hospital were referred by district hospital.

Table 21: Demographic information of deceased newborns

1.Sexe of Newborn	Percentage
Female	47
Male	53
2.Birth weight	
> 2500 Gr	42
1000Gr- 1499Gr	19
1500 Gr - 2500 Gr	29
500Gr-999 Gr	10
3.Place of Birth	
At Home	4
On Route to HF	3
Health Center	25
District Hospital	65
Referral Hospital	3
4. Place of Death	
Health Center	2
District Hospital	92
Reference Hospital	6

CLINICAL INFORMATION ON DECEASED NEWBORNS

Preterm delivery contributes to 50% of neonatal. The hypothermia is still among the factors that contribute to neonatal death.

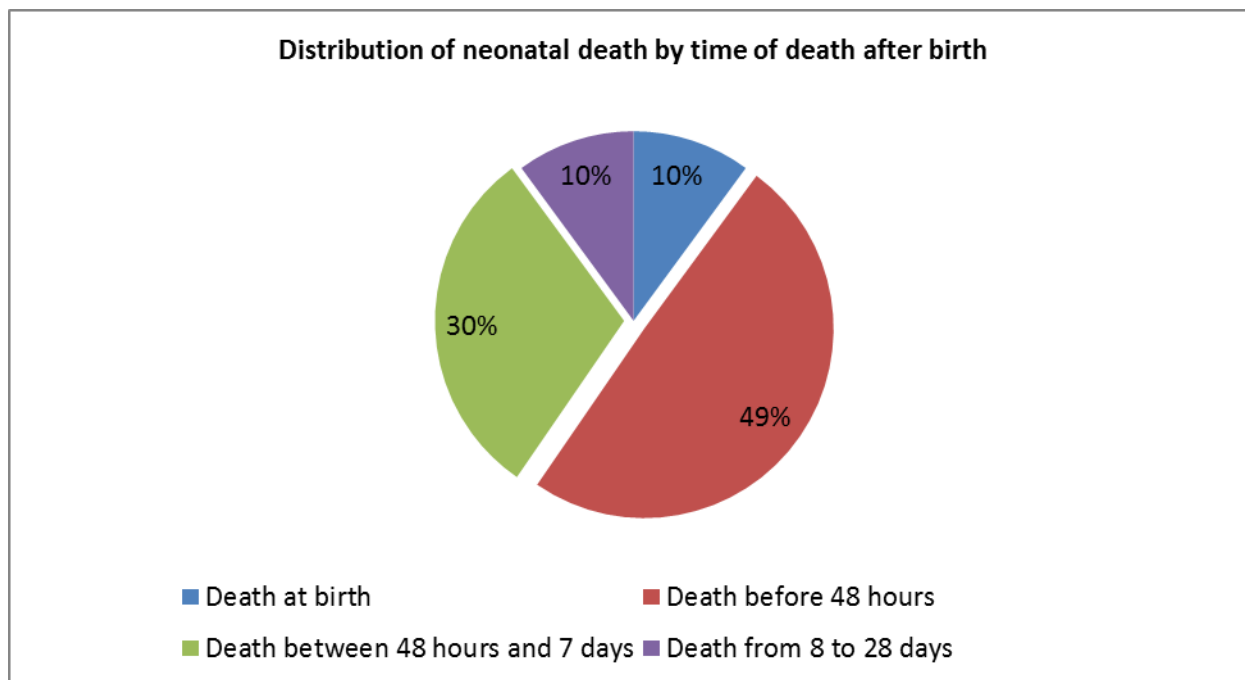
1.Age of Pregnancy	Percentage
Prematurity	50
2.Cry at Birth (APGAR >6)	
No	52
Yes	30
No documented	18
3.Mode of Delivery	
C-Section	25
Abnormal vaginal Delivery	9
Normal Vaginal Delivery	66
4. Temperature on admission in Neonatology services	
< 36.5 C	77
36.5-37.5 C	14
>37.5 C	4
Non recorded	5

AGE OF DEATH AFTER BIRTH

The table below shows that early neonatal deaths represent 90% of deaths, including death at birth which represents 10%. Neonatal deaths that occur in first 48 hours after birth represent 61%.

According to neonatal death audit reports, early neonatal death represents 90% among them, 10% are deaths at birth.

Figure 23: Age of death after birth



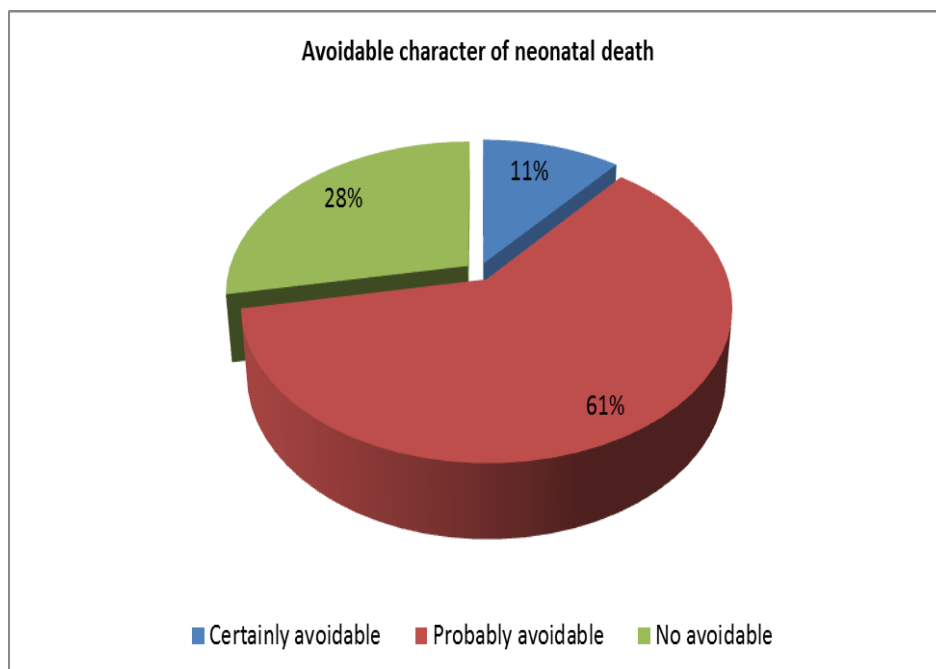
Source: NCDA 2014, MCCH Division

AVOIDABLE FACTORS ASSOCIATED WITH NEONATAL DEATHS

1. Avoidable character of neonatal deaths according opinion of audit committee

According to the opinion of the audit committee, 72% of neonatal deaths were avoidable this means that they identified clear avoidable factor associated with neonatal death.

Figure 24: Avoidable factors of neonatal deaths

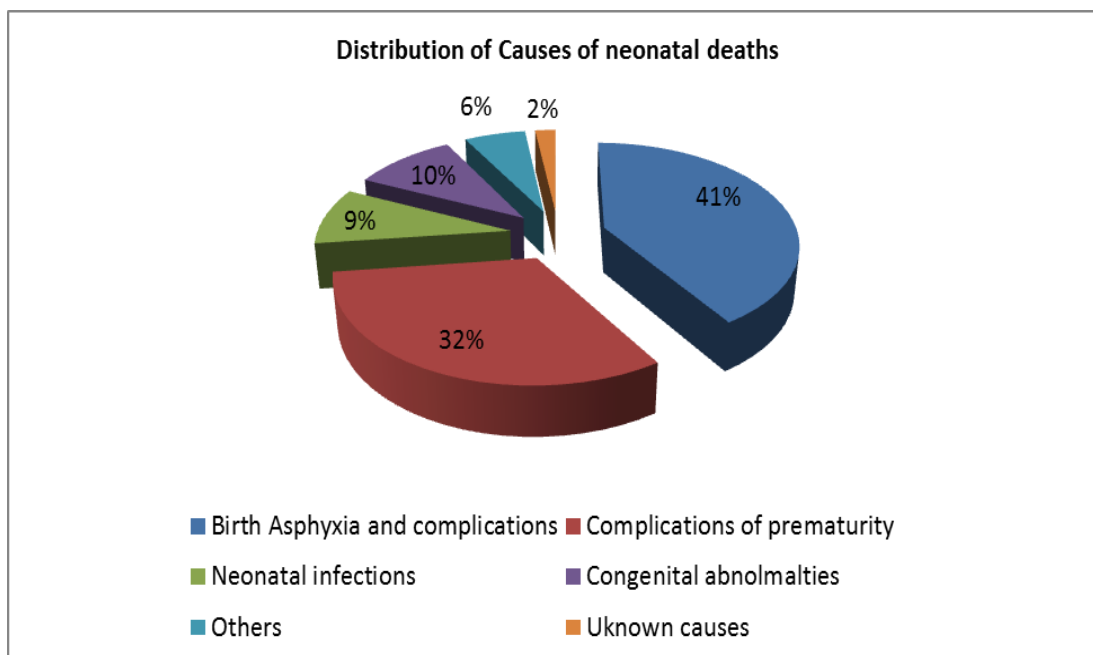


Source : Neonatal and child death audit

CAUSES OF NEONATAL DEATHS

According to the neonatal death audit results, Birth asphyxia is still the leading cause of neonatal death followed by complications of prematurity.

Figure 25: Primary causes of neonatal deaths



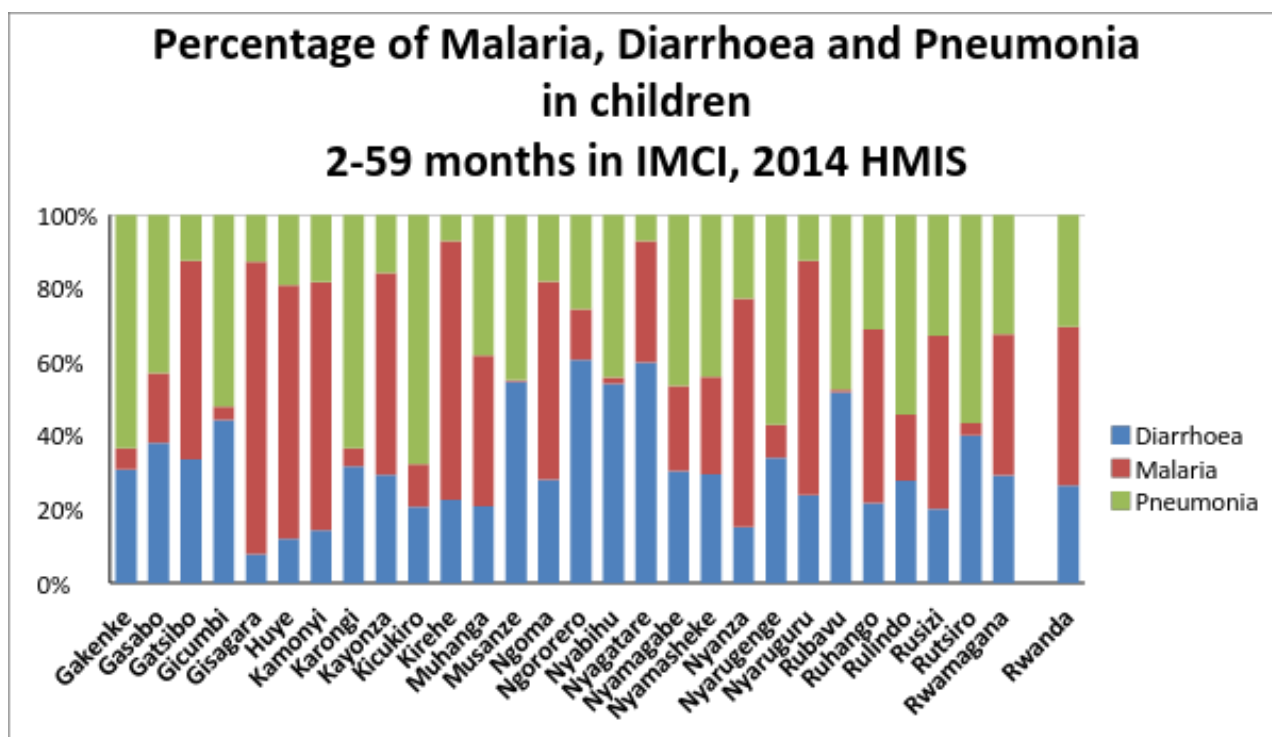
Source: Neonatal and child death audit

CHILD HEALTH

MALARIA, DIARRHEA AND ARI IN CHILDREN 2-59 MONTHS TREATED IN IMCI IN HEALTH CENTERS

Overall, malaria, ARI and diarrhea cases treated according to IMCI service was almost evenly distributed across Rwanda.

Figure 26: Proportion of malaria, Diarrhea and ARI in children 2-59 months treated in IMCI in health centers

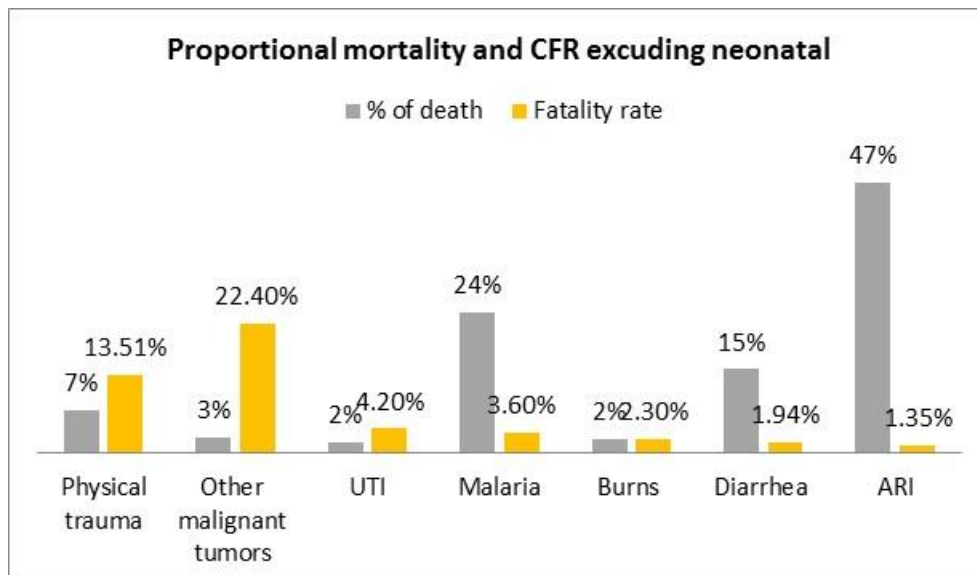


Sources: RHMIS Database 2014

Proportional mortality and case fatality rate (CFR)

The 3 leading causes of under 5 deaths are ARI, Diarrhea and Malaria. These 3 top killer diseases represent almost 60% of the total deaths that occur in under 5 children for all childhood diseases: 11% of children under 5 were admitted for trauma & burns, 10% for Malnutrition and 5% were admitted for HIV/AIDS related diseases.

Figure 27: Proportional mortality rates under 5 years (excluding neonates)



Source: RHMIS Database 2014

Overall, ARI and malaria contributed to 71% of total deaths among under 5 children.

As indicated in this graph, the case fatality rate (CFR) for other malignant tumors is very high (22, 4%) followed by trauma (13, 5%).

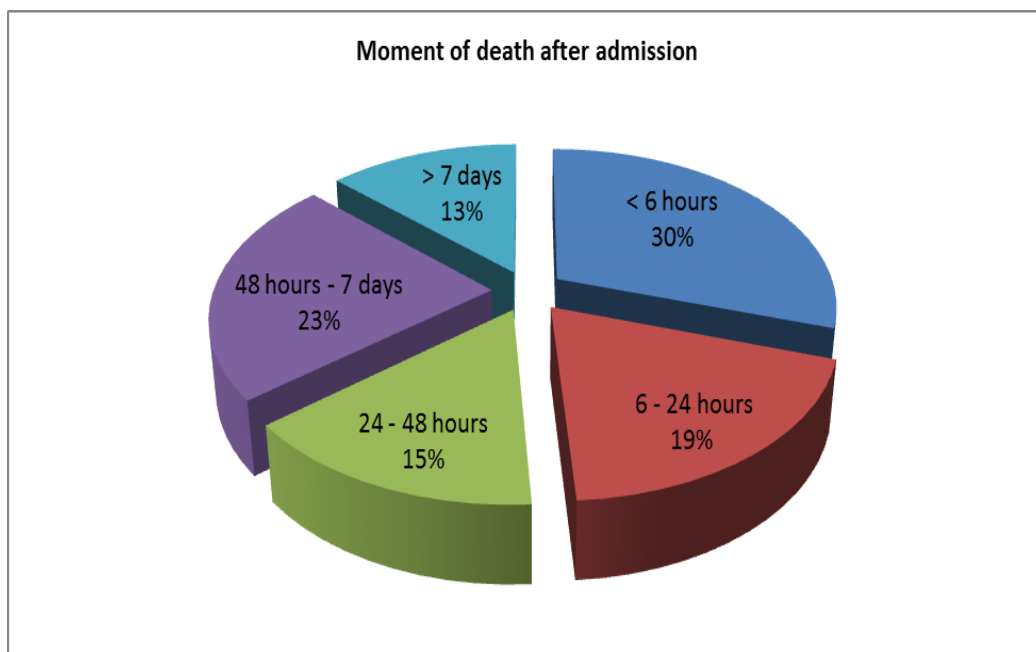
CHILD DEATH AUDIT

In 2014, Hospitals have reported in weekly reports 1014 child deaths and audited cases entered in database are 531, representing 52% of all reported child deaths.

Moment of death after admission

In the figure below, 65% of under-five death in health facilities occurred within 48 hours of admission, among them more than 50% died within 6 hours of admission. This justifies the improvement measures to assess and treat under five children with severe cases at health facilities.

Figure 28: Time of child death after admission, 2014



Source: RHMIS Child Death Audits

During this period 2014, The high degree of collaboration of several nutrition partners, capacity building of health workers and community, have contributed to strengthen maternal, infant child feeding, during pregnancy and prevent stunting in the first two years of the child through 1000 days campaign activities.

1. National screening of malnutrition of children under 5 years December 2014

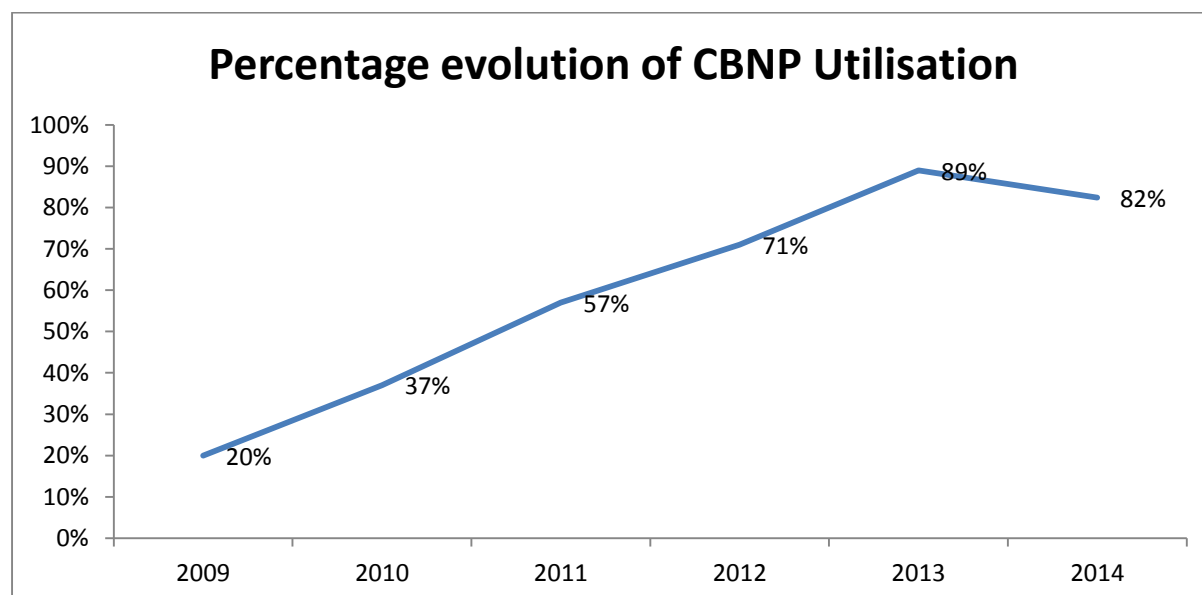
According the data from SISCOM December 2014, the global acute malnutrition rate is 0.96%; while the screening coverage is 81 % as indicated in the following table/graph.

Table 22: Malnutrition screening for U5 children

Children expected	Children screened (using W/A)	Severely malnourished children (using W/A)	Moderately malnourished children(using W/A)
1.386.164	1,123,045 (81, 02 %)	1,327 (0.85 %)	9,498 (0,12)

Source: SISCOM database, 2014

Figure 29: Evolution of CBNP coverage and its impact on nutritional status of children



Source: SISCOM database 2014

Rehabilitation of malnourished children at health facilities

According to the table below, Nutrition rehabilitation seems to be improving since 90% of all children under five admitted for malnutrition were cured.

Table 23: Rehabilitation of malnourished children at health facilities

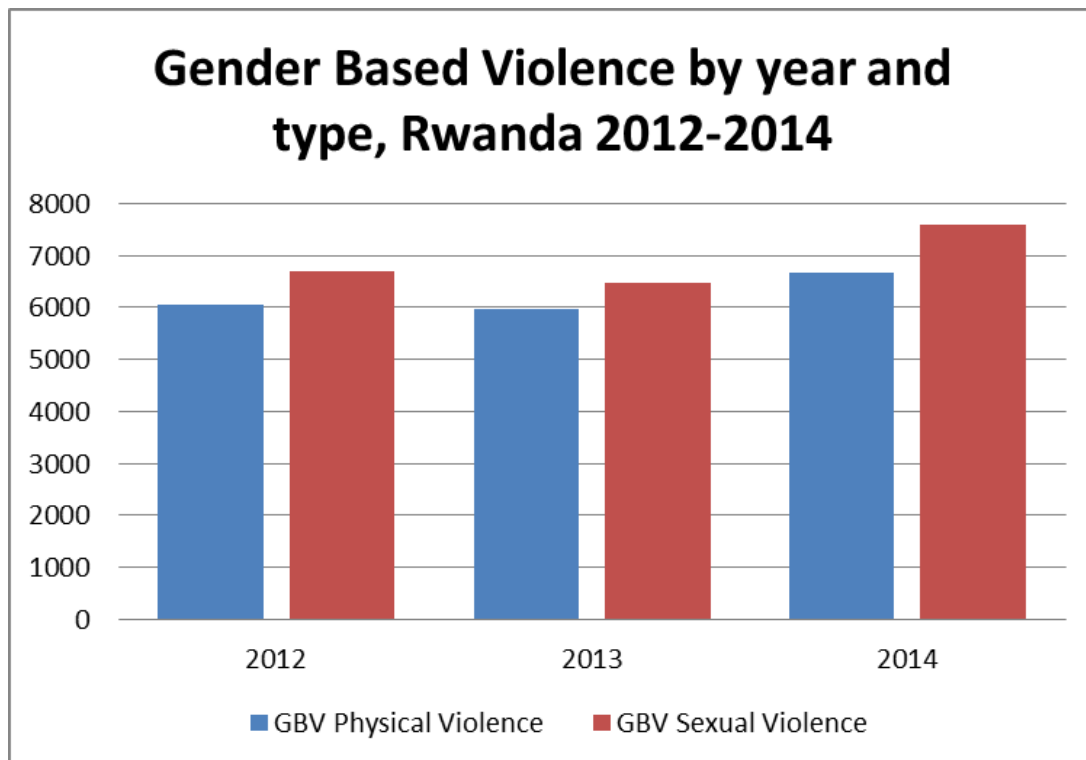
Admitted for acute malnutrition	Discharged cured	Discharged died
24,312	21,884 (90.0%)	150 (0.7%)

Source: RHMIS database, 2014

GENDER BASED VIOLENCE

The graph below shows physical and sexual gender based violence evolution since data was collected in 2012. There has been a gradual increase over the past 3 years, but this is most likely the result of increased reporting as more health workers are trained to manage GBV and the population is made more aware of the One Stop Centers that have been set up to care for these cases.

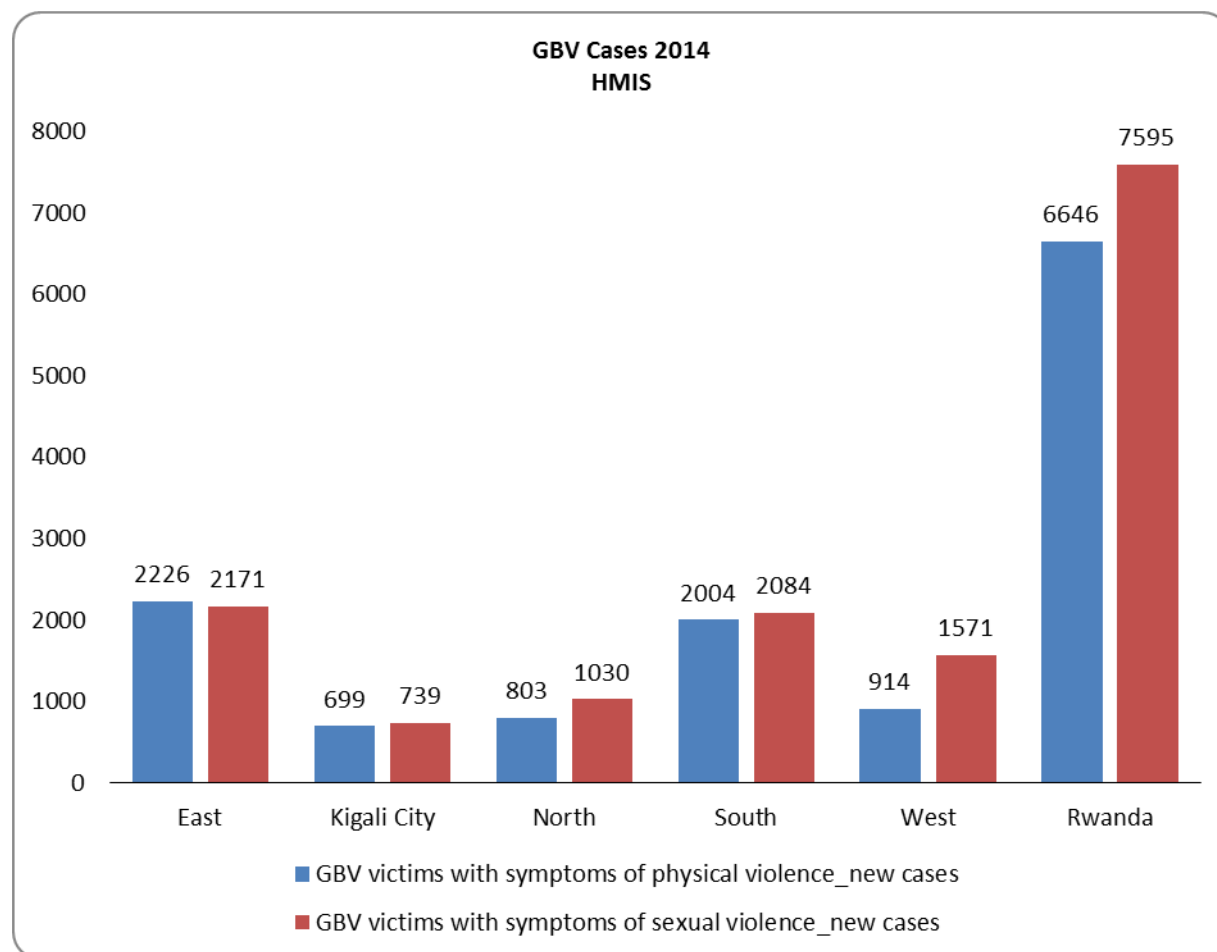
Figure 30: GBV by year and type of violence



Sources: RHMIS database 2014

The figure below shows the geographic distribution of GBV cases, the majority of which come from the Eastern and Southern Provinces.

Figure 31: Victims of GBV patients received at district hospital, 2014



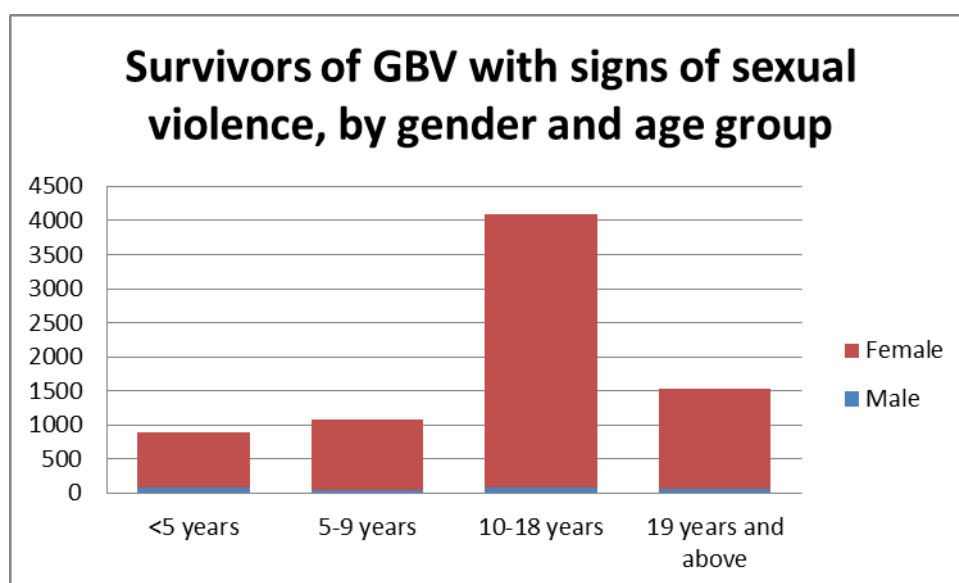
Sources: R-HMIS Database 2014

Figure 32: Survivors of GBV with signs of physical violence by age and gender, 2014



Sources: RHMIS database 2014

Figure 33: Survivors of GBV with symptoms of sexual violence by age and gender, 2014



Source: RHMIS, Database, 2014

The two figures above shows that victims of physical violence are distributed quite differently from those with signs of sexual violence. Physical violence is overwhelmingly in the 19 year and above age group and a significant proportion are males, while those with sexual violence are nearly all females with the largest number falling into the 10 to 18 year age group.

Target population for immunization

- 0-11 Months children: Routine immunization
- 12-23 Months children: Routine immunization (Measles second dose)
- 12 Years girls: HPV vaccination
- Pregnant women: For TT Vaccine

Available vaccines in Routine immunization

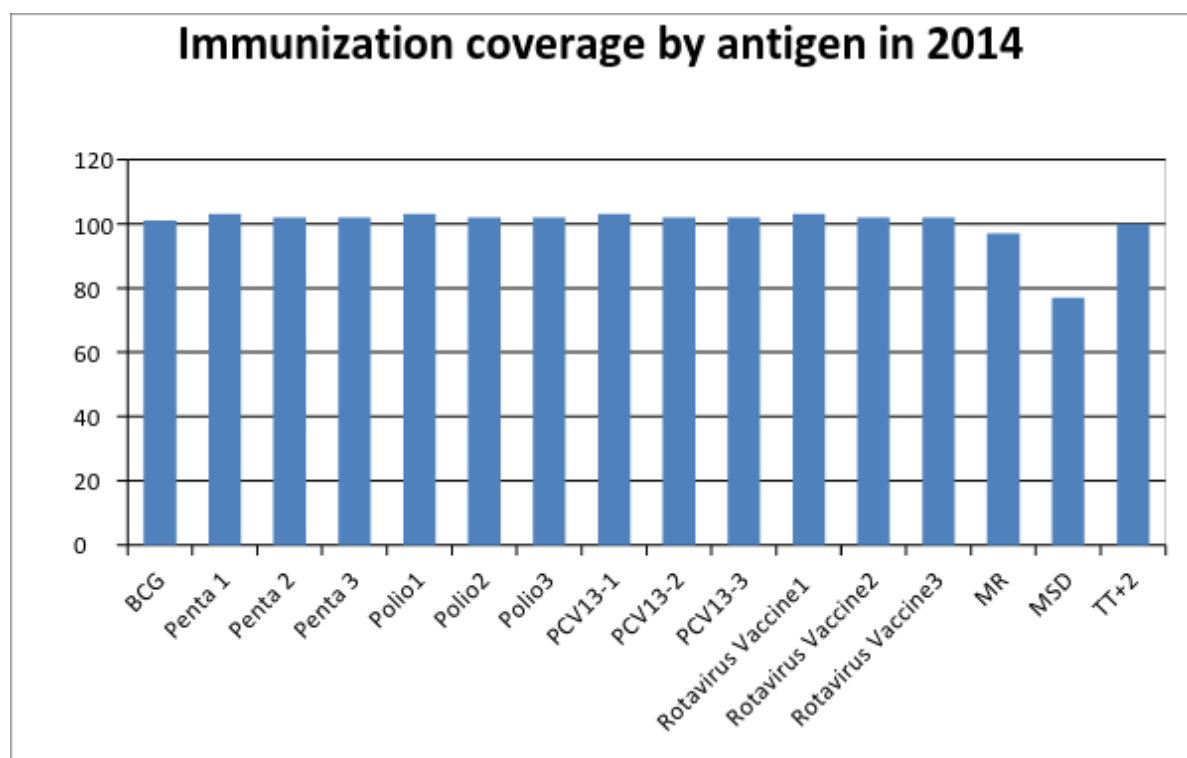
- BCG
- Oral polio vaccine
- DPT-HepB-Hib (Diphtheria, Pertussis, Tetanos, Hepatitis B and HemophilusInfluenzae type B)
- PCV13 (Pneumococcal conjugated vaccine)
- Rotavirus vaccine
- Measles and Rubella combined vaccine
- Measles
- HPV vaccine
- TT Vaccine

Denominator for routine immunization

- Surviving infant: 329,491
- Expected live-births: 345,966

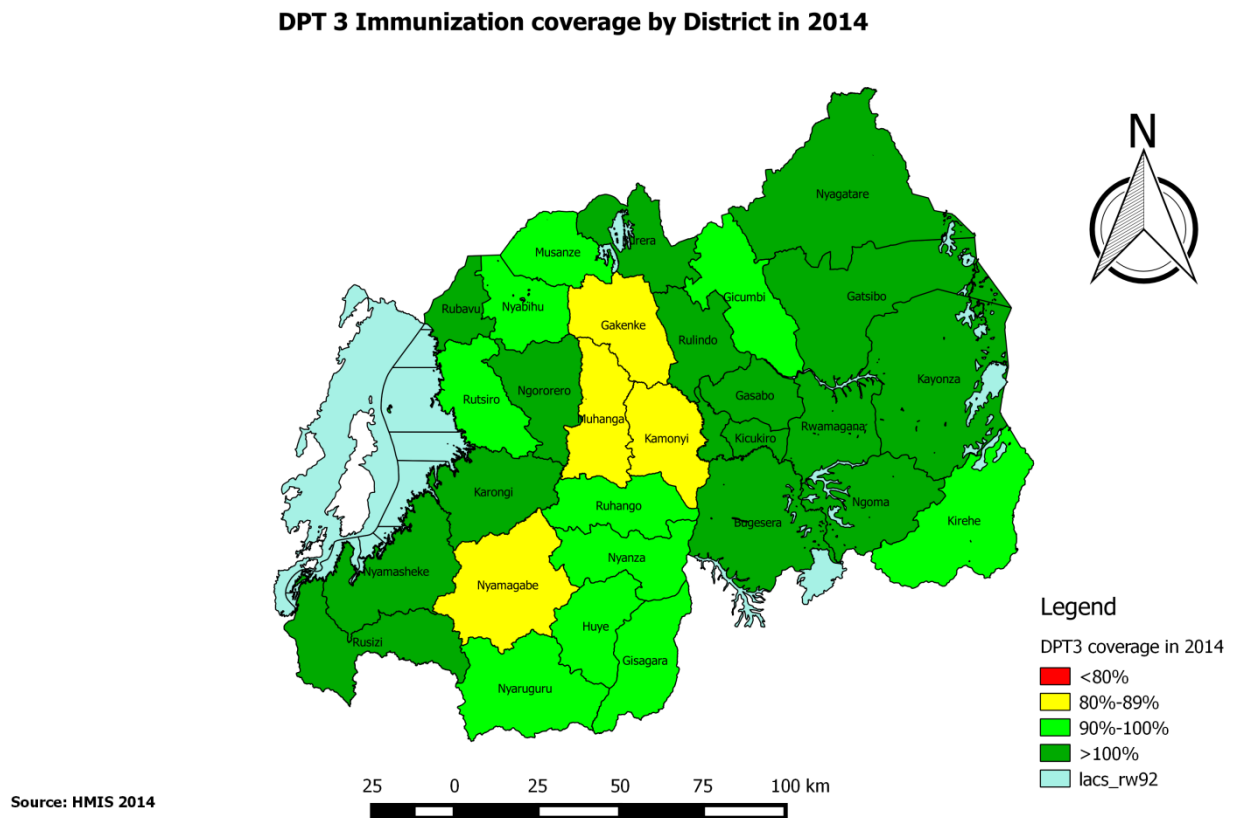
Rwanda has achieved high immunization coverage for all antigens in 2014. The denominator used to calculate immunization coverage come from 2012 general population and housing census, projection of the total population 2012-2032 by single age according to the high projection scenario. The coverage exceeded 95% for all antigens.

Figure 34: Immunization coverage in 2014 for all antigens



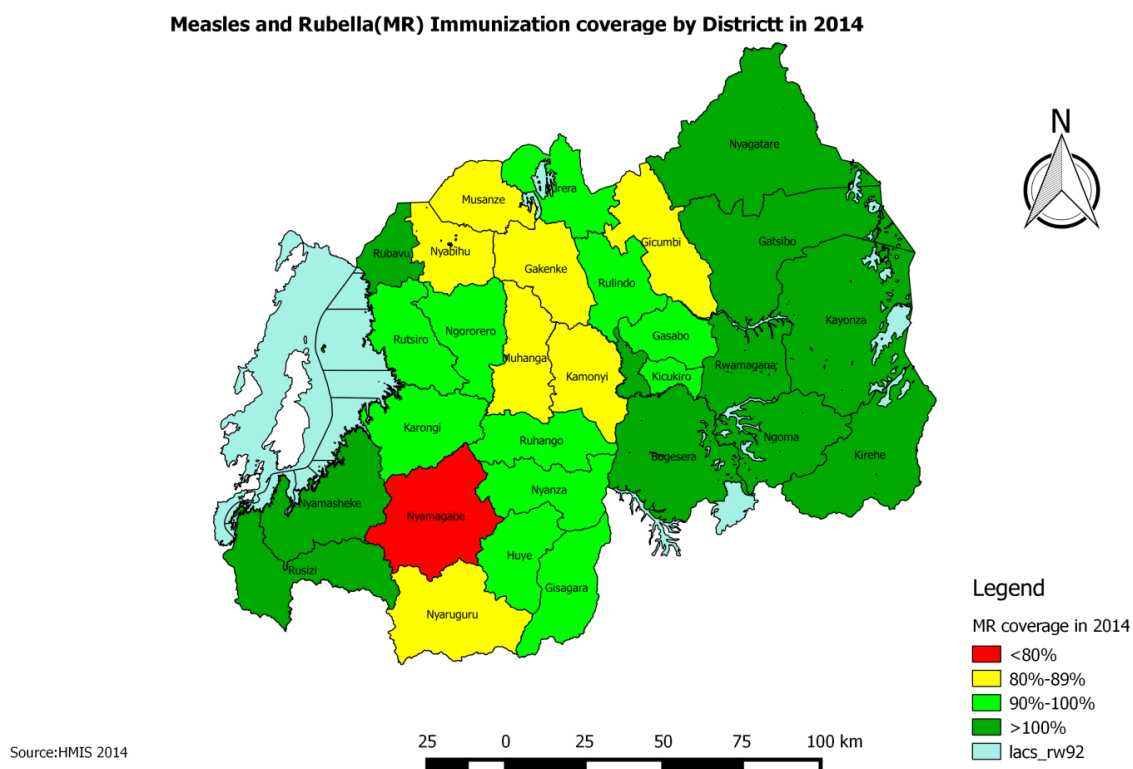
Source: RHMIS database, 2014

Figure 35: DPT 3 Immunization coverage by district, 2014



All Districts have reported the DPT-HepB-Hib coverage > 80%, however districts highlighted in yellow have to increase the DPT-HepB-Hib3 coverage.

Figure 36: Measles and rubella (MR) Immunizations coverage by district, 2014

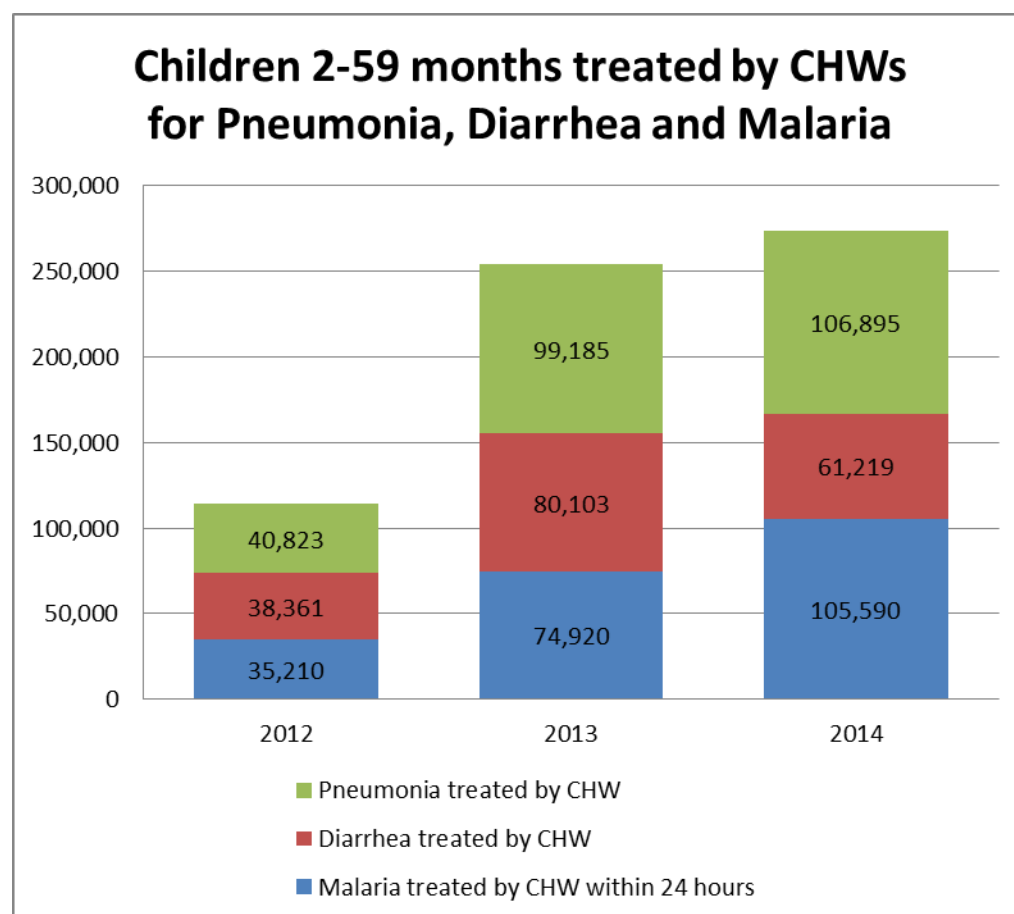


Measles and Rubella combined vaccine was introduced in routine immunization in January 2014, the age at administration is 9 months while the Measles vaccine stand alone is being given at 15 months as a booster dose. The immunization coverage for Measles and Rubella combined vaccine achieved 97% nationwide. Nyamagabe District reported coverage below 80% while 7 Districts reported the immunization coverage between 80%-90% and remaining districts reported immunization coverage above 90%.

COMMUNITY CASE MANAGEMENT (CCM)

During 2014, 276,474 children were treated by CHWs, compared to 252,268 in 2013. This increase was largely due to the introduction of Cell coordinators integrated program who oversee community health workers on day to day basis to check if there no stock outs on all community commodities and also notify at an early stage all issues that occur in the community in time.

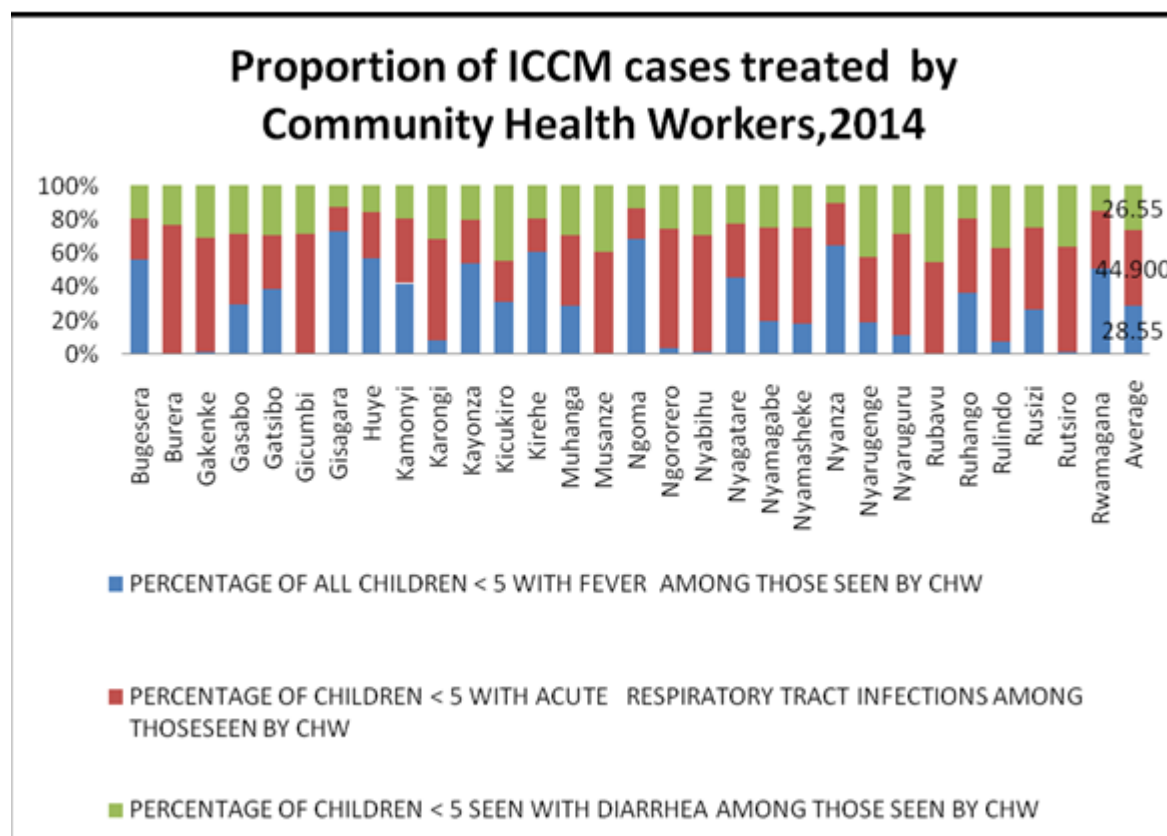
Figure 37: Children treated by CHWs for pneumonia, diarrhea and malaria 2012-14



Source: SIScom, 2014

The figures above shows that the cases treated by CHW's have increased compared to 2014.

Figure 38: Proportion of ICCM cases treated by Community Health Workers, 2014



The figure above shows the proportion of the three diseases treated by CHWs at the community, level and it shows that most of the cases treated were Pneumonia cases with Burera as the highest, Malaria cases highest in Gisagara District and diarrhea highest in Rubavu District.

HIV & AIDS

COUNSELING AND TESTING

In 2014, at least 3,598,804 people were tested for HIV and 99, 6% received their results. Among those tested for HIV, the positivity rate is around 0.8% of the clients tested. Considering the male uptake of 85% the PMTCT program still needs to improve counseling for partners to be tested for HIV. The table below highlights more details on the current status of PMTCT and HTC services in Rwanda.

TABLE 24: HIV TESTS IN HTC AND PMTCT SERVICES, 2014

	Number of Persons Tested		Number of Persons Tested who received results		HIV+		% HIV+	
	2013	2014	2013	2014	2013	2014	2013	2014
HTC	3,208,961	2,946,765	3,173,145 (98.88%)	2,933,748 (99.5%)	25,316	23,999	0.78%	0.81%
PMTCT	343,463	352,248	333,836 (97%)	352,248 (100%)	4,159	3,936	1.2%	1.12%
Males Tested during their Partners' PMTCT Appointment	294,180 (86%)	299,791 (85.1%)	294,180 (100%)	299,791 (100%)	3,734	3,036	1.3%	1.01%
Total	3,846,604	3,598,804	3,801,161 (98.81%)	3,585,787 (99.6%)	33,209	30,971	0.86%	0.86%

Source: RHMIS Database, 2014

PMTCT

In 2014, 366,950 women received ANC services, and among them 359,975 had unknown HIV status. Among those with unknown HIV status, 352,248 were tested for HIV. Among those tested, a total of 3,936 women were tested positive for HIV in 2014. HIV positivity rate among pregnant women decreased in 2014.

Among 81,100 couples tested for HIV in HTC, 1317 (1.6%) couples were discordant. In PMTCT service, 299,791 couples were tested for HIV and 3570 (1, 2%) couples were discordant.

TABLE 25: NUMBER OF COUPLES TESTED FOR HIV, 2014

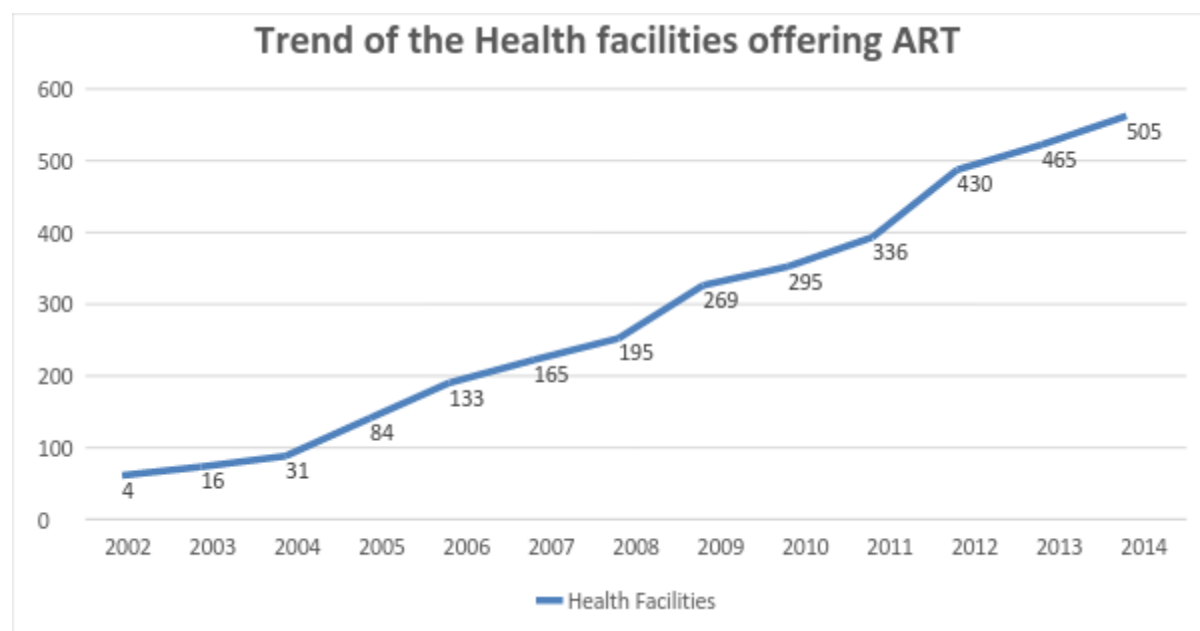
VCT		PMTCT	
Couples Tested for HIV	Discordant Couples	Couples Tested for HIV	Discordant Couples
81,100	1,317 (1.6 %)	299,791	3,570 (1.2 %)

Source: RHMIS Database, 2014

Care and treatment

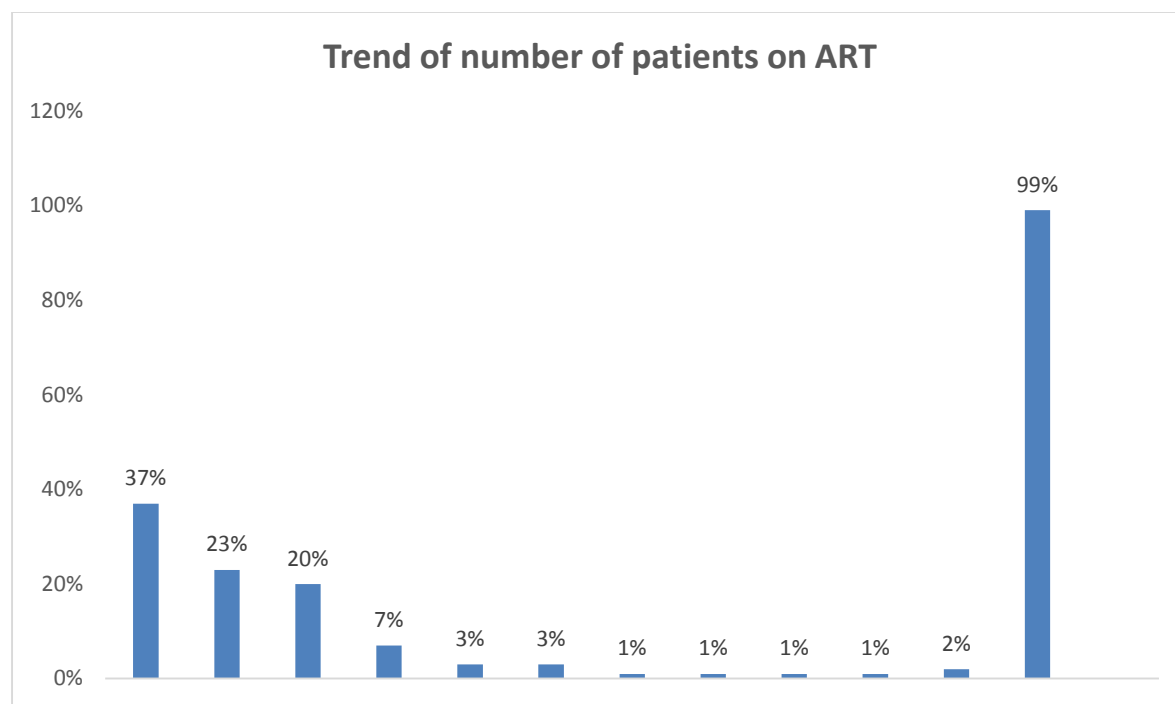
There has been an increase in number of health facilities providing Antiretroviral Therapy and number of persons on ART from 2004 to 2014. Thus, in 2014, out of 645 public and private health facilities, 505 (78%) provide ART; while the number of persons on ART increased regarding the Change in national immunologic eligibility criteria for the initiation of ART from a CD4 count less than 350 cells/mm³ to a CD4 count less than 500 cells/mm³ started in July 2014.

Figure 39: Trend of Health facilities offering art services, 2002-2014



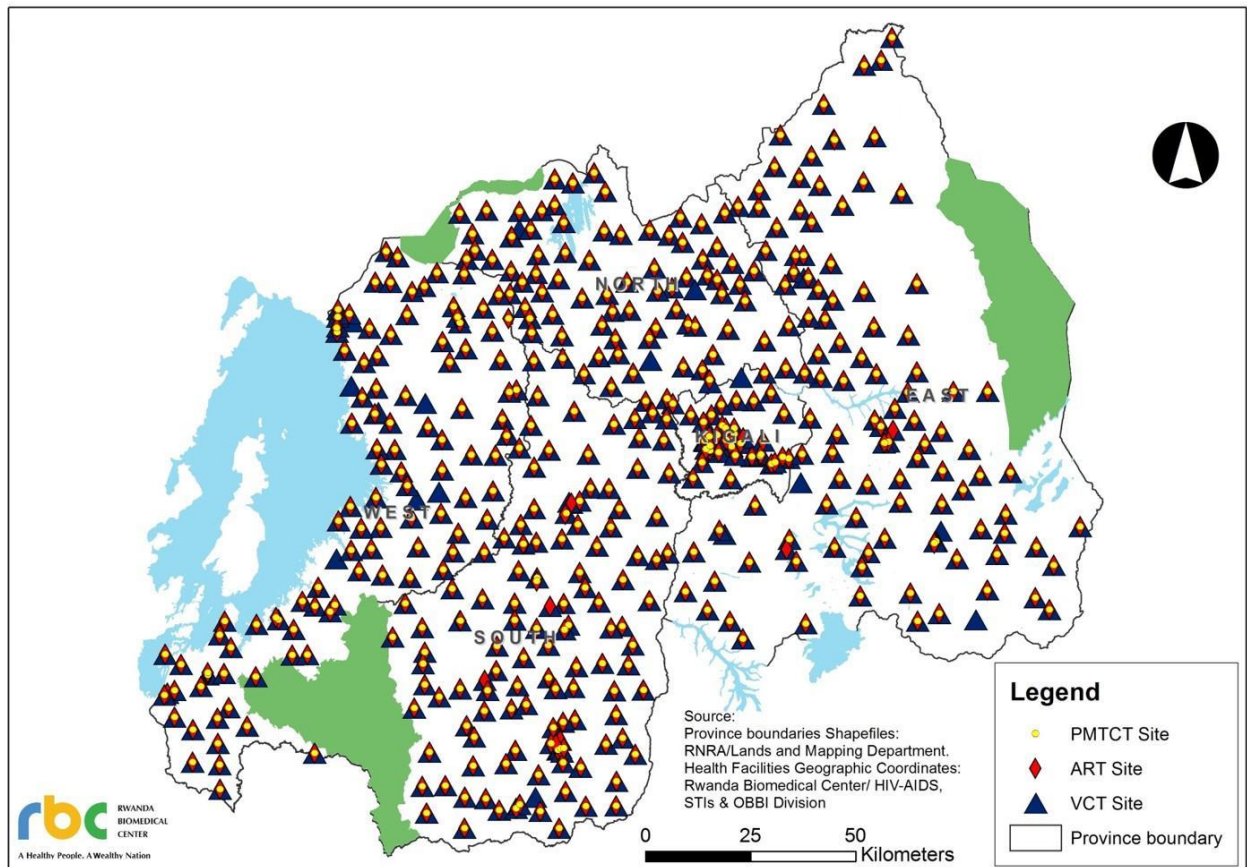
Source: RHMIS, 2014

Figure 40: Evolution of patients on ART



Source: RHMIS, 2014

Figure 41: Distribution of HIV service coverage, Rwanda

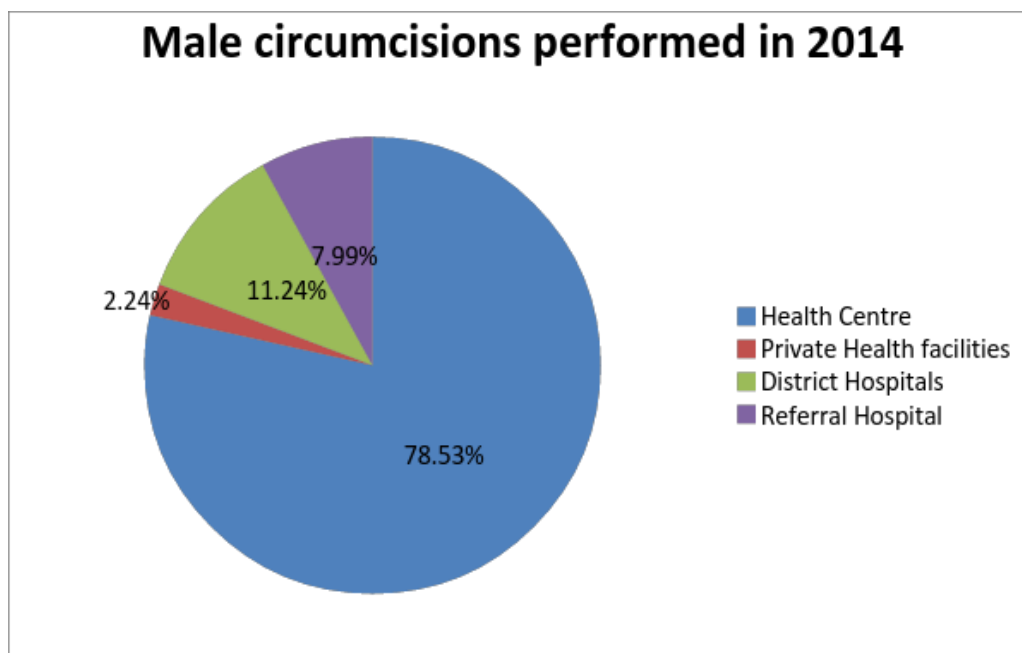


MALE CIRCUMCISION

Since 2012 male circumcision was added to the HMIS following the results of international research that suggests that male circumcision can contribute to reduced HIV/AIDS transmission. The MoH has played an active role in promoting circumcision through training of health workers and public education up to now.

In 2013 male circumcision was 77276 while in 2014 became 132097 cases with 70.94% of change because of sensitization on the importance of being circumcised.

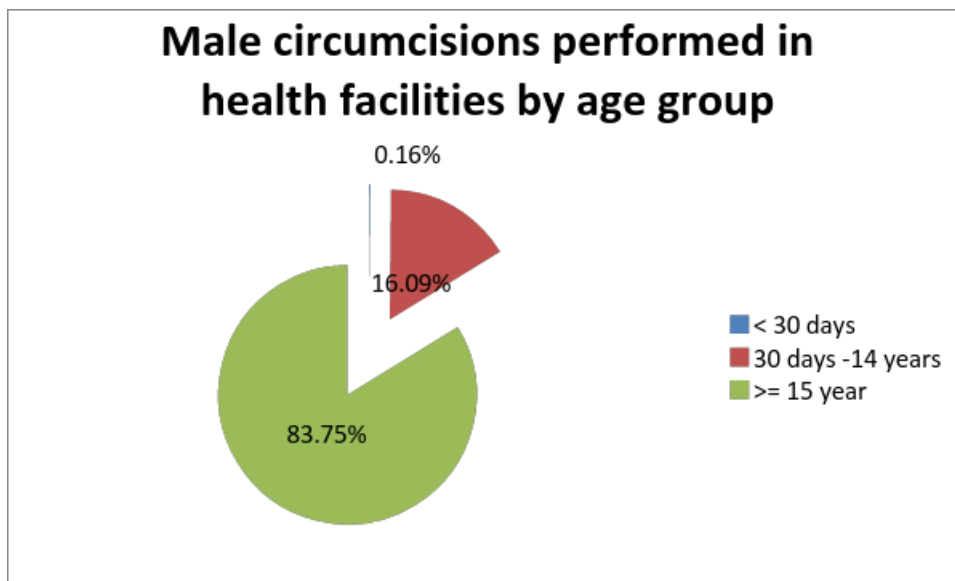
Figure 42: Male circumcisions performed by health facility type



Source: National HMIS Database, 2014

The figure above shows that the health facility type that performed the most male circumcisions in Rwanda was the health center with 78.53 % followed by district hospital with 11.24%, 7.99% were performed in Referral hospitals while Private Health facilities performed only 2.24%.

Figure 43: Male circumcisions by age group, 2014



Source: National HMIS Database, 2014

The figure above shows that the most frequent age category for male circumcisions in Rwanda is above 15 years old with 83.75% followed by 30 days to 14 years with 16.09% while less than 30 days is still low with 0.16%

TUBERCULOSIS

Economic burden of Tuberculosis

- Tuberculosis (TB) and poverty create a vicious cycle, whereby the disease exacerbates poverty, which in turn increases the likelihood of contracting TB;
- The World Bank estimates that loss of productivity attributable to TB is 4 to 7 percent of some countries' GDP.
- TB treatment is often free, but patients incur other costs, like transportation and hospital costs, at the same time they have likely reduced their working hours or stopped working completely.
- The WHO calculates that the average TB patient loses three to four months of work-time and up to 30 percent of yearly household earnings.

Goals of Tuberculosis Control in Rwanda

- Reduce Tuberculosis related morbidity, mortality and transmission; And Prevent development of drug-resistant Tuberculosis;

Main strategies used for Tuberculosis Control in Rwanda

- Expansion and improvement of quality TB diagnosis, through inclusion of community health workers (CHWs) to bring TB care close to affected people, and introduction and expansion of more sensitive technologies;
- Improve TB cases management, through availability of quality TB drugs at all level and close follow up of patients under treatment;
- Expansion of TB infection prevention and control measures in health facilities;

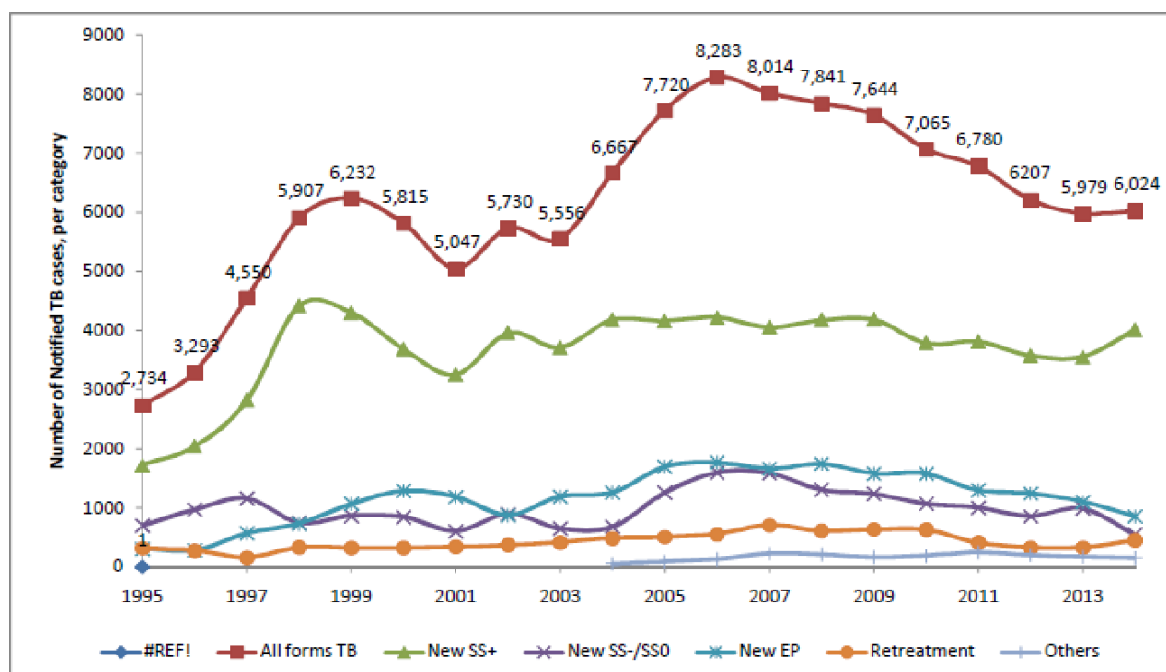
Global Impact of TB control in Rwanda

- Between 1990 and 2013:
 - TB mortality rate fell by 81% from 37/100,000 to 6.9/100,000;
 - Prevalence and incidence fell by 75% and 76% (from 356/100,000 to 89/100,000 and from 290/100,000 to 69/100,000 respectively);

Screening and Notification of Tuberculosis

- 48% of all patients with symptoms suggestive of TB (presumptive TB cases) in 2014 were brought by Community health workers (CHWs), increasing easy and rapid access to TB health facilities;
- In 2014, 6,024 all-forms TB cases were reported, with the consistent 2.3% annual decrease since 2006 stabilized in 2014;

Figure 44: Number of notified TB cases per category 1995-2014



- In 2014, 81 cases of multi-drugs resistant TB (MDR-TB) were started on 2nd line TB treatment. Between 2007 and 2011, we were reporting on average 80 MDR-TB patients.

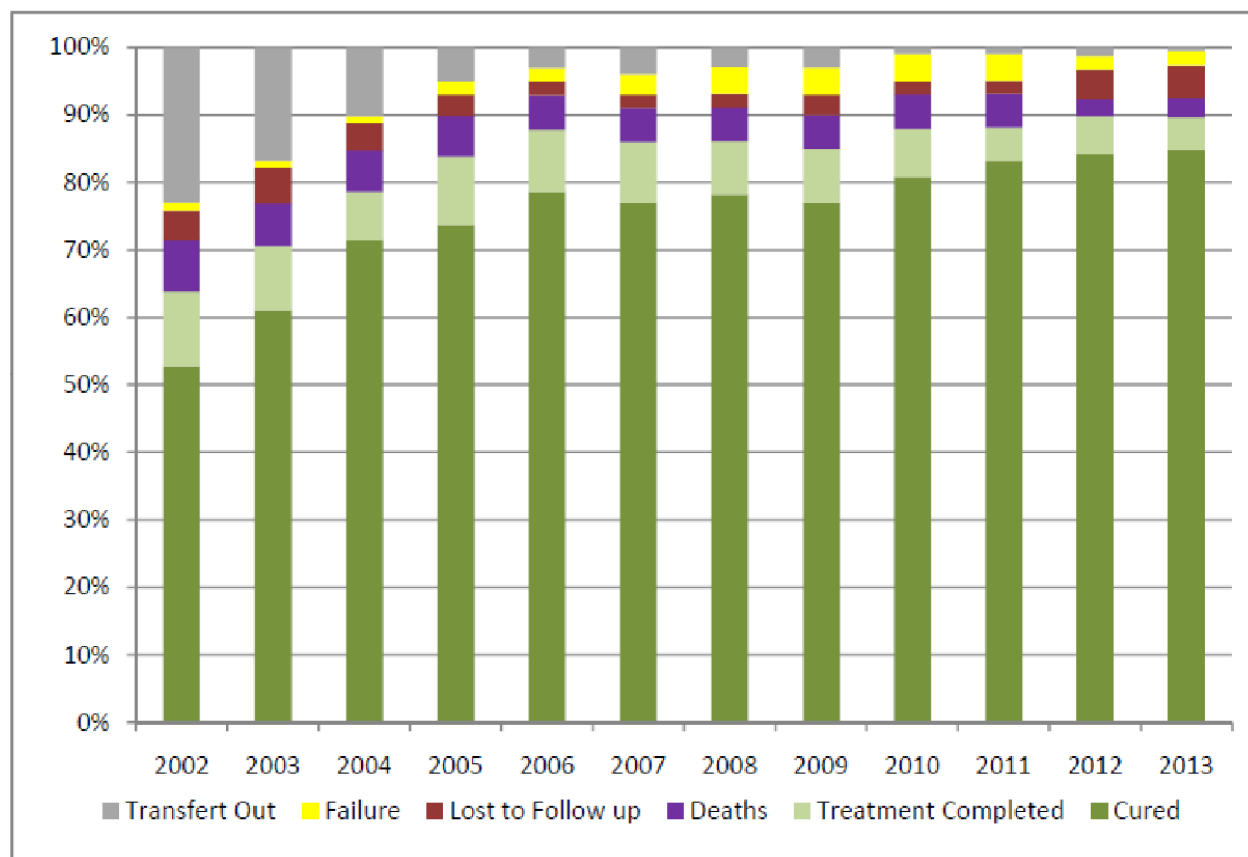
Tuberculosis/HIV co-infection

- In 2014, 99% of all patients with symptoms suggestive of TB (presumptive TB cases) and 99% of all-forms TB cases reported, had their HIV status known;
- In 2014, 98% of HIV+ TB patients were on Cotrimoxazole prophylaxis and 90% on antiretroviral therapy (ARTs);

Treatment of Tuberculosis

- 89.6% of the 2013 cohort of new infectious TB cases (new sputum smear positive or patients susceptible to spread TB) were successfully treated. This decrease transmissions of TB to healthy people;

Figure 45: TB treatment outcomes by year, 2002-2013



- 51% of those TB patients were followed (given TB drugs) by Community health workers (CHWs) near to their homes. 93% of TB patients given TB medicines by CHWs were successfully treated;
- $\geq 100\%$ of MDR-TB cases of the 2012 cohort were successfully treated;

Tuberculosis infection prevention and control

- In 2014, 60% of health facilities involved in TB control activities were implementing the full package of minimum TB infection control.

MALARIA

The goal of the current Rwanda National Malaria control strategic plan is to contribute to the improvement of the health status of the population and the fight against poverty by reducing the burden due to malaria. The main objective is to scale up current interventions and consolidate achievements in order to reach the malaria pre-elimination phase and near zero deaths in Rwanda by 2018.

Rwanda has achieved significant reductions in the burden of malaria over the past decade. Evidence of progress in malaria control provided by RHIMS include an 86% decline in malaria incidence between 2005 and 2011; 87% decline in outpatient malaria cases between 2005 and 2011; 74% decline in inpatient malaria deaths between 2005 and 2011; and 71% decline in malaria test positivity rate (TPR) between 2005 and 2011. According to the 2010 RDHS, malaria prevalence has decreased from 2.6% in 2008 to 1.4% in 2010 in children < 5 years and a decline from 1.4% in 2008 to 0.7% in 2010 of malaria prevalence in pregnant women.

For the past years, Rwanda has continued to implement key malaria control interventions which included:

- Promotion and distribution of LLINs to children under five and pregnant women through routine EPI and ANC as well as household distribution mainly prioritizing high malaria burden districts
- Early diagnostic and treatment of malaria both at community level through CHWs for integrated community case management and health facility level
- Implementation of IRS in the 3 high malaria burden districts with full blanket spraying
- Implementation of pre-elimination activities in 6 districts with reactive case detection of malaria cases
- Strong BCC/IEC for malaria control interventions

This has helped the country to sustain high coverage of key malaria control interventions.

Table 26: Rwanda key malaria control indicators

Key malaria control interventions	Source	2010	2011	2012	2013	2014
Mosquito net utilization	DHS/MIS					
Women			72%		74%	
Children			70%		72%	
Mosquito net Ownership	DHS/MIS		80%		82%	
Proportion of patients who receive antimalarial at health facilities that are laboratory confirmed before treatment	HMIS	94%	99%	99.9 %	99.9%	99.9%
Proportion of simple malaria cases in the health facilities that are treated in accordance with the national treatment policy	Health facility survey		86%		94.6%	
Proportion of structures in targeted Districts that received Indoor Residual Spaying	Malaria report		98%	98%	98%	98%
Percentage of mothers who know the causes symptoms, treatment and preventive measures of malaria	MIS				83%	
Proportion of under-five with malaria/fever receiving appropriate treatment within 24h	SISCom	89%	94%	96%	96%	96%

Malaria situation in Rwanda 2012-2014

Malaria-related data collected from the HMIS, SIS com, and malaria reports.

Table 27: Rwanda malaria situation 2012-2014

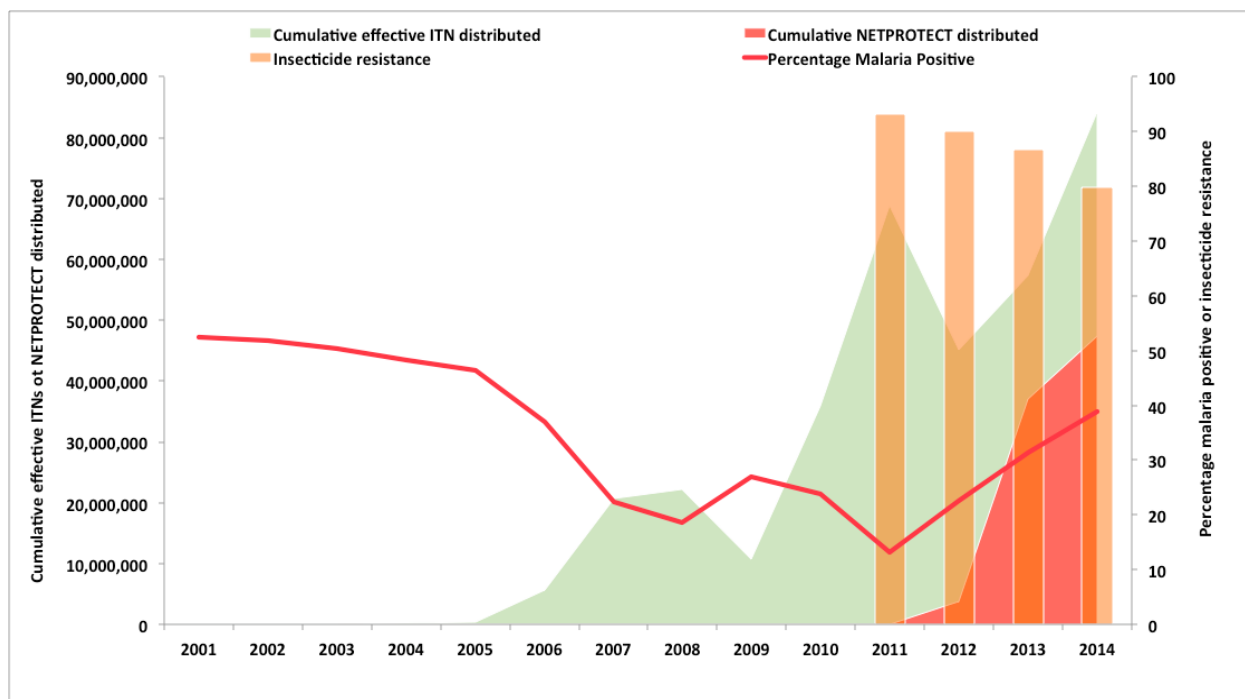
Malaria Burden(2012- 2014)	2012	2013	2014
Uncomplicated Malaria cases	481,868	934,484	1,597,143
Malaria proportional Morbidity	5.8%	10%	14.8%
Confirmed Deaths due to Malaria	459	409	496
Malaria proportional mortality	5.8%	4.9%	5.6%

The Rwanda HMIS reveals that at the end of 2012 and beginning of 2013 up to today, Rwanda has experienced an increase of malaria morbidity particularly in districts known to be high malaria burden in the country mostly located in the eastern and southern province. Early diagnostic and treatment have stabilized the number of deaths due to malaria.

Rwanda data shows that main reasons for malaria increase include:

- Substandard LLINs (sub-optimal insecticide): Rwanda data shows that Long Lasting Insecticide treated Nets (LLINs) insecticide efficacy decrease and the low coverage of effective LLINs is resulting in increase of malaria cases. In 2012 and 2013, Rwanda distributed 3 millions of LLINs which were found through Rwanda monitoring to be substandard due to low insecticide with priority given to districts with high malaria burden.
- Climatic data anomalies: more rainfall and changes in ambient temperature in Rwanda have shown to be associated with increase of malaria burden
- Insecticide resistance through documented emerging parathyroid resistance

Figure 46: Main reasons of malaria increase in Rwanda



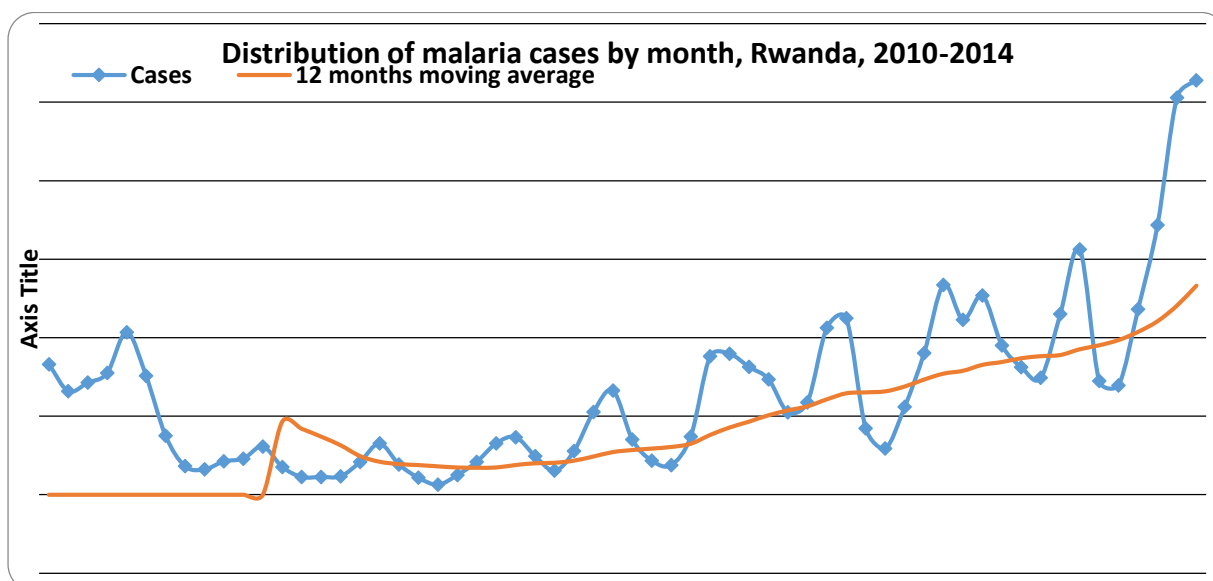
Source: Mal&OPDD analysis

It is important to note that there is increase of malaria for the last 2 years in eastern Africa region which is neighboring districts located at the borders of neighboring countries.

TIME TREND OF MALARIA CASES AND DEATHS IN RWANDA

The temporal distribution of malaria cases for the decade 2010-2014 is presented in Figure 1. The figure 2 also shows a centered 12-month moving average to show the overall trend by smoothing seasonal and random variations.

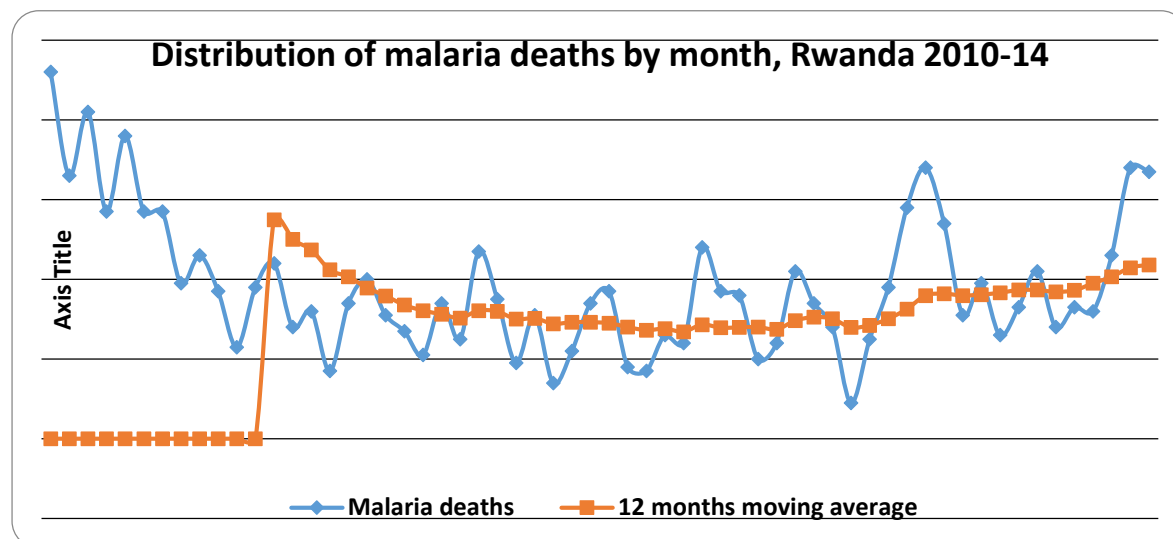
Figure 47: Distribution of Malaria cases by month, Rwanda 2010-14



Source: Mal&OPDD analysis of HMIS data

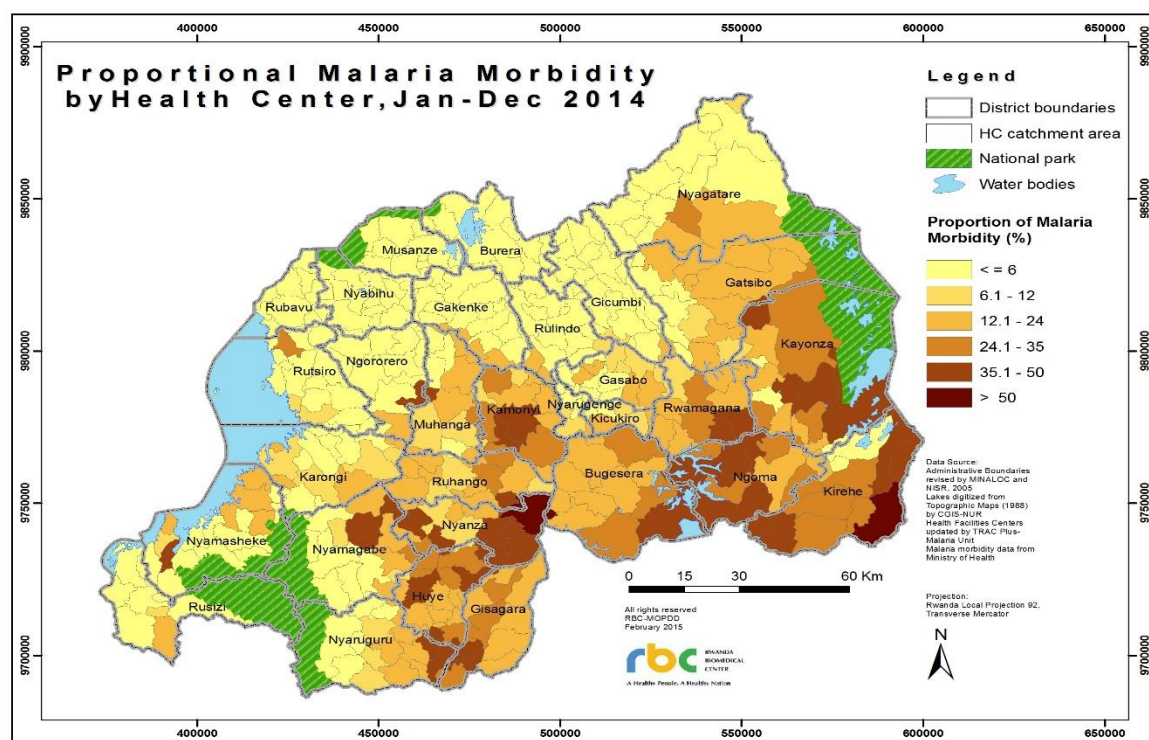
The number of malaria deaths by month declined from 2010 to 2014 with 456 deaths due to malaria in 2012, 409 in 2013 and 496 in 2014. Time trend in malaria deaths for the period of 2010–2015 is presented on the following figure with a centered 12-months moving average to show the overall trend by smoothing seasonal and random variations. The figure shows that there was a declining trend in malaria deaths over times.

Figure 48: Distribution of malaria deaths by month, Rwanda, 2010-14



Source: Mal&OPDD analysis of HMIS data

Figure 49: Geographical distribution of Malaria, 2014



In 2014:

- The top 17 **high malaria burden Districts** counted 92% of Malaria cases,
- the top 11 **High malaria burden Districts** counted 79% of malaria cases:
- **High malaria burden Districts in Eastern Province together represent 41%:** Kirehe, Ngoma, Bugesera, Kayonza, Rwamagana
- **High malaria burden Districts in Southern Province together represent 38% of all malaria cases:** Gisagara, Nyanza, Huye, Kamonyi, Ruhango, Muhanga

Table 28: Malaria deaths by district in 2014

Districts with 0 deaths due to malaria	Districts with 5 or less deaths due to malaria	Districts with 6-10 deaths due to malaria	Districts with 11 &+ deaths due to malaria 6 Districts = 89% of all malaria deaths
Burera	Gicumbi, Rutsiro, Musanze, Nyagatare, Gakenke, Nyabihu, Rulindo	Nyarugenge, Gasabo, Kicukiro	Rubavu, Huye, Nyanza, Rusizi, Kamonyi, Bugesera, Gisagara, Kayonza, Muhanga, Karongi, Nyamagabe, Ruhango, Ngoma, Kirehe, Gatsibo, Nyaruguru, Ngororero, Nyamasheke, Rwamagana

Non-Communicable diseases (NCDs)

According to the 4th Population and Housing Census, the life expectancy in Rwanda increased from 51.2 years in 2002 to 64.4 years in 2012. The trend of ageing population is driving a progressive increase of demand of NCD service from people in their 40s and 50s. The Rwanda Burden of Disease Study estimates that in 2010, NCDs and Injuries accounted for 42% of the overall deaths in Rwanda for the age group 10-40, surging to 63% in those over 40.

The table below reports for each cluster of NCDs, the number of visits for new and old diagnosed cases, hospitalizations and surgeries reported in the last 12 months (January 2014 to December 2014) excluding children under 5 years old, covered in the IMCI section. In order to evaluate the systematic follow-up program for chronic cases, the table reports also the number of follow-up cases registered in last month of the period considered (December 2014), that can be compared with the number of new cases diagnosed in the last 12 months.

The first analysis reports that in term of overall number of visits (1.725.481 visits) for new and old cases, the Injuries and oral health and eye health are the leading cause of consultation of NCDs with around 83% the overall NCDs visits. The service for chronic conditions such as cardiovascular disease, chronic respiratory diseases and Diabetes accounts all together for only 17% of the overall visits.

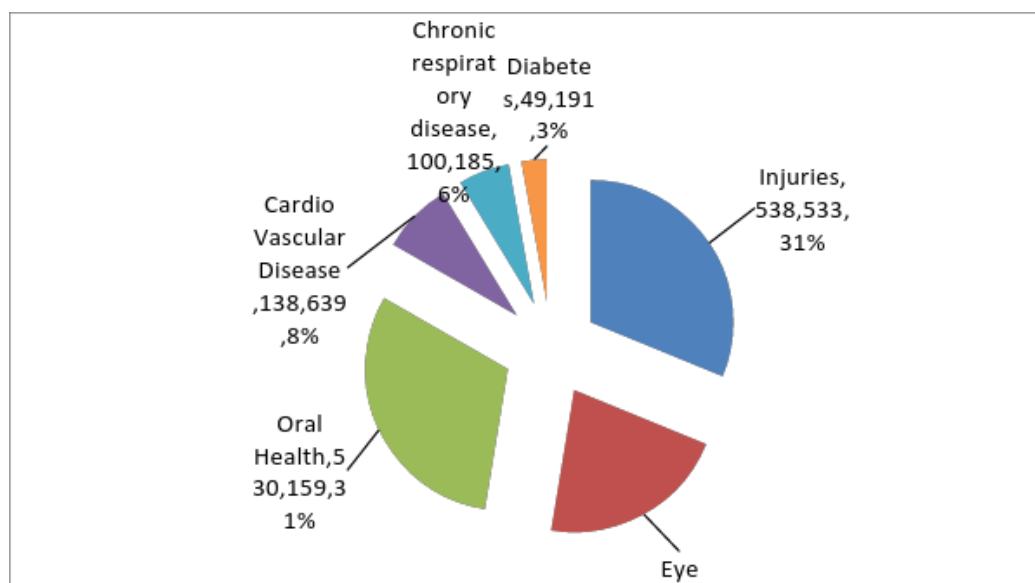
Table 29: Non-Communicable Disease cases treated in all health facilities, Rwanda 2014

Type of Non-communicable diseases	OPD new cases (sum 12 months)	Hospitalizations (sum 12 months)	Surgeries (Sum 12 months)
Injuries	538,533	40,686	11,540
Fractures	21,611	9,075	N/A
Physical traumas, other than fractures	497,898	11,676	N/A
Bone and Joint disorder, other than fractures	19,024	1,286	N/A
Trauma Other	N/A	12,755	N/A
Burns	N/A	1,677	N/A
Trauma Head	N/A	4,136	N/A
Ruptured spleen	N/A	81	N/A
Eye health	368,774	-	2,772
Trachoma	1,599	N/A	
Trichiasis	1,102	N/A	
Glaucoma	1,713	N/A	21
Cataract	11,203	N/A	189
Refractive Errors	18,990	N/A	
Corneal scars	1,454	N/A	
Eye trauma	3,858	N/A	
Eye problem other	235,119	N/A	2,562
Diabetic rethinopat	2,774	N/A	
Conjunctivitis	90,962	N/A	
Oral Health	530,159	-	89
Dental caries	472,953	N/A	
Periodontal disease	16,959	N/A	89
Teeth and gum infections, other	40,247	N/A	

Cardio Vascular Disease	35,600	103,039	10,454	6,046
Hypertension	23,412	87,266	8,474	4,244
Heart Disease Acute	746	1,240	61	N/A
Stroke	829	698	15	16
Cardiomyopathy (excl. peri-partum)	N/A	N/A	N/A	116
Peri-partum cardiomyopathy	37	108	5	63
Rheumatic heart disease	6,738	6,539	1,110	184
Congenital heart disease	109	336	25	218
Congestive Heart Failure	1,230	2,888	258	1,205
Cardio vascular disease other	2,499	3,964	506	
Chronic respiratory disease	27,433	72,752	6,915	2,424
Asthma	25,053	70,322	6,719	2,424
Chronic obstructive lung diseases	569	1160	92	N/A
Bronchiectasis (chronic bronchitis)	1,811	1,270	104	N/A
Diabetes	4,614	44,577	3,614	2,396
Diabetes, insulin dependent	2,241	18,208	1,160	N/A
Diabetes, non-insulin dependent	2,044	25,289	2,391	N/A
Diabetes, gestational	329	1,080	63	N/A
Chronic kidney diseases	-		-	1,750
Renal failure	N/A	N/A	N/A	655
Kidney infections	N/A	N/A	N/A	436
Nephritic syndrome	N/A	N/A	N/A	465
Glomerulonephritis	N/A	N/A	N/A	194
Cancer	-		-	5,925
Nephroblastoma (Wilm's tumor)	N/A	N/A	N/A	478
Burkitts lymphoma	N/A	N/A	N/A	82
Leukemia	N/A	N/A	N/A	429
Breast cancer	N/A	N/A	N/A	1,161
Kaposi's sarcoma	N/A	N/A	N/A	175
Prostate cancer	N/A	N/A	N/A	320
Uterine and ovarian cancers	N/A	N/A	N/A	109
Cervix cancer	N/A	N/A	N/A	354
Liver cancer	N/A	N/A	N/A	319
Tumors Other malignant	N/A	N/A	N/A	1,196
Tumors Other non malignant	N/A	N/A	N/A	1,302

Source: National HMIS Database, 2014

Figure 50: Top causes of NCDs visits (new and old) in all health facilities, Rwanda 2014



Source: National HMIS Database, 2014

Data reported in the table for the number of visits for old cases reported in December 2014 provides insights also in the quality of the follow up for chronic conditions such as cardiovascular disease, diabetes and chronic respiratory disease. The monthly figures of cases followed up are lower than the number of new cases suggesting that the follow-up service should be strengthened.

NEGLECTED TROPICAL DISEASES AND OTHER PARASITIC DISEASES (NTD)

In 2012 changes were made to the HMIS to enable the MoH to track neglected tropical diseases. The table and chart below show the distribution of these diseases by province and overall. The most common diseases diagnosed E. histolytica, Ascariasis and E. coli.

Although lab tests don't equate to numbers of cases, NTDs represent a significant public health issue across the country and the leading causes are transmitted via the oral-fecal route due to lack of environmental hygiene.

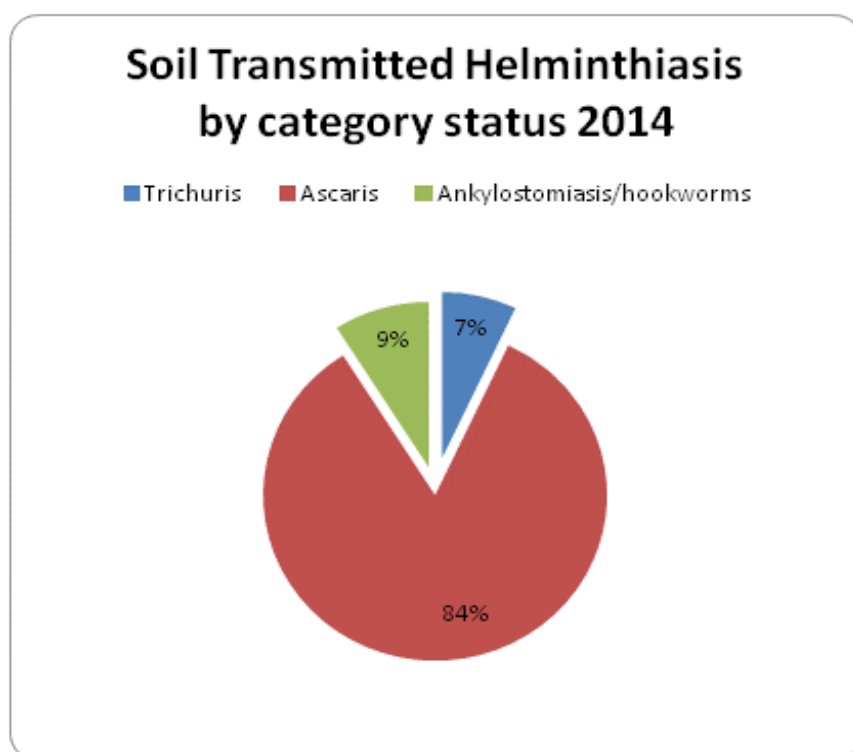
Neglected tropical diseases continue to be an important cause of morbidity in Rwanda with significant increases reported in nearly all diseases from the previous year averaging around 16.5%. Ascariasis or round worms are by far the most common form of NTD representing 84% of the Soil Transmitted Helminthiasis (STH). Fortunately cases of schistosomiasis remain relatively low and are reported from very few foci mostly in Western and Eastern Provinces.

Table 30: Neglected Tropical Diseases and other parasitic diseases 2013-2014

NTD/Parasitic disease	2013	2014	Percent Increase
Ascariasis	152,307	167,972	10.3%
Ankylostomiasis/hookworms	18,184	17,728	-2.5%
Schistosoma	571	656	14.9%
Trichuris	13,791	14,202	3.0%
Entamoeba coli	152,344	181,719	19.3%
Entamoeba histolytica	206,751	252,894	22.3%
Giardia	65,853	76,742	16.5%
Taenia	3,917	4,248	8.5%
Other parasites	297,050	344,431	16.0%
Total	910,768	1060592	16.5%

Source: National HMIS Database 2013-14

Figure 51: Distribution of positive lab tests for soil transmitted helminthiasis, 2014



Source: National HMIS Database 2014

Other parasitic diseases have seen virtually the same increases averaging around 18.5% from 2013. Schistosomiasis has increased by 14.9% from 2013 to 2014. This may be attributed to the increase of diagnostic means and reporting. These figures speak to the need for increasing the attention paid to basic environmental hygiene, especially latrines, clean water and hand washing, in communities and schools across the country. As per the table below, the highest burden of NTDs and other parasitic diseases is in the East and South provinces.

Table 31: Lab stool positive tests conducted in the country by province tested positive

Diseases	2014					Total
	East	Kigali City	North	South	West	
Ascariasis	8,987	2,810	44,946	52,941	58,288	167,972
Ankylostomiasis/hookworms	4,426	667	1,531	7,179	3,925	17,728
Entamoeba coli	38,805	20,592	28,330	51,382	42,610	181,719
Entamoeba histolytica	91,431	32,286	39,178	62,334	27,665	252,894
Giardia	26,227	10,290	15,307	15,480	9,438	76,742
Other parasites	82,425	47,589	51,364	91,158	71,895	344,431
Schistosoma	78	85	47	166	280	656
Taenia	657	105	1,448	1,039	999	4,248
Trichuris	2,124	327	2,718	1,855	7,178	14,202
Total	255,160	114,751	184,869	283,534	222,278	1,060,592

Source: National HMIS Database, 2014

OTHER EPIDEMIC AND INFECTIOUS DISEASES (EID)

Background

The Epidemic Surveillance and Response Division (ESRD) is one of the divisions under the Institute of HIV/AIDS, Disease Prevention and Control (IHDPC) Department within Rwanda Biomedical Center (RBC).

Mission

The mission is to prevent and control epidemic prone diseases and other public health events in Rwanda through the implementation of an effective and efficient national epidemiological surveillance system.

To achieve its mission, the ESRD has established an innovative electronic Integrated Disease Surveillance and Response system based on the WHO standard. This electronic tool (e-IDSRS) is contributing to reach the objective of earlier detection and timely response to epidemic prone diseases and others public health threats across the country.

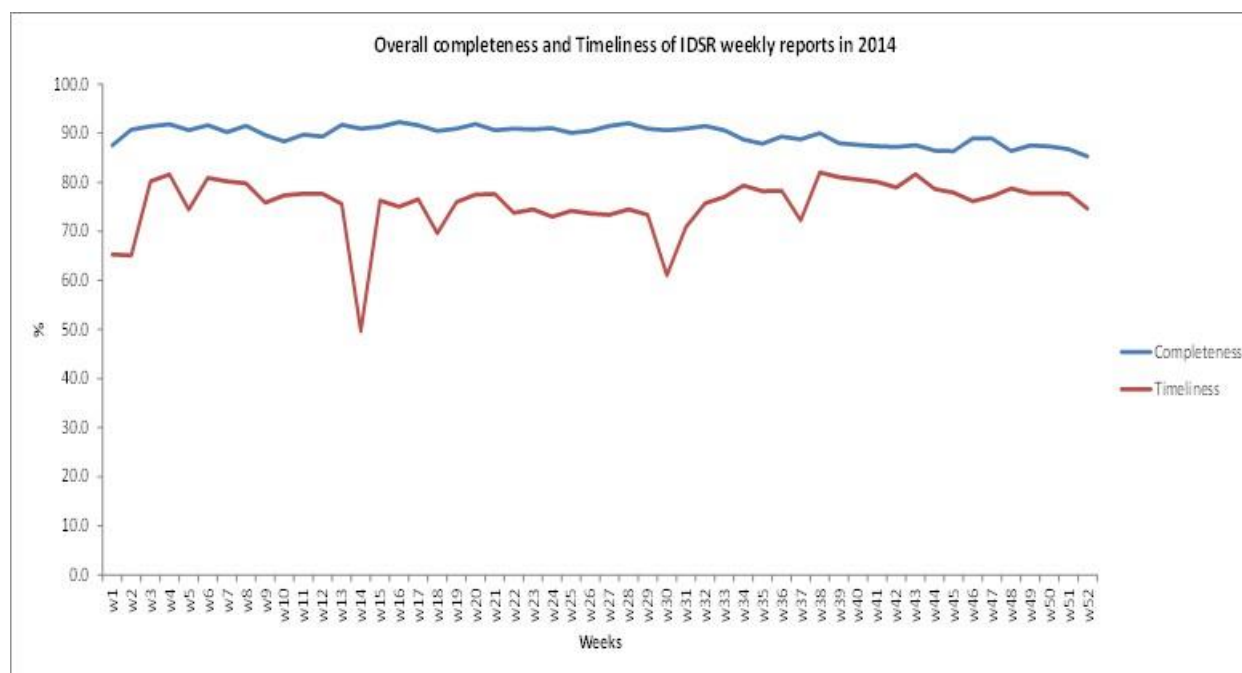
Twenty three priority diseases are subject to epidemiological surveillance. Among them, nineteen diseases are for immediate notification namely Acute Flaccid Paralysis, Chicken Pox (Varicella), Cholera, viral Conjunctivitis, Shigellosis, Rabies, Diphtheria, , Food poisoning, Meningococcal meningitis, Measles, Mumps, Neonatal tetanus, Plague, Rubella, Typhoid fever, epidemic typhus, Viral Hemorrhagic Fevers ,Yellow fever and Pertussis) while four are weekly notifiable diseases namely Malaria, Non Bloody diarrhea, influenza like illness and severe pneumonia under five).

Completeness and Timeliness of weekly reporting

By each ending ISO epidemiological week (Every Monday), ESRD expects 659 reports respectively 525 from all public health facilities respectively (Health centers, district hospitals, provincial hospitals and referral hospitals) and 134 reports from privates facilities licensed by the Ministry of Health and trained in diseases surveillance.

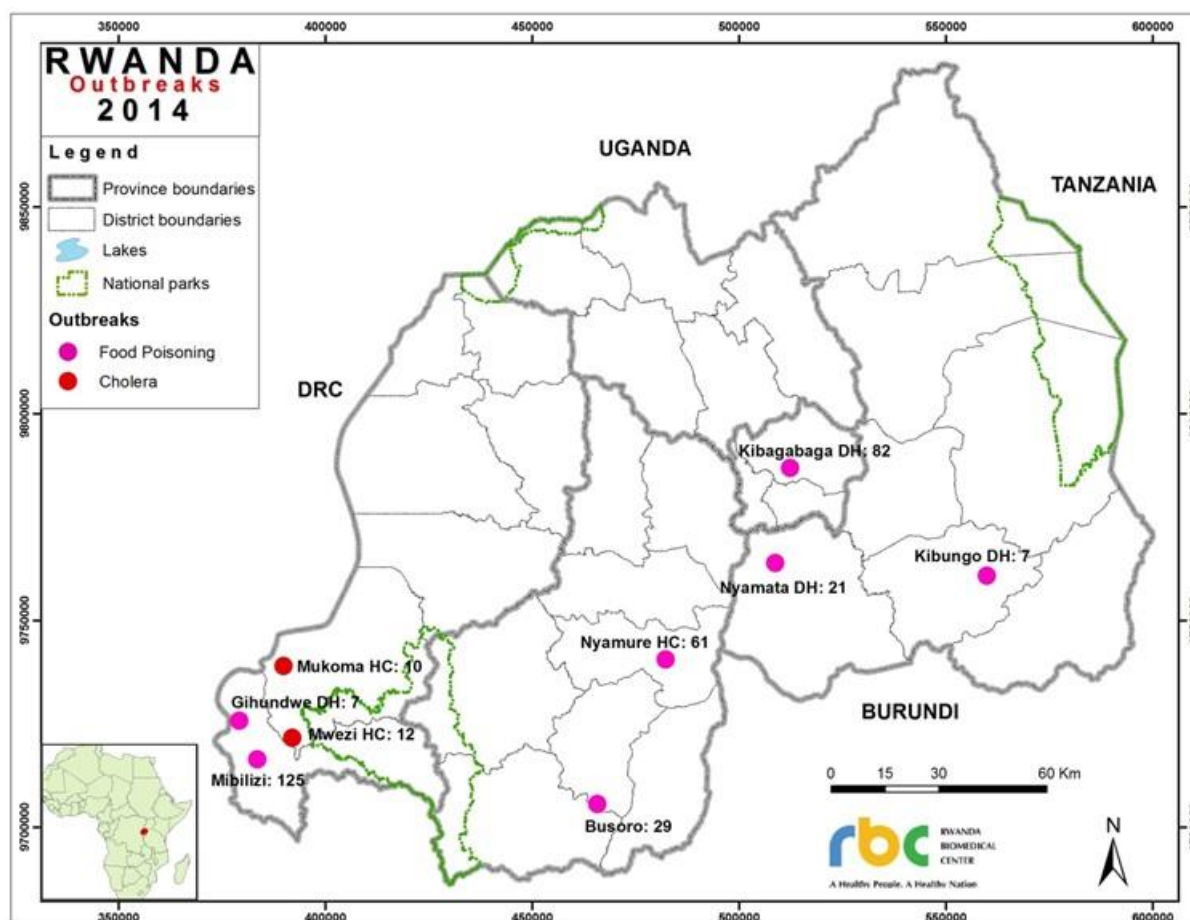
The following graph illustrates the weekly timeliness and completeness during 2014 for both public and private health facilities. The completeness is 90% while the timeliness is 80%.

Figure 52: Overall completeness and timeliness of IDSR weekly reports in 2014



Source: e-IDSR, 2014

Figure 53: Map of the summary of outbreaks that occurred from January - December 2014.



Influenza sentinel surveillance

One thousand and one hundred forty six samples (1,146) were collected and tested for influenza in 2014 and 4.8% of samples were tested positive to influenza strains.

Table 32: Influenza sentinel surveillance, 2014

Case definition	A/ H1	A/ H3	A/ H5	A/ Un-subtypable	B	Novel A/ H1N1	Total positive	Negative	Grand Total
ILI	0	0	0	0	0	1	1	50	51
SARI	0	34	0	0	11	9	54	1034	1088
Unclassified	0	0	0	0	0		0	7	6
Grand Total	0	34	0	0	11	10	55	1091	1146

Laboratory



Based on RHMIS reports of laboratory tests conducted in health facilities listed in the table below in 2014, about 76.03% of all reported laboratory tests were conducted at the health center level, 18.54% at district and provincial hospitals and 5.42% from Referral Hospitals.

45.40% of laboratory tests were blood, 28.08% were Thick Blood Smears and only 2.71% were sputum tests.

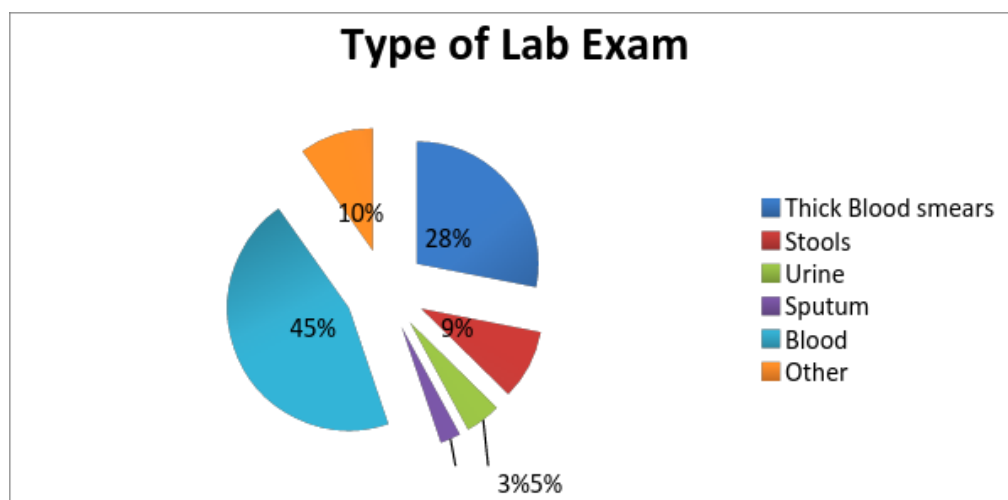
Overall, fewer laboratory tests were reported in 2014 than in 2013, though this trend was mostly limited to the Health Center level.

Table 33: Type of laboratory exams by facility type, 2013-14

Type of Lab Exam	2013					2014				
	Health Center	Private health facilities	District Hospital	Referral Hospital	Total	Health Center	District Hospital	Referral Hospital	Total	% Per type of Lab exam
Thick Blood smears	3,753,453	83,225	140,663	17,973	3,995,314	3,828,585	133,499	17,487	3,979,571	28%
Stools	1,136,107	48,048	53,120	5,404	1,242,679	1,250,782	56,350	4,377	1,311,509	9%
Urine	655,908	50,035	57,129	6,413	769,485	606,968	57,692	5,888	670,548	5%
Sputum	213,633	498	59,622	2,695	276,448	264,417	115,455	4,632	384,504	3%
Blood	8,253,581	354,472	1,536,460	343,590	10,488,103	4,493,779	1,524,461	416,708	6,434,948	45%
Other	495,994	222,842	535,901	179,431	1,434,168	332,641	740,467	319,816	1,392,924	10%
Total	14,508,676	759,120	2,382,895	555,506	18,206,197	10,777,172	2,627,924	768,908	14,174,004	100%
%	80%	4%	13%	3%	100%	76%	19%	5%	100%	

Source: RHMIS 2013-2014

Figure 54: Distribution of types of lab exams conducted in 2014



Source: National HMIS Database, 2014

Surgery

A total of 110,857 surgical interventions were performed during 2014. The common type of surgery performed during 2014 was Urgent interventions 59.23%, and 40.77% was planned. The most interventions were Gyneco-obstetrical with 77.61%.

Table 34: Number and type of surgery performed, 2014

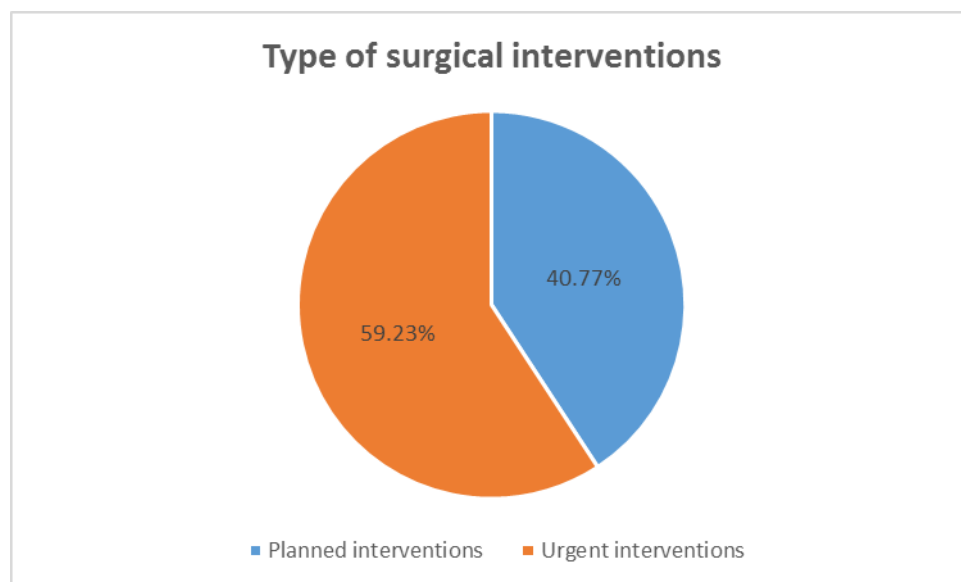
2013	planned	urgent	Total
Major surgery	20083	41270	61353
Minor surgery	20767	20692	41459
total surgeries	40850	61962	102812

□

2014							
Type of Surgery	District Hospital	Military Hospital	Medical clinic	Provincial Hospital	Referral Hospital	Total	%
Planned interventions							
Major surgery	16987	41	1203	4002	3486	25719	40.77%
Minor surgery	9101	567	257	1416	8139	19480	
Sub Total	26088	608	1460	5418	11625	45199	
Urgent Interventions							
Major surgery	30315	1631	1121	6764	4493	44324	59.23%
Minor surgery	11582	24	192	2731	6805	21334	
Sub Total	41897	1655	1313	9495	11298	65658	
Grand Total	67985	2263	2773	14913	22923	110857	100.00%

Source: National HMIS database, 2014

Figure 55: Type of surgery performed, 2014



Source: National HMIS Database, 2014

According to the figure above urgent interventions were done at 59.23% of all surgery, while planned interventions had 40.77%.

Table 35: Surgical procedures carried out in 2013-2014

Selected Surgical	2013			2014				%
	planned	urgent	Total	planned	urgent	Total		
General Surgery	12609	6432	19041	14004	8031	22035	100.00	28.41
Appendectomy	81	113	194	102	99	201	0.91	0.26
Hernia	1955	166	2121	1785	147	1932	8.77	2.49
Laparotomy	613	925	1538	420	1301	1721	7.81	2.22
Thyroidectomy	288	3	291	162	17	179	0.81	0.23
Cataract	2075	37	2112	2160	18	2178	9.88	2.81
Adenomectomy	94	2	96	100	13	113	0.51	0.15
Glaucoma	1	0	1	378	15	393	1.78	0.51
Trachoma	189	0	189	18	0	18	0.08	0.02
Others	7313	5186	12499	8879	6421	15300	69.43	19.72
Gyneco-obstetrical (G-O) Surgery	6513	41338	47851	5023	42478	47501	100.00	61.23
Caesarean Section	4869	39452	44321	3523	41221	44744	94.20	57.68
Hysterectomy	585	181	766	471	250	721	1.52	0.93
Other Laparotomies (G-O)	452	472	924	459	523	982	2.07	1.27
Myomectomy	441	38	479	327	21	348	0.73	0.45
Curettage	108	1178	1286	75	461	536	1.13	0.69
Fistula Repair	58	17	75	168	2	170	0.36	0.22
Orthopedic Surgery	4036	4249	8285	3813	4223	8036	100.00	10.36
Amputations	167	82	249	169	81	250	3.11	0.32
Osteosynthesis	1558	692	2250	1303	209	1512	18.82	1.95
Other	2311	3475	5786	2341	3933	6274	78.07	8.09
Total	23158	52019	75177	22840	54732	77572	100.00	100.00

RADIOLOGY



Data reported from hospitals on medical imagery and other diagnostic testing procedures indicate that over 182,744 x-rays were conducted in 2014, which represented 55.93% of all medical imagery exams conducted.

Among these x-ray exams, 30 % were for bones and 19.76% were for Lungs. Echography exams were the second most common type of medical imaging representing 41.42% of the total number of exams. Use of Echography increased dramatically from 2012 to 2014 over doubling from just over 60,000 in 2012 to 135,332 in 2014 due to the increased

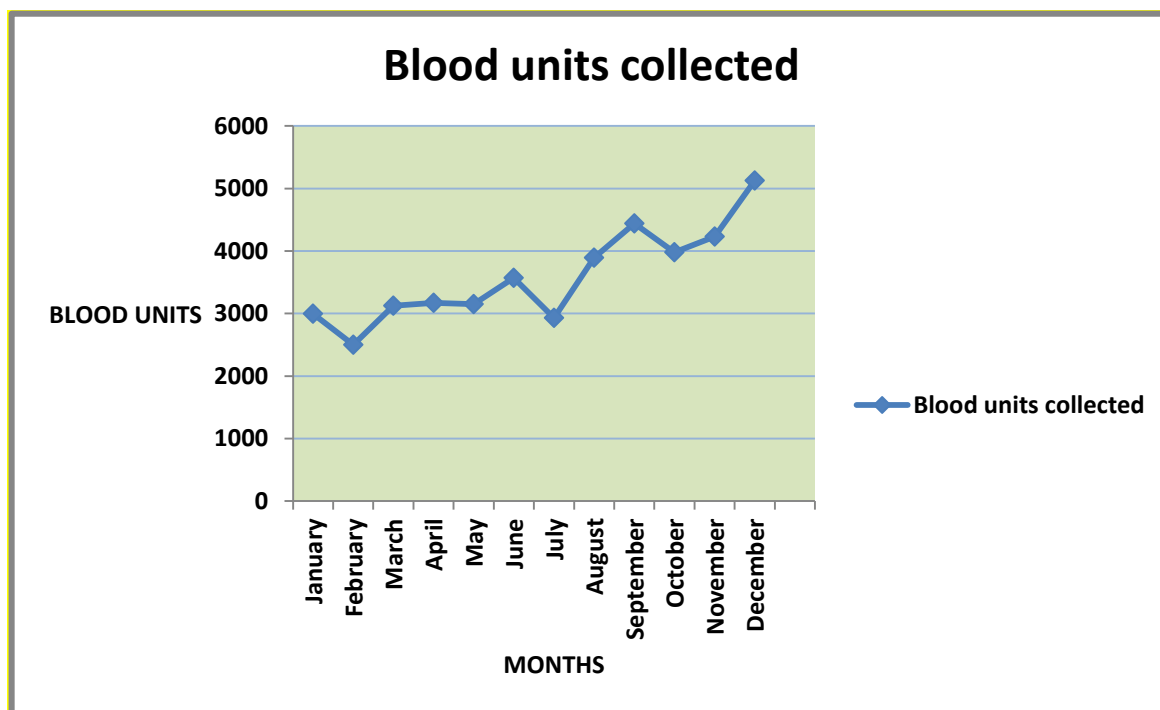
training especially in District Hospitals, and better reporting from private medical clinics.

Table 36: Radiology and Medical imagery

2013			2014						
Exam Type	Cases	%	District Hospital	Medical Clinic	Military Hospital	Provincial Hospital	Referral Hospital	Grand Total	%
Total Radiology Exams	184,416	59.84%	110,801	493	1,715	25,972	43,763	182,744	55.93%
Lungs	65782	21.34%	41,920	170	799	9,801	11,862	64,552	19.76%
Bones	92222	29.92%	64,170	249	891	15,210	17,485	98,005	30.00%
Abdomen without Preparation	4995	1.62%	3,265	28	25	883	1,189	5,390	1.65%
Abdomen with Dyes	322	0.10%	99	0	0	13	173	285	0.09%
Other Radiology	21095	6.84%	1,347	46	0	65	13,054	14,512	4.44%
Gastroscopy	4956	1.61%	599	228	0	0	2,864	3,691	1.13%
Echography	110272	35.78%	60,842	30,135	0	17,315	27,040	135,332	41.42%
Electro-cardiogram	8542	2.77%	1,485	518	0	2	2,955	4,960	1.52%
Total Exams	308186	100.00%	173,727	31,374	1,715	43,289	76,622	326,727	100.00%

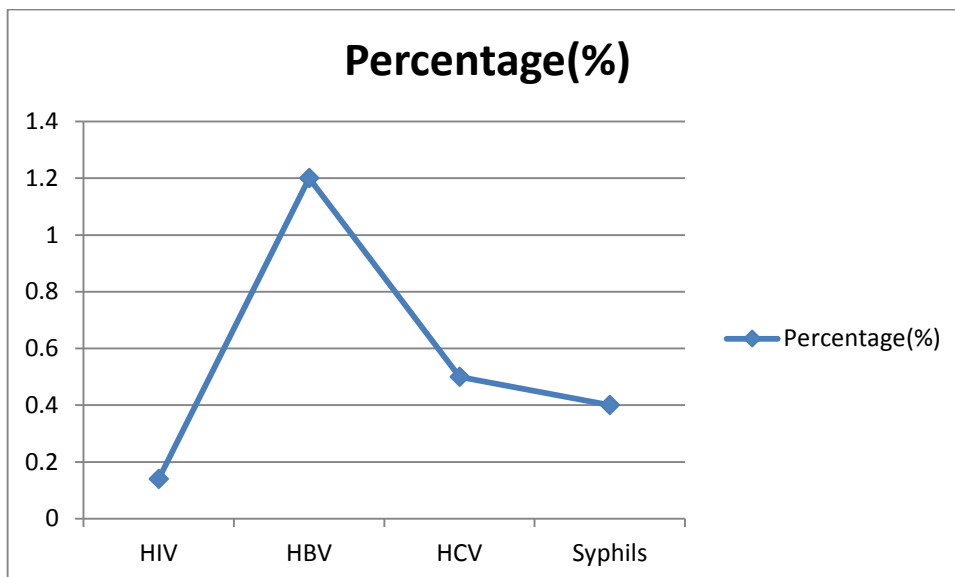
Source: National HMIS Database, 2013 and 2014

Figure 56: Blood units collected during 2014



As it is indicated in the graph above, NCBT collected 43098 blood units in 2014 and all were processed into blood components more than 51,000 blood components were distributed in different health facilities.

Figure 57: Seroprevalence of transfusion transmissible infections in blood donors in 2014



The seroprevalence of HIV in blood donors was 0.14% which is very small compared to 3% in general population. The most prevalent marker in blood donors was Hepatitis B Virus (HBV) with 1.2%. The Hepatitis C Virus (HCV) and Syphilis were 0.5% and 0.4% respectively.

THE SUCCESS STORY OF QMS IMPLEMENTATION IN RWANDA

Quality management system (QMS) is a set of policies, processes and procedures required for planning and execution (production/development/service) in the core business area of an organization. (i.e. areas that can impact the organization's ability to meet customer requirements.) Some people generically refer to the group of documents as a QMS, but specifically it refers to the entire system - the documents just describe it. QMS is nothing more than good business sense.

The Rwanda National center for Blood Transfusion started to focus its vision on QMS implementation from late 2009. At this time, American Association of Blood Banks (AABB) carried out a gap analysis in respect to their standards. The gap analysis revealed that nearly 93% of requirements were not met. Later on, a work plan towards meeting the standards requirements was put in place. This encompassed appointment and training of a person to oversee the quality system; training of laboratory technicians on good manufacturing practices; acquisition of various equipment to accommodate quality and above all, elaboration of policies and Standard Operating Procedures.

In late 2011, thanks to AABB technical assistance, a lot of documents had been developed which include quality plan, corporate procedures and Standard Operating Procedures.

In fact, QMS implementation was launched in mid of 2012. NCBT management put much effort in enforcing its implementation. AABB carried out an assessment in March 2013 and appreciated the progress to meeting the requirements though some non-conformances needed actions. A follow up assessment in February 2014 took place and most of the Standards (nearly 92%) were addressed with the exception of Transfusion Related Acute Lung Injury prevention; Nucleic Acid testing for HIV; HCV and HBV; Limitation, detection or inactivation of bacterial contamination in platelet and ISBT 128 Labelling (conventional blood products nomenclature and labelling) .

Most of these major non conformances were money demanding and would require lengthy time to close. African Society for Blood Transfusion (AfSBT) step-wise accreditation was chosen as an intermediate option while dealing with shortcomings on AABB requirements. The AfSBT step wise accreditation includes level 1 (basic), level 2 (Intermediate) and level 3 (the highest).

In November 2014, AfSBT carried out assessment and NCBT was awarded Level 2 accreditation making it the second country in African blood banks after Namibia to be accredited by AfSBT.

NCBT is one of few organizations which in less than 3 years have managed to come from scratch to excellence. This has improved quality of products and services to its customers at the same time advanced control over all blood bank processes.

NCBT is striving to achieve level 3 AfSBT accreditation by 2017 while doing its best to achieve AABB international accreditation by 2020.

PERFORMANCE-BASED FINANCING (PBF)

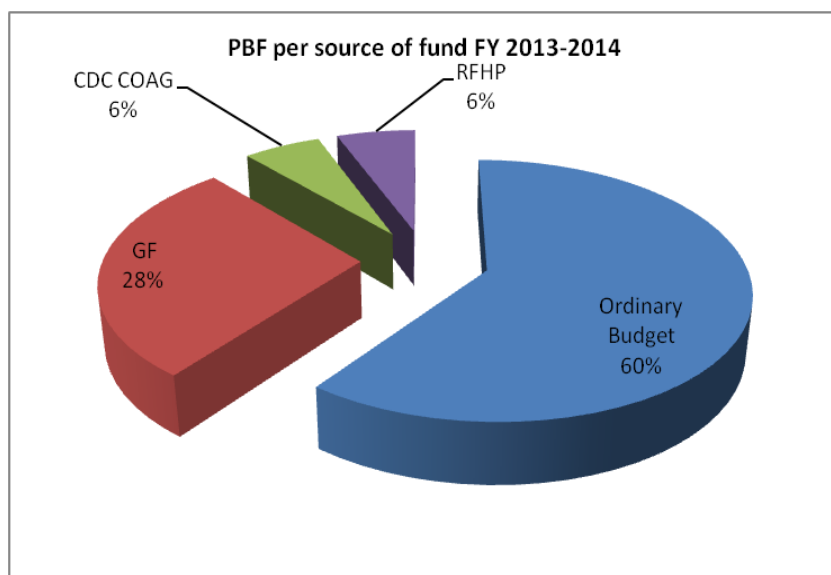
FINANCING SOURCES FOR ALL PBF INDICATORS

Table 37: PBF funds by funding source (Rwf), fiscal year 2013 – 2014

GoR Ordinary Budget	CPA (DH, SH, RH, SAMU)	4,474,083,659
	MPA	2,078,463,841
	CP (Steering committees)	139,710,528
S/total Ordinary Budget		6,692,258,028
Global Fund	HIV	1,822,929,469
	TB	1,304,300,980
S/total GF Budget		3,127,230,449
CDC COAG	HIV & CPA	633,852,612
RFHP	HIV	646,765,538
S/total US Gov Agencies		1,280,618,150
Total PBF Clinical Budget		11,100,106,627

Source: PBF Annual report, 2013-2014

Figure 58: PBF funds by funding source (%)



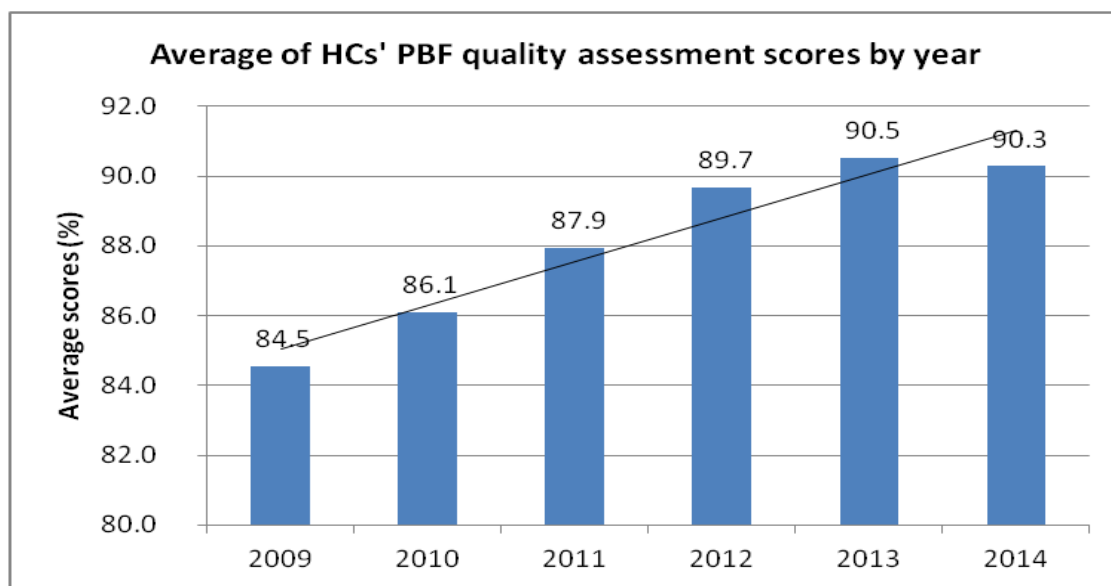
Source: PBF Annual report, 2013-2014

According to the table and figure above, the largest funding source for PBF and TOP UP in FY In 2013-2014 was the Government of Rwanda, which through the ordinary budget, funded CPA, MPA and district Steering Committees. The Global Fund was the second largest funding source and the largest source of funds for the remuneration of TB and HIV indicators. HIV indicators were also funded by RFHP, CDC/COAG.

CDC/COAG also contributed to the financing of CPA indicators. Overall it appears evident that the GoR is responsible for the remuneration of CPA, MPA and district SC indicators while DPs are focusing predominantly on the remuneration of HIV and TB indicators.

The funds utilized by the GoR accounts to 60 percent of total PBF funds for indicators; the Global Fund made up 28 percent of PBF funds for indicators followed by a 12 percent of funds contributed by CDC/COAG (6%) and RFHP (6%).

Figure 59: Average quality scores from health centers' PBF quality assessments



Source: PBF Database, 2013 and 2014

According to PBF quality assessments that are conducted quarterly in all health centers the quality of care provided to the population has improved from 2009 to 2014, this is justified by a trend that has increased since 2009 (84.5%) to 2014 (90.3%).

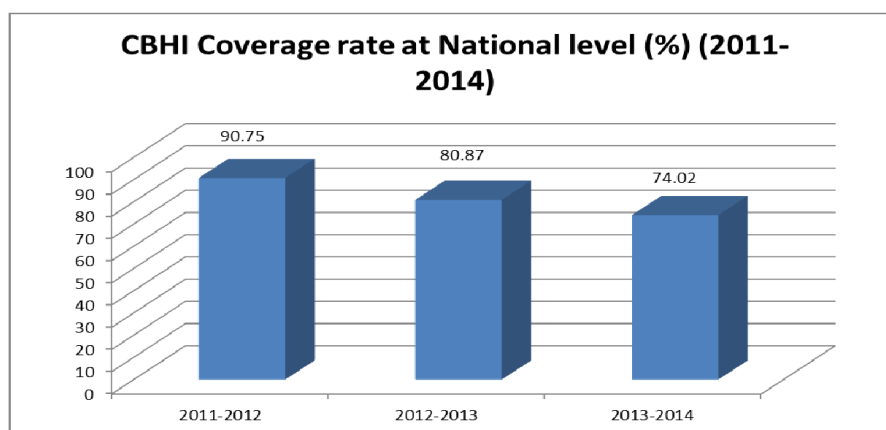
COMMUNITY-BASED HEALTH INSURANCE/MUTUELLE (CBHI) 2013-2014

EVOLUTION OF MEMBERSHIP RATE (2011-2014)

The implementation of CBHI has increased the accessibility of the majority of the Rwandan population to modern healthcare. During the CBHI year 2011-2012, 90.7% of the Rwandan population was covered under CBHI. This achievement was due to the commitment and leadership of Rwandan authorities at all levels. Before the beginning of the CBHI year 2012/13 MOH/HFU organized a sensitization campaign in each district and met with different opinion leaders such as religious representatives, presidents of cooperatives, members of civil society organizations, focal points of CBHI partners, V/Mayors of social affairs, executive secretaries of sectors and all CBHI staff at district level. The expected output of these sensitization strategies was the achievement of at least 90% coverage rate by the end of March 2013.

Along with sensitization strategies MoH/HFU also organized quarterly CBHI national auto evaluation workshops with CBHI District Directors: during these evaluations many strategies were planned to improve the CBHI management and CBHI enrolment. Moreover the Ministry of Health in collaboration with the Ministry of Local Government organized different Joint meetings to discuss and develop strategies to increase the rate. The year 2013-2014 ended with 74%.

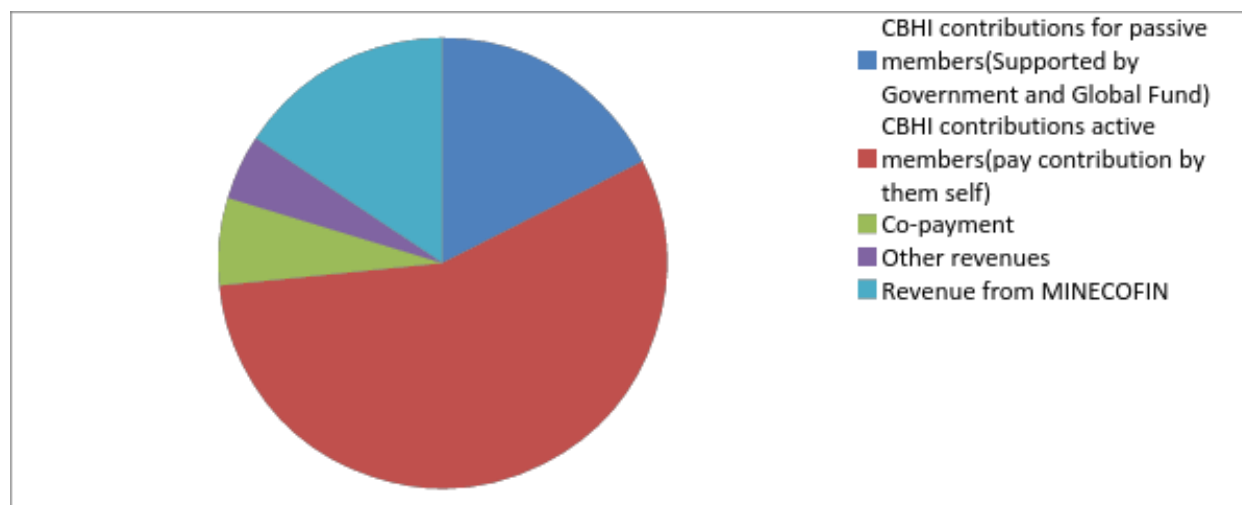
Figure 60: CBHI coverage rate at national level, 2011-12 to 2013-14



COMPARISON OF COVERAGE RATE FOR YEAR 2011-2014

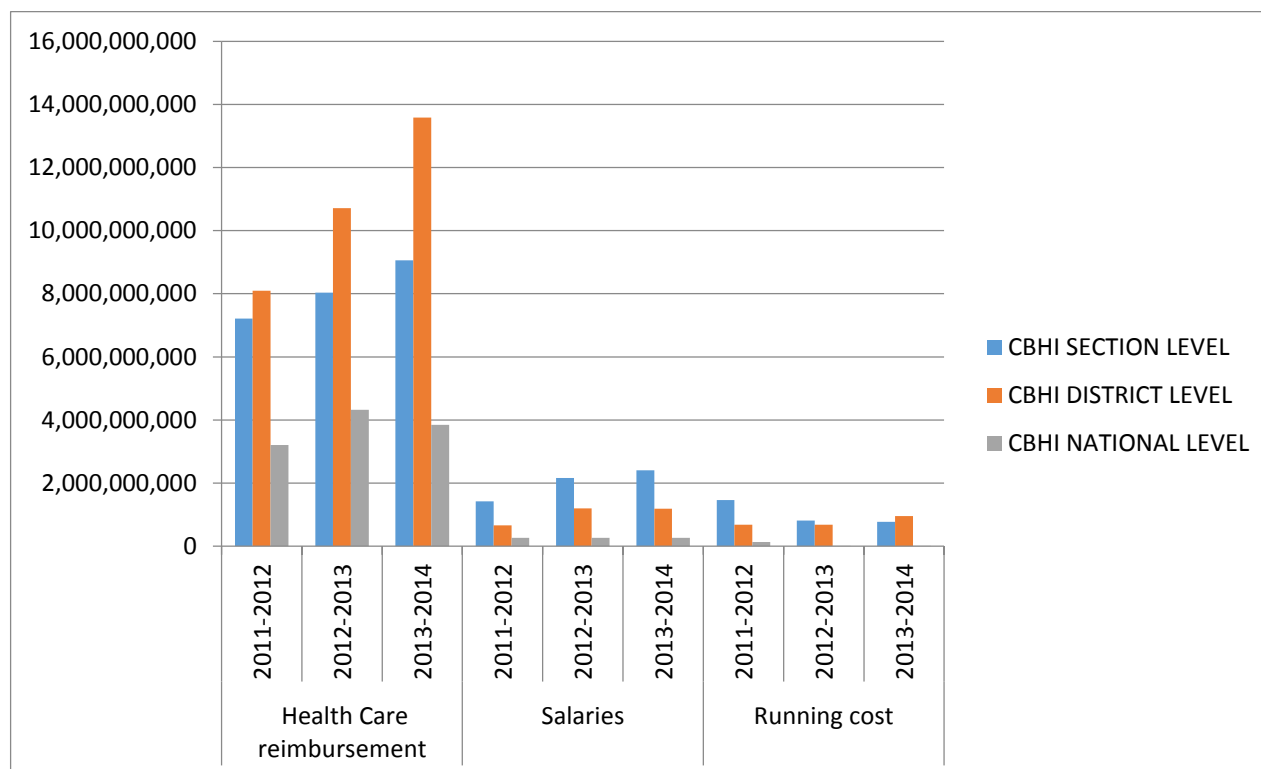
NO	DISTRICT	2011&2012	2012&2013	2013&2014
1	BUGESERA	87,15	80,67	72,18
2	BURERA	93,39	80,67	78,52
3	GAKENKE	89,09	83,43	82,53
4	GASABO	89,84	83,16	56,19
5	GATSIBO	87,83	71,16	84,50
6	GICUMBI	85,15	75,97	76,91
7	GISAGARA	72,92	76,28	73,34
8	HUYE	87,37	81,58	82,13
9	KAMONYI	124,34	92,69	83,40
10	KARONGI	122,93	100,00	75,61
11	KAYONZA	97,18	80,64	65,41
12	KICUKIRO	84,95	86,77	74,11
13	KIREHE	81,52	74,86	86,23
14	MUHANGA	86,45	81,20	77,46
15	MUSANZE	91,77	72,26	71,35
16	NGOMA	76,30	74,42	67,31
17	NGORORERO	105,76	86,90	77,64
18	NYABIHU	94,75	73,44	67,57
19	NYAGATARE	97,42	82,28	76,94
20	NYAMAGABE	97,36	81,07	81,32
21	NYAMASHEKE	94,77	82,94	77,38
22	NYANZA	76,45	77,74	66,12
23	NYARUGENGE	102,17	85,14	65,63
24	NYARUGURU	85,41	71,29	79,61
25	RUBAVU	79,68	79,13	69,43
26	RUHANGO	84,49	75,36	74,33
27	RULINDO	83,99	71,72	71,01
28	RUSIZI	87,94	84,33	68,34
29	RUTSIRO	91,26	85,30	65,89
30	RWAMAGANA	87,77	93,71	74,82
	NATIONAL	90,75	80,87	74,02

Table 38: Income vs Expenditures



The graph above, shows the different sources of CBHI Revenue and their distribution during fiscal year 2013-2014. During the year, 56% of income is those from contributions directly paid by members. This shows that CBHI is half financed by only members and 18% provided by the GoR and its partners to cover poor people in cat. 1, on this 16% of the total income is added as Government contributions into CBHI for the reimbursement of Referral Hospitals. These are the only sources of funds for CBHI up to now. It is expected that active contributions would gradually increase as per decrease of Government contributions for Cat. I. the number of very poor people may decrease since the Government is initiating different programs to eradicate poverty.

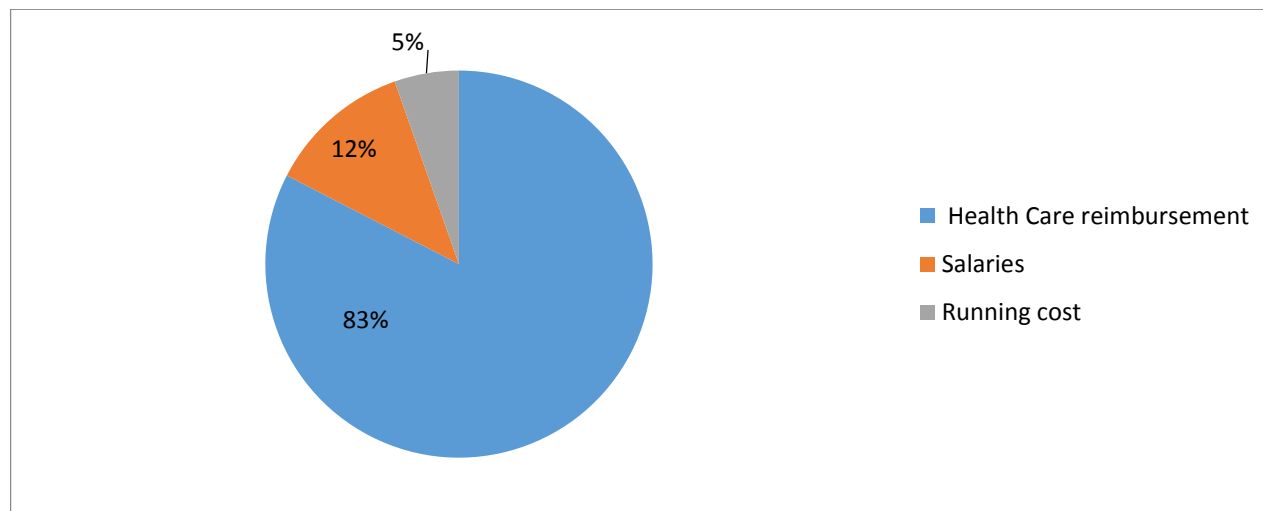
Figure 61: Distribution of major expenses for CBHI by level and year



The graph above compares all CBHI levels in terms of expenditures for the 3 years since the new Policy Implementation. Expenditures increased year by year, and health care reimbursement takes the main expenditures, which is rational. The reimbursement of health care has gradually increase from 2011-2012 to 2012-2013 there is a significant increase at all levels and so from 2012-2013 to 2013-2014. The big increase is at District level where medical bills increased from 8,095,878,048 in 2011-2012 to 10,717,472,077 in 2012-2013 and to 13,584,326,305 in 2013-2014. This increase may related to the increase of the Utilization rate.

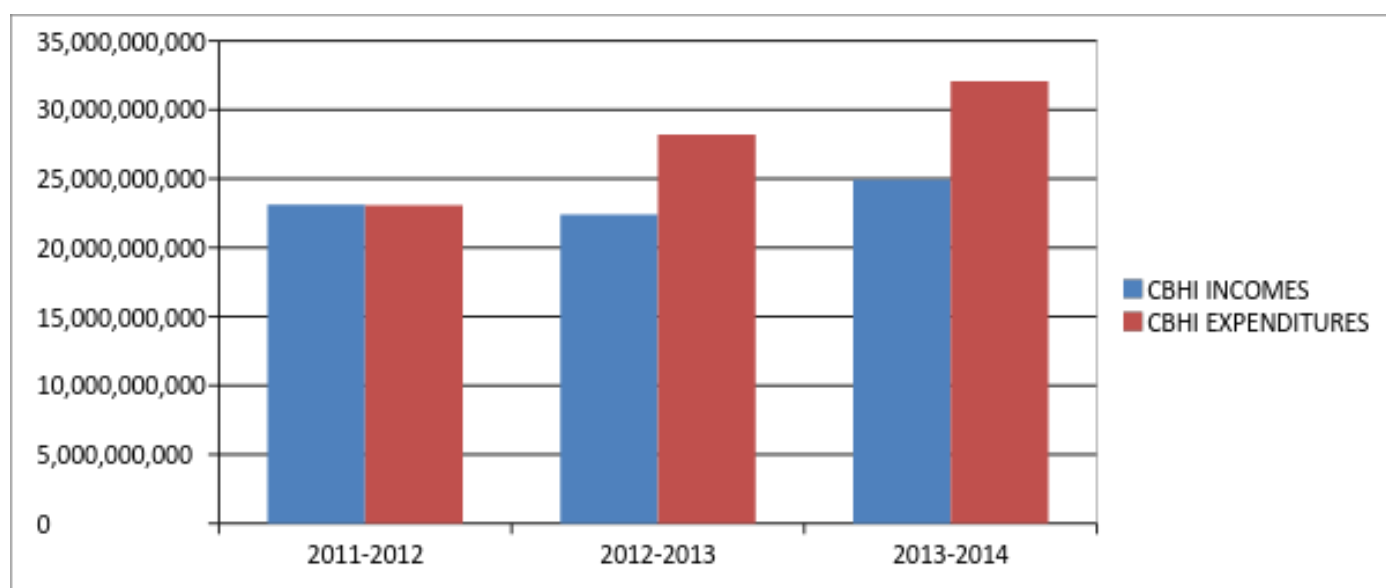
Generally, medical reimbursement is 82% of total expenditures while salaries represent 12% and running cost which is almost 7% of the total expenditures.

Figure 62: Major categories of CBHI expenditure, 2013-14



The chart above is the distribution of expenditures for the year 2013-2014: health care reimbursement takes 83% of the total expenditures made at all 3 levels of CBHI, which is normal because this is the main activity for a health insurance scheme. 12% of total expenditures are those of salaries at both Districts and Sections level, and 5% as of running cost mainly made at District and section level. Generally the picture remains the same as in the graph above when comparing the 3 previous years. The 5% of running cost is also acceptable, as for a scheme.

Figure 63: CBHI income and expenditure 2011-12 to 2013-14



This graph above gives a brief summary of the 3 past years; it shows the comparison of Incomes and Expenditures for the 3 years. The first year of the new policy was the best ever compared to the 2 past years. 2012-2013 and 2013-2014 encountered deficit. In the 3 pasted year there was decrease in mutuelle de santé subscription and the utilization of health care services has increased because of better geographic and financial access and social mobilization. As health care has a cost and the bills amount claimed to CBHI for health services rendered to its members have gradually increased the deficit is mainly due to the increase of medical bills especially at District level and national level. This increase calls up the fact that the utilization of health care services raised up.

Sources of Data

Health Management Information System (RHMIS)

Rwanda Health Management Information System (R-HMIS) is the main tool for collection, validation, analysis, and presentation of aggregate statistical data for the health sector. It has been implemented using a generic platform (DHIS-2) rather than a custom-developed database application, with an open meta-data model and a flexible user interface that allows the user to design the contents of a specific information system without the need for programming. R-HMIS is a modular web-based software package built with free and open source Java frameworks. Rwanda moved the R-HMIS to the DHIS-2 platform in January 2012 so this is the first year that analysis is being prepared using this software. The largest data sets reported using this system are the Monthly Reports from Hospitals, Health Centers and private health facilities (which only began reporting at the end of 2012). Other health information sub-systems also on the RHMIS platform include: SISCom, a new quarterly TB reporting module, infant and child death audit reporting, the HIV module and the eIDSR.

National Institute of Statistics Rwanda

Population denominators have been obtained from the National Institute of Statistics Rwanda (NISR), population projections are based upon the 2012 census.

PBF Database

PBF uses a web-based database to collect a selected number of mostly output indicators that are used to track progress and calculate performance based payments for CHW cooperatives, health centers, and district hospital. The system also uses data from quarterly quality evaluations to ensure that data and service quality are maintained, and to reduce the performance payment accordingly. The system is in the process of being expanded to integrate community-based services (i.e., community PBF). PBF data is cited occasionally for comparison purposes because the reporting rate is virtually 100% and the data are carefully validated each quarter.

Community-based Health Insurance (CBHI) Indicator Database

The community-based health insurance program uses a web-based database to collect a very limited number of indicators that are used to track progress and determine the financial viability of individual CBHI or mutuelle sections. The reporting rate for 2010 was approximately 84% of the 428 mutuelle sections reporting.

Rwanda Interim DHS 2014 (RDHS)

The 2014-2015 Rwanda Demographic and Health Survey (RDHS) is the fifth DHS survey to be conducted in Rwanda and it was implemented by the National Institute of Statistics of Rwanda (NISR) and the Ministry of Health (MoH), in collaboration with the worldwide Demographic and Health Surveys Program.

The primary objective of the 2014-15 RDHS project is to provide up-to-date estimates of basic demographic and health indicators. Specifically, the RDHS collected information on fertility levels, marriage, sexual activity, fertility preferences, awareness and use of family planning methods, breastfeeding practices, nutrition, childhood and maternal mortality, maternal and child health, awareness and behavior regarding HIV/AIDS and other sexually transmitted infections (STIs), malaria, and other health issues such as smoking. In addition, the 2014-15 RDHS provides estimates of anemia prevalence among children age 6-59 months and adults and estimates of HIV prevalence among adults and children. This RDHS is a follow-up survey to the earlier RDHS surveys (1992, 2000, 2005, 2007-08, and 2010).

The fieldwork for data collection for the RDHS was conducted for about five months from November 9, 2014, to April 8, 2015; and the data entry took place from December 3, 2014, to April 21, 2015. Three questionnaires were used for the 2014-15 RDHS: the Household Questionnaire, the Woman's Questionnaire, and the Man's Questionnaire.

A total of 12,793 households were selected for the survey, of which 12,717 were occupied. Of the occupied households, 12,699 were successfully interviewed, yielding a response rate of 99.9 percent. In the interviewed households, 13,564 eligible women were identified for individual interviews; interviews were completed with 13,497 women, yielding a response rate of 99.5 percent. In the subsample of households selected for the male survey, 6,249 eligible men were identified and 6,217 were successfully interviewed, yielding a response rate of 99.5 percent.