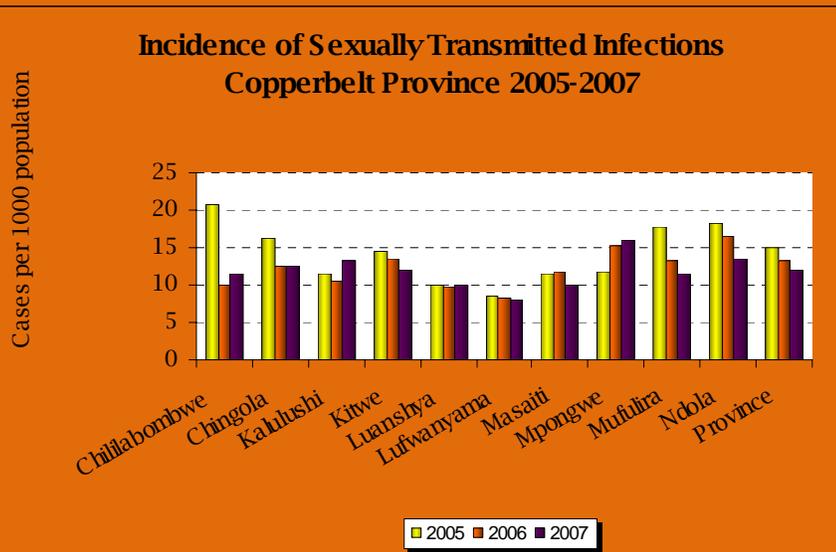




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Ministry of Health

Copperbelt Province



2007 Annual Health Statistics Bulletin

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Preface

All provinces are now required to compile an Annual Health Statistical Bulletin to provide an annual comparative analysis of the health indicators. This is a first edition for Copperbelt Province.

This document contains data on selected indicators based on service delivery and disease burden statistics collected in the hospitals and health centres in Copperbelt Province.

We hope that the production of the Annual Health Statistical Bulletin will be an annual event. Suggestions on how to improve future editions are most welcome. It is also hoped that in future, districts would also produce an Annual Health Statistical Bulletin.



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List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
CHAZ	Churches Health Association
DHMT	District Health Management Team
DHO	District Health Office
DHIO	District Health Information Officer
DPT-Hib + HepB	Diphtheria, Pertussis, Tetanus, Haemophilus Influenza and Hepatitis B
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HSSP	Health Services and Systems Programme
IDSR	Integrated Disease Surveillance and Response
MACEPA	Malaria Control and Evaluation Partnership in Africa
NHSP	National Health Strategic Plan
PHO	Provincial Health Office
SFH	Society for Family Health
STI	Sexually Transmitted Infections
tTBA	trained Traditional Birth Attendant
ZVCTS	Zambia Voluntary Counselling and Testing Services

Table of Contents

Preface.....	i
Acknowledgements	ii
List of Abbreviations.....	iii
Table of Contents.....	iv
List of Tables	vi
List of Figures.....	vii
List of Figures.....	vii
Glossary of Terms.....	viii
Executive Summary	x
Chapter 1: Background	1
1.1 Geography and Administration.....	1
1.2 Demographic Information.....	1
1.3 Data sources.....	2
1.4 Scope of analysis.....	2
1.5 Limitations of this report	3
Chapter 2: Disease Burden.....	4
2.1 Major causes of illnesses.....	4
2.1.1 Malaria	4
2.1.2 Respiratory infections (non-pneumonia).....	7
2.1.3 Respiratory infections (pneumonia).....	8
2.1.4 Diarrhoea non-bloody	10
2.1.5 Diarrhoea bloody (suspected dysentery).....	12
2.1.6 Trauma (accidents, injuries, wounds, burns e.t.c.).....	13
2.1.7 Eye infections	15
2.2 Patient case load	17
2.3 Under-five case fatality rates.....	18
2.4 Selected notifiable diseases.....	18
2.4.1 Acute flaccid paralysis.....	18
2.4.2 Measles.....	19
Chapter 3: HIV, AIDS, Tuberculosis and Sexually Transmitted Infections.....	21
3.1 Counselling and testing.....	21
3.2 Prevention of HIV transmission from mothers to infants	22
3.2.1 Antenatal HIV testing	23
3.2.2 Proportion of pregnant women with HIV	23
3.2.3 Antiretroviral prophylaxis.....	24
3.2.4 Ever enrolled on antiretroviral therapy.....	24
3.2.5 Ever enrolled on antiretroviral therapy against target.....	25
3.2.6 Antiretroviral therapy patient outcomes at 12 months	26
3.3 Tuberculosis	26
3.3.1 Tuberculosis notifications from 2005 to 2007.....	27
3.3.2 Tuberculosis cure, completion and success rate.....	27
3.4 Sexually transmitted infections	28
Chapter 4: Human resources.....	30
4.1 Number of medical personnel by district	30
4.2 Health centre staff daily contacts	30
4.3 Community Health Volunteers	31

4.3.1	Trained Traditional Birth Attendants.....	32
4.3.2	Community Health Workers.....	32
Chapter 5:	Availability of drugs.....	34
5.1	Medical supplies in stock at health facilities	34
5.1.1	Availability of tracer drugs	35
Chapter 6:	Health Services Delivery Indicators	36
6.1	Health facility utilisation.....	36
6.2	Outpatient department utilisation.....	36
6.2.1	Health centre per capita attendance.....	37
6.2.2	Bed occupancy rate–health centre and hospital.....	37
6.2.3	Hospital outpatient department percentage by-pass first attendances.....	39
6.2.4	In-patient turnover rate	40
6.2.5	Average length of stay	41
6.3	Maternal health and family planning	42
6.3.1	Summary of maternal health indicators.....	42
6.3.2	Antenatal care	42
6.3.3	Average number of antenatal visits	44
6.3.4	Supervised deliveries	44
6.3.5	Complicated deliveries	45
6.3.6	Prevalence of still births	46
6.3.7	First postnatal attendance	46
6.3.8	Maternal mortality	47
6.3.9	New family planning acceptors.....	48
6.4	Child health indicators	48
6.4.1	Fully immunisation coverage	49
6.4.2	BCG -Measles dropout rate	50
6.4.3	Pregnancies protected against tetanus	50
6.4.4	Under-five underweight prevalence.....	51
Chapter 7:	Environmental and Public Health.....	52
7.1	Malaria control.....	52
7.1.1	Insecticide treated nets.....	52
7.1.2	Indoor residual house spraying	53
7.2	Water quality monitoring.....	54
7.3	Management of medical waste.....	54
7.4	Public health inspections.....	55
7.5	Food inspections	56
References	57

List of Tables

Table 1.1: Distribution of district population by selected age groups.....	2
Table 2.1: Ten major diseases accounting for attendance of health facilities 2007.....	4
Table 2.2: Malaria incidence and case fatality rates by age group in Copperbelt Province, 2007.....	5
Table 2.3: Respiratory infections (non-pneumonia) incidence per 1,000 population, 2007.....	7
Table 2.4: Respiratory infections: pneumonia incidence and case fatality rates by age group, 2007.....	9
Table 2.5: Diarrhoea-non-bloody incidence and case fatality rates by age group, 2007.....	11
Table 2.6: Dysentery incidence rate by age group, 2007.....	12
Table 2.7: Trauma incidence and case fatality rates by age group, 2007.....	14
Table 2.8: Incidence rate of eye infections by broad age group and district, 2007.....	16
Table 2.9: Proportion of children under 5 years case load by district, 2005-2007.....	17
Table 2.10: Under-five years case fatality rate by district, 2005-2007.....	18
Table 2.11: Acute flaccid paralysis surveillance performance indicators by district, 2007.....	19
Table 2.12: Measles (suspected) cases reported to health facilities by age and district, 2005-2007.....	19
Table 3.1: Proportion of clients taking an HIV test.....	21
Table 3.2: Proportion of clients that took an HIV test and were found to have HIV by district.....	22
Table 3.3: Proportion of women starting antenatal care who took an HIV test by district, 2007.....	23
Table 3.4: Proportion of pregnant women testing HIV positive by district, 2007.....	23
Table 3.5: Proportion of babies exposed to HIV given antiretroviral prophylaxis by district, 2007.....	24
Table 3.6: Cumulative number of patients ever enrolled on ART by district, 2006-2007.....	24
Table 3.7: Proportion ever started on antiretroviral therapy against target by district and year.....	25
Table 3.9: Tuberculosis notifications by type, district and sex, 2007.....	27
Table 3.10: Tuberculosis cure rate 2005 to 2007.....	28
Table 3.11: Sexually transmitted infection Incidence, 2007.....	28
Table 4.1: Number of health staff by district, December 2007.....	30
Table 4.2: Number of active tTBAs and deliveries conducted, 2005-2007.....	32
Table 4.3: Number of active CHWs and patients attended to by community health workers.....	32
Table 5.1: Percentage of months for which drugs were in stock by district, 2005-2007.....	34
Table 5.2: Percentage of months in which tracer drugs were available, 2007.....	35
Table 6.1: Trends of selected service delivery indicators by year.....	36
Table 6.2: Outpatient department utilisation rate in Copperbelt Province, 2005-2007.....	36
Table 6.3: Health centre per capita attendances Copperbelt Province, 2005-2007.....	37
Table 6.4: Bed occupancy rate per district and year, 2005-2007.....	37
Table 6.5: Hospital outpatient department first attendance utilisation.....	39
Table 6.6: Hospital outpatient department percentage by-pass first attendance, 2005-2007.....	39
Table 6.7: Health centre and hospital inpatient turnover rate per district and year, 2005-2007.....	41
Table 6.8: Hospital average length of stay by district, 2005-2007.....	42
Table 6.9: Maternal health indicators, Copperbelt Province, 2005-2007.....	42
Table 6.10: First antenatal attendance coverage, 2005-2007.....	43
Table 6.11: Average antenatal visit, 2005-2007.....	44
Table 6.12: Supervised deliveries by place of delivery and district, 2005-2007.....	44
Table 6.13: Percentage of complicated deliveries in health centres and hospitals by district, 2007.....	46
Table 6.14: Proportion of total births that were still borne by district, 2005-2007.....	46
Table 6.15: First postnatal coverage, 2005-2007.....	47
Table 6.16: Maternal mortality rate trends in health facilities 2005-07.....	47
Table 6.17: New family planning acceptors per 1000 women of childbearing age,.....	48
Table 6.18: Child health indicators, 2005-2007.....	49
Table 6.19: Fully immunised children under 1 year by district, 2005-2007.....	50
Table 6.20: Percentage distribution of BCG-measles dropout rate by district, 2005-2007.....	50
Table 6.21: Pregnancies with tetanus toxoid protection, 2005-2007.....	51
Table 6.22: Percentage of under five children underweight, 2005-2007.....	51

List of Figures

<i>Figure 2.1: Malaria incidence rate by district, 2005-2007</i>	6
<i>Figure 2.2: Incidence of respiratory infections: non-pneumonia</i>	8
<i>Figure 2.3: Incidence rate of respiratory infections: pneumonia</i>	10
<i>Figure 2.4: Incidence of diarrhoea non-bloody</i>	12
<i>Figure 2.5: Incidence of suspected dysentery, 2005-2007</i>	13
<i>Figure 2.6: Incidence of trauma, 2005-2007</i>	15
<i>Figure 2.7: Incidence rate of eye infections by district, 2005-2007</i>	17
<i>Figure 3.1: Some outcomes of patients enrolled on antiretroviral therapy</i>	26
<i>Figure 3.2: Incidence of sexually transmitted infections</i>	29
<i>Figure 4.1: Daily staff contacts</i>	31

Glossary of Terms

Antenatal First Attendance: First time pregnant woman attends antenatal clinic during that pregnancy.

Average Antenatal Attendance: Number of return visits to the Antenatal clinic by a pregnant woman for that particular pregnancy.

Average length of stay: The average number of days a patient spends in a health facility from the time of admission to the time of discharge.

BCG - Measles Dropout Rate: The difference in proportion between children under one year who received BCG and Measles.

Bed Occupancy Rate: This is an average percentage of used beds in a given period of time.

Bed Turnover: This is the number of admissions per bed during a given period of time.

Case Fatality Rate: The number of deaths due to a certain illness out of the cases resulting from that illness.

Case Load: The number of times a child less than five years is attacked by a disease or condition in a year.

Disease Incidence Rate: The number of new cases that occur within a given period, at a given location in a given population group.

Fully Immunisation: The number of children aged one year and below who received or completed a full series of the recommended immunisations.

Health Centre Daily Staff Contacts: The average number of clients and patients a trained staff attends to in a day.

Incidence Rate: The number of cases of a disease over the total catchment population

Institutional Delivery: A delivery that takes place in a health centre or hospital.

Maternal Death: A death of a woman during pregnancy or within 42 days after delivery or termination of pregnancy from bleeding, seizures, infection or any pregnancy related cause (excluding accidents).

Maternal Mortality Ratio: Maternal mortality is defined as a death of a woman during pregnancy or within 42 days after termination of pregnancy from bleeding, seizures, infection or any other pregnancy related causes. The rate of is expressed per 100,000 live births.

Morbidity Rate: The proportion of people suffering from a particular disease or condition out of a 1000 population.

Mortality Rate: The proportion of people dying of a particular disease out of a 1000 admissions.

New Family Planning Acceptors: A person who has never before used a modern method of contraception as prescribed by any registered health facility.

Per Capita Attendance: The average number of people in a catchment area that attended a health service.

Peri-Natal Mortality: The proportion of neonates dying from the time of birth up to the 28th day after birth.

Post Natal Care First Attendance: The proportion of women attending postnatal clinic for the first time after delivery out of the estimated deliveries.

Prevalence Rate: The proportion of people suffering from a disease or condition out of the total catchment area population.

Rational Drug Prescription: Prescribing the right medicine, for the right diseases to the right patient in right dosages for right time.

Sexually Transmitted Disease: A disease or condition that is transmitted or contracted through coitus.

Supervised Delivery: A delivery assisted by either trained Traditional Birth Attendant or any trained Health Staff.

Tuberculosis Completion Rate: The proportion sputum smear positive cases who completed treatment with negative sputum smear results at the end of the initial phase but with no or only one negative sputum examination in the continuation and none at the end of treatment out of a total of tuberculosis cases enrolled in the same period.

Tuberculosis Cure Rate: The proportion of new smear positive cases in a given period of time, who completed treatment and that are declared cured at the end of treatment with a confirmation of at least two negative smear results, one of which must be at completion of treatment out of the new smear positive cases registered for treatment during the same time period.

Tuberculosis Treatment Success Rate: The total coverage of cured patients and those completing treatment out of the total tuberculosis cases enrolled in the same period.

Underweight Ratio: The number of children aged five years and below whose weight fell below the lower reference line of the under-five card.

Executive Summary

Introduction

The main objective of this document is to provide trends of selected indicators on disease burden and service delivery in the province from 2005 to 2007. This bulletin presents data on indicators collected from the HMIS and those not captured in the main stream HMIS such as antiretroviral services and human resources. The indicators are compared by districts and two broad age groups namely under-fives and the rest of the older population. The report does not provide detailed explanations about the factors behind the trends in the indicators.

Disease burden

▪ Malaria

Although malaria was still the top most cause of morbidity in Copperbelt Province, the trend has been on the decline from an incidence rate of 380.1 per 1000 population in 2005 to 391.1 per 1000 population in 2006 and to 349.7 per 1000 population in 2007.

There was a yearly reduction in the incidence rate in Ndola, Mufulira and Chingola. In Ndola the incidence rate reduced from 454.7 in 2005 to 433.6 in 2006 and to 381.4 in 2007. In Mufulira the incidence rate reduced from 361.1 in 2005 to 349.5 in 2006 and to 303.4 in 2007 while in Chingola the reduction was from 250.3 in 2005 to 213.7 in 2006 and to 178.9 in 2007.

The case fatality rate among the malaria cases admitted in the hospitals in 2007 per 1000 cases was 45.0 among the under-fives and 20.0 among the older age group. The case fatality rate was higher among the under-fives than among the older age group in all the districts except in Chililabombwe and in Chingola. The case fatality rate in Chililabombwe was 13.8 per 1000 admissions among the under-fives and 20.2 among the older population. Respective rates in Chingola were 9.6 and 19.4 per 1000 admissions.

▪ Respiratory infections (non-pneumonia)

The incidence rate of non pneumonia respiratory infections was higher among the under-fives than among the older age group in all the districts. The case fatality rate was lower among the under-fives than among the older age groups in most of the districts.

The total incidence rate in the province per 1000 population increased from 191.8 in 2005 to 205.2 in 2006 and to 226.4 in 2007. Among the districts, the sharpest increase was in Lufwanyama where the incidence rate increased from 84.2 in 2005 to 109.1 in 2006 and to 183.4 in 2007. It was followed by Mpongwe where the incidence increased from 209.1 in 2005 to 365.7 in 2006 and to 419.8 in 2007. In Luanshya, the increase was from 121.9 in 2005 to 152.6 in 2006 and to 212.1 in 2007. In Kitwe, the increase was from 209.1 in 2005 to 365.7 in 2006 and to 419.8 in 2007. In Kalulushi, it was from 173.2 in 2005 to 201.1 in 2006 and to 209.3 in 2007.

Among the districts, total case fatality rates were the highest in Kitwe (68.4 per 1000 population), Chingola (56.1 per 1000 population) and in Ndola (53.6 per 1000 population). No deaths were reported in Masaiti because serious cases were referred to Mpongwe and Ndola hospitals. As can be seen, the highest incidence of 419.8/1000 was in Mpongwe.

▪ Respiratory infections (pneumonia)

Respiratory infections pneumonia was the fifth leading cause of attendance in health facilities in 2007 in the province. The total incidence rate in the province was 40.6 per 1000 population and the total case fatality rate was 101.7 per 1000 admissions. The incidence rate among the under-fives in the province at 115.5 per 1000 population was more than five times higher than among the older population at 22.1 per 1000 population. However, the case fatality rate in the province at 91.1 per 1000 admissions was lower among the under-fives than among the older population at 114.5 per 1000 admissions.

Among the districts, the incidence rate was also higher among the under-fives than among the older population in all of them. In case fatality, the opposite was the case except in Chililabombwe, and in Luanshya.

The incidence rate reduced in the province from 46.6 in 2005 to 43.1 in 2006 and to 40.6 in 2007. Among the districts, there were yearly reductions in Mufulira and Ndola. The reduction in Mufulira was from 31.4 in 2005 to 23.9 in 2006 and to 18.4 in 2007. In Ndola, the yearly reduction was from 45.2 in 2005 to 53.3 in 2006 and to 64.9 in 2007. In Mpongwe, there was a yearly increase from 27.7 in 2005 to 42.4 in 2006 and to 49.1 in 2007.

▪ **Diarrhoea non-bloody**

The total incidence rate for diarrhoea (non-bloody) was 76.2 per 1000 population. The incidence rate was more than five times higher among the under-fives (215.7 per 1000 population) than among the older population (41.6 per 1000 population).

Among the districts, the highest incidence rate was in Mpongwe (147.3), Chililabombwe (95.6) and Ndola (89.3). In Mpongwe most of the water sources are unprotected and shallow wells. Ndola is characterised by long hours in which there is no running water from the taps. Incidence was higher among the under-fives than among the older population in all the districts.

The total case fatality rate was the highest in Masaiti (152.2 per 1000 admissions) followed by Ndola (108.4 per 1000 admissions). In some districts the case fatality rate was higher among the under-fives than among the older population and in others among the older population.

▪ **Diarrhoea bloody (suspected dysentery)**

The incidence rate of diarrhoea bloody (suspected dysentery) in the province in 2007 was higher among the under-fives at 9.1 per 1000 population than among the older population at 3.6 per 1000 population. The total incidence rate was 4.7 per 1000 population.

Among the districts, the total incidence rate was the highest in Mpongwe at 8.9 per 1000 population followed by Lufwanyama at 8.5 per 1000 population and Chililabombwe at 6.5 per 1000 population. Mpongwe and Lufwanyama are predominantly rural while Chililabombwe is predominantly urban.

The incidence of dysentery per 1000 population in the province increased yearly from 4.5 in 2005 to 4.6 in 2006 and to 4.7 in 2007.

▪ **Notifiable diseases**

These are diseases that are reported to other levels of care immediately they are diagnosed. These diseases can quickly spread within the community causing high morbidity and mortality. They have been classified in the Integrated Disease Surveillance and Response (IDSR) strategy in order to effectively prevent, manage and control them. There are ten notifiable diseases in the HMIS namely; acute flaccid paralysis, measles, neonatal tetanus, dysentery, cholera, plague, rabies, typhoid fever, yellow fever and tuberculosis.

- **Acute flaccid paralysis /suspected polio.**

This is a condition that affects those younger than 15 years. It presents with sudden onset of weakness of the limbs without a history of injury. The two main acute flaccid paralysis surveillance indicators are non acute flaccid paralysis rate measured per 100,000 children less than 15 years and stool adequacy rate. A non acute flaccid paralysis cases is determined by an investigation of 2 stools within 14 days of onset.

In the province 10 acute flaccid paralysis cases out of the expected target of 18 were detected. A 100 per cent stool adequacy rate was achieved. Also, an annualised non acute flaccid paralysis rate of 1.1 per 100000 children aged less than 15 years was also achieved.

Among the districts, the highest number of acute flaccid paralysis cases was detected in Masaiti. In Ndola 1 out of 4 expected cases were detected. The set target of the annualised non polio acute flaccid paralysis rate was attained in Kalulushi (2.4), Luanshya (1.2), Masaiti (7.3) and Mufulira (1.2). Below target were Ndola (0.5) and Kitwe (0.9). No cases were detected in Chililabombwe, Chingola, Lufwanyama and Mpongwe.

- **Measles surveillance**

Suspected measles cases among the under-fives in the province drastically reduced from 102 in 2005 to 34 in 2006. There was a further reduction to 25 in 2007. Suspected cases were higher among the under-fives as expected than among the older population in all the years except in 2007 when they were the same (25).

In 2005, 2006 and 2007, the highest number of suspected measles cases among the under fives were in Kitwe. There were 36 cases in 2005, 16 in 2006 and 14 in 2007. This was also the case among the older population with 39 cases in 2005, 12 in 2006 and 14 in 2007. The highest incidence rate among the under-fives was also in Kitwe in 2006 and 2007 (0.2 per 1000 population in both years). However, the incidence rate was the highest in Mpongwe in 2007 (0.7 per 1000 population).

- **Tuberculosis notifications**

There were more males (1,887) than females (1,458) infected with tuberculosis in the province. This is also the case among the districts except in Mpongwe where the number was the same among both males and females. There were more sputum smear negative (1,368) than sputum smear positive (1,122) cases in the whole province and in most of its districts. This was due to the high rate of tuberculosis cases among those with HIV.

- **Number of patients on antiretroviral therapy**

The number of people ever enrolled on antiretroviral therapy has been increasing. The increase by 27,188 from 31,931 in 2006 to 59,119 is due to more health facilities offering the therapy on the heavily subsidised public treatment programme.

The target of the number to enrol on antiretroviral therapy by 2006 and 2007 was exceeded. The number to be enrolled by the end of 2006 in the province was 25073 but 31931 were enrolled by the end of the year. The number to be enrolled by the end of 2007 was 30,732 but 59,119 were enrolled. This was also the case among the districts except in Chingola where the target was not achieved by the end of 2007 although it was by the end of 2006.

Although very few clients in the province stopped the antiretroviral therapy after 12 months (34), a lot of them were lost to follow-up (1200) which suggests that they might have also

stopped treatment or died. The number lost to follow-up is extremely high and should raise concerns about the development of resistant strains of the virus.

Human resources

Adequate human resources are essential in the provision of health services because they affect the ability to provide quality health services.

- **Health centre daily staff contacts**

Health centre daily staff contacts measures the average number of contacts each qualified worker in an institution attends to over a period such as quarterly or annually. The total number of contacts in a period is divided among the total number of qualified health workers available in the same period excluding holidays and weekends. One qualified health worker such as a medical doctor, nurse and clinical officers working in the outpatient department, maternal and child health unit and inpatient departments is by standard supposed to see 10 to 12 clients per day.

The highest average number of total daily staff contacts in 2007 were in Masaiti (22) followed by Mpongwe (19) and Lufwanyama (14). Quite clearly, the staffing levels in these predominantly rural districts in the province were less inadequate compared to those in the predominantly urban districts. In Masaiti, staffing levels did not improve such that the average number of daily staff contacts increased from 18 in 2005, to 21 in 2006 and to 22 in 2007. In contrast, staffing levels in the predominantly urban districts of Ndola, Luanshya, Kitwe, Kalulushi and Chingola saw a reducing number of daily contacts from 2005 to 2007. Age daily staff contacts reduced from 16 in 2005, to 15 in 2006 and to 13 in 2007. In Kitwe, the reduction was from 13 in 2005, to 12 in 2006 and to 10 in 2007. In Kalulushi, there were 12 average total contacts in 2005 and 2006 and 10 in 2007. In Chingola, there were 10 average total contacts in 2005 and 2006 and 9 in 2007.

- **Trained traditional birth attendants**

Current policy places emphasis on tTBAs promoting maternal and reproductive health services and encouraging women to utilise professionals at health facilities than on conducting deliveries. In areas where health facilities are sparsely located such as in rural areas and staffing levels in health facilities are low, the utilisation of tTBAs is high. However, in Copperbelt province the average number of deliveries carried out by tTBAs was above the provincial average in some of the urban districts where it would have been expected that deliveries would be in health facilities under midwives or medical doctors.

The average number of deliveries carried out by tTBAs in the province was 18 in 2005, 17 in 2006 and 19 in 2007. In the predominantly urban districts of Chingola, tTBAs carried out an average of 30 deliveries in 2005, 35 in 2006 and 32 in 2007. In Luanshya, they carried out 27 in 2005, 22 in 2006 and 32 in 2007. In Ndola, they carried out 22 in 2005, 16 in 2006 and 31 in 2007. This explains why institutional deliveries in Copperbelt province in which 79 per cent of the population lived in urban areas in proximity to health facilities were only 52 per cent in 2005, 52 per cent in 2006 and 54 per cent in 2007.

- **Community health workers**

These are community health volunteers trained to offer the primary basic health care package within the community. They are trained for a period of six to eight weeks. At provincial level there was an increase in the number of active community health workers from 296 in 2005, to 310 in 2006 and to 380 in 2007. Partly as a result, the average number of patients attended to by community health workers in the province reduced from 693 in 2005, to 591 in 2006 and to 278 in 2007.

Availability of drugs

This is measured by the percentage of months in which specific drugs were not in stock for the whole month. The specific drugs in health centres include essential items such as first line anti-malarial drugs Coartem and Fansidar, Paracetamol, Cotrimoxazole, Oral contraceptives, Vaccines (Bacillus Calmette Guerin, Oral Polio Vaccine, Diphtheria, Pertusis, Tetanus, Haemophilus Influenza and Hepatitis B, Measles and Tetanus Toxoid). In the hospitals, Fansidar, Benzyl Penicillin, Amoxicillin, Refampcin /Isoniazid, Ketamine, Lancets, Rapid Plasma Reagent and HIV kits are considered essential items. Possible reasons that may lead to stock outs include: poor logistical planning and management, pilferage, over prescribing by staff and unusual disease trends. Drugs were in stock for the whole month in 75 per cent of the months in 2005, 78 per cent in 2006 and 86 per cent in 2007.

Health service delivery indicators

These indicators reflect the amount and kind of services that are being offered by health personnel in the health care system. They include health service performance indicators such as health centre utilisation, maternal health, family planning indicators and child health indicators.

- **Health centre per capita attendance**

In rural areas, the per capita outpatient department attendance should not be less than 1 per year while in urban areas it should not be less than 3.

There was higher per capita attendance among the under-fives than among the older population. In all the rural districts, namely Lufwanyama, Masaiti and Mpongwe, the per capita attendance was above the threshold of 1 visit per annum in 2005 2006 and 2007. In the urban districts, the threshold of 3 visits per annum was only attained in Luanshya although it reduced from 3.50 in 2005 to 3.25 in 2006 and 3.06 in 2007. In Kitwe, the threshold was attained in 2005 (3.32) and in 2006 (3.15). In Ndola, it was attained in 2005 (3.31). In the

older population, the threshold of 1 was attained in rural districts only in Mpongwe and Masaiti in 2006 and 2007. None of the urban districts attained the threshold of 3 visits per annum in 2005, 2006 and 2007.

Generally, the catchment populations did not utilise the health centres the number of times they were expected to in the urban districts of Chililabombwe, Chingola, Kalulushi, Kitwe, Luanshya, Mufulira and Ndola. One reason could be that some of the patients purchase medicines directly from chemists without consulting health centres. Long queues at health centres could also dissuade patients. Inability to afford transport fares let alone the fees charged in urban health centres could be a factor as well.

- **Bed occupancy rate**

The bed occupancy rate is defined as the average percentage of available beds occupied during a period. The purpose of the indicator is to maximise the utilisation of facilities for inpatient treatment. Ideally the bed occupancy rate should not be less than 80 per cent. There was no district in the province in which beds were occupied at the threshold level or more in 2005, 2006 and 2007. The average percentage of beds occupied in health centres in the province was 27 in 2005, 17 in 2006 and 15 in 2007. In hospital it was 54 per cent in 2005, 49 per cent in 2006 and 49 per cent in 2007.

- **Maternal health**

- **Antenatal visits**

The average number of antenatal visits during a pregnancy in the province was 3.4 in 2005, 3.2 in 2006 and 3.1 in 2007. The national target was 4.

- **Caesarean section rate**

According to WHO standards, 15 per cent of all the deliveries should be by caesarean section in order to avoid potential risks in vertex deliveries.

The total percentage of caesarean sections in the province was 14 per cent. The percentage was above the threshold of 15 per cent in Chililabombwe (18 per cent), Chingola (23 per cent), Kalulushi (28 per cent), Kitwe (19 Per cent) and Ndola (17 percent). Delays in decision making and taking action at all levels (family, community, health facility) can lead to complicated deliveries.

- **Stillbirth**

A stillbirth is a baby which dies before it is born or within an hour of delivery. The percentage of still births in the province was 2.6 per cent in 2005, 3.7 per cent in 2006 and 2.3 per cent in 2007. In 2005 the percentage of still births was the highest in Kitwe at 3.3 per cent and the lowest in Masaiti at 0.8 per cent. In 2006, the percentage was the highest in Ndola at 6.8 per cent and the lowest was in Masaiti at 1.1 per cent. The highest was in Masaiti in 2007 at 4.8 per cent and the lowest was in Ndola and Lufwanyama at 1.9 per cent in each.

- **Institutional maternal mortality**

Maternal mortality is defined as a death of a woman during pregnancy or within 42 days after termination of pregnancy from bleeding, seizures, infection or any other pregnancy related causes.

The maternal mortality ratio in health facilities was 192.4 in 2005, 292.5 in 2006 and 212.4 in 2007. The ratio also fluctuated in all the districts in these years. The highest ratio among the districts in 2005 was in Luanshya with 299.4 per 100,000 live births. The lowest was in Chililabombwe (65.0). In 2006, the highest rate was in Kitwe (431.6) while Chililabombwe recorded the lowest of 55.1. Mpongwe recorded the highest in 2007 at 330.4. The lowest was recorded in Lufwanyama at 97.1. Kalulushi did not record any maternal death in the period under review and Masaiti did not record any in 2005 and Lufwanyama in 2006.

Some of the contributing factors for high maternal mortality could be the few antenatal visits pregnant women make over the course of the pregnancy and delayed decision making in a home on whether to go to the facility early or not.

- **Postnatal attendances**

After delivery, mothers should present themselves to a postnatal clinic conducted by health professionals for the first time within 6 weeks of delivery. The national target is 80 per cent. During the first postnatal visit the baby should also be given the BCG, OPV I, DPT-Hib+HepBI vaccine.

The coverage in the province was below the national target of 80 per cent. It was 55 per cent in 2005, 54 per cent in 2006 and 59 per cent in 2007. Among the districts, coverage in

Chililabombwe reduced from 76 per cent in 2005, 61 per cent in 2006 and 57 per cent in 2007. It increased from 59 per cent in 2005 to 60 per cent 2006 and to 69 per cent in 2007.

○ **Family planning**

The new family planning acceptor rate is the proportion of new acceptors among the women of child bearing age (15-49 years) in the catchment population.

The rate of new family planning acceptors in the province was 171.0 per 1000 women of child bearing age in 2005. It was 165.2 in 2006 and 168.7 in 2007. Among the districts, the highest rate of new family planning acceptors was in Lufwanyama in all the three years although the rate reduced yearly from 460.3 in 2005 to 305.2 in 2006 and to 283.4 in 2007. The lowest rate in all the three years was in Mufulira. It was 84.4 in 2005, 71.1 in 2006 and 81.6 in 2007.

The explanation for the highest acceptance rate in Lufwanyama is due to the high number of community based distributors and availability of contraceptives. One other possible reason is that there are also many other sources offering family planning services in the urban districts which makes it very difficult to compile data for this indicator.

○ **Pregnancies protected against tetanus**

Protection of a pregnancy against tetanus is important because it reduces the chances of neo-natal tetanus. The national target is to ensure that 80 per cent of all pregnancies are protected against tetanus. Pregnancies protected against tetanus are those which received two or more doses of tetanus toxoid.

The coverage in the province was 67 per cent in 2005, 68 per cent in 2006 and 72 per cent in 2007. Among the districts, the target was only achieved in Masaiti (83 per cent in 2006), Mpongwe (82 per cent in 2006 and 87 per cent in 2007).

▪ **Child health**

○ **Fully immunisation coverage**

Fully immunisation coverage refers to the number of children under the age of one who completed the recommended series of immunisations within their first year of life. Fully immunisation coverage was 78 per cent in 2005, 77 per cent in 2006 and 84 per cent in 2007 were fully immunised in the province. The national target of 80 per cent was achieved in 2007. However, the coverage in 2007 in Luanshya, Mufulira, Lufwanyama and Chililabombwe was below the national target of 80 per cent.

○ **Low birth weight**

This is the percentage of under-fives whose weight is low for their age and is below the lower line on the child health card. It can signal the children at risk of severe protein energy malnutrition.

The percentage of underweight children in the province reduced from 10 per cent in 2005 to 8 per cent in 2006 and to 5 per cent in 2007. There were also yearly reductions in the underweight prevalence in all the districts. The reductions could have been due to improved food security due to the reductions in poverty levels and fair rainfall pattern in the period under review.

Chapter 1: Background

The main objective of this document is to provide trends of selected indicators on disease burden and service delivery in the province from 2005 to 2007. This bulletin presents data on indicators collected from the HMIS and those not captured in the main stream HMIS such as antiretroviral services and human resources. The indicators are compared by districts and two broad age groups namely under-fives and the rest of the older population. The report does not provide detailed explanations about the factors behind the trends in the indicators.

1.1 Geography and Administration

Copperbelt Province is situated in the northern part of Zambia, sharing borders with Central and North-Western Provinces and an international boundary with the Democratic Republic of Congo. The land area is 31014 square kilometres, which is about 4.2 per cent of the total land area of Zambia. The Province consists of ten administrative districts. These are Chililabombwe, Chingola, Kalulushi, Kitwe, Luanshya, Lufwanyama, Masaiti, Mpongwe, Mufulira and Ndola. Lufwanyama, Masaiti and Mpongwe are predominantly rural while the other 7 districts are predominantly urban.

The Copperbelt Provincial Health Office is one of the nine provincial health offices in Zambia. It consist of 10 District Health Management Teams, 3 second level referral hospitals and 3 third level referral hospitals, 5 nurse training schools, a Biomedical Laboratory Training School and 3 Statutory Boards.

1.2 Demographic Information

In 2007, the estimated population in Copperbelt Province was 1,929,960 of which 970,125 were males and 959,835 were females. There were more males than females in the province largely due to the impact of the HIV epidemic and the higher rate of in-migration by males. The population of children 0-11 months was 78,479. Expected pregnancies were 105,406 and expected deliveries were 101,503. The median age of the population was 19 years.

Table 1.1: Distribution of district population by selected age groups

District	Population distribution									
	Children							Expected		
	0-11 months	Less than 5 years	5-14 years	Women 15-49 years	Adults 15years+	Total males	Total females	Pregnancies	Deliveries	Births
Chililabombwe	3,533	16,391	22,790	43,302	48,561	44,591	43,064	4,769	4,592	
Chingola	8,702	35,346	54,509	109,443	123,071	107,813	105,112	11,748	11,315	
Kalulushi	3,555	14,195	22,588	46,514	52,496	44,598	44,681	4,797	4,620	
Kitwe	18,512	70,989	117,246	241,821	270,216	231,296	226,698	24,989	24,064	
Luanshya	7,012	28,784	35,506	90,143	107,895	82,326	90,031	9,469	9,119	
Lufwanyama	3,129	13,274	22,071	35,738	43,279	39,844	38,702	4,224	4,068	
Masaiti	4,681	19,161	32,680	54,545	65,713	59,861	57,693	6,319	6,084	
Mpongwe	3,544	13,554	22,720	35,960	42,149	39,979	38,365	4,248	4,090	
Mufulira	7,313	31,174	45,029	94,069	106,283	91,514	90,790	9,869	9,507	
Ndola	18,498	72,027	114,610	237,373	265,912	228,303	224,699	24,974	24,044	
Province	78,479	314,895	489,748	988,908	1,125,576	970,125	959,835	105,406	101,503	

Source: Population 0-11 months, expected pregnancies, deliveries and births were estimated by applying fractions developed for the HMIS to the estimated projected populations obtained from the Central Statistical Office (Central Statistical Office (2003) Zambia, 2000 Census of Population and Housing, Population Projections Report)

1.3 Data sources

Data used to compile this report is from all public health institutions in the province and a few private institutions where the HMIS is running. The HMIS includes the Antiretroviral Information System (ARTIS), Integrated Disease Surveillance and Response (IDRS), Zambia Prevention Care and Treatment (ZPCT) reporting forms and the district human resource establishment registers.

1.4 Scope of analysis

Information included in this report is for the period 2005 to 2007. The district is the lowest unit of analysis. This provides a comparative picture by districts to which all health facilities have contributed. District health offices are encouraged to start compiling district health statistical reports so that detailed health facility data is analysed.

1.5 Limitations of this report

Data from most private health institutions was not included in this report as most private health institutions do not report in the HMIS. While every care was taken in the preparation and collection of this data, there is no guarantee that different sources have compiled or reported data in a consistent way.

Chapter 2: Disease Burden

This chapter highlights diseases which accounted for most of the attendance at health centres from 2005 to 2007. They include malaria, respiratory infections (pneumonia and non-pneumonia) and diarrhoeal diseases (bloody and non-bloody).

Disease burden is measured by its incidence rate and case fatality rate recorded at health facilities. Disease incidence rate is defined as the number of new cases that occur during a period in a population, while case fatality rate is the number of deaths from a particular illness out of total admissions over a period.

2.1 Major causes of illnesses

Table 2.1 shows that malaria is the leading cause of morbidity in the province. Respiratory infections non-pneumonia was the second leading cause of attendances at health facilities. Suspected and confirmed AIDS was the tenth leading cause of morbidity. It increased from 16.3 per 1000 in 2005 to 22.3 per 1000 in 2006 and to 24.1 per 1000 in 2007.

Disease	Incidence per 1,000 population		
	Under 5	5 years and above	Total
Malaria	819.9	233.3	349.7
Respiratory infections-non pneumonia	551.7	145.9	226.4
Diarrhoea: non-bloody	215.7	41.6	76.2
Trauma	67.3	68.5	68.2
Pneumonia	115.5	22.1	40.6
Skin infections	81.1	26.2	37.3
Ear, Nose, Throat	53.1	22.5	28.5
Digestive system (not infectious)	23.0	29.2	27.9
Muscular skeletal and connective tissue (not infectious)	7.6	32.0	27.1
AIDS suspected and confirmed	10.0	27.6	24.1

Source: HMIS

2.1.1 Malaria

Although malaria was still the top most cause of morbidity in Copperbelt Province, the trend has been on the decline from an incidence rate of 380.1 per 1000 population in 2005 to 391.1 per 1000 population in 2006 and to 349.7 per 1000 population in 2007.

Table 2.2 shows that the rural districts Mpongwe, Masaiti and Lufwanyama recorded higher incidences of malaria as compared to urban districts in 2007. The incidence rate in Mpongwe was 535.3 per 1000 population, in Masaiti 420.0 per 1000 population and in Lufwanyama 377.7 per 1000 population. This could be attributed to the poor quality of houses, the absence of indoor residual spraying that was done in the urban districts and the presumptive treatment of malaria in patients with fever in rural health facilities which lack diagnostics such as testing equipment. In the urban districts, the lowest incidence rate was in Chingola (178.9 per 1000 population). There is a long history of sustained malaria prevention by a variety of methods including indoor residual spraying in Chingola by the copper mining company in its quest to minimise productivity losses from diseases such as HIV and AIDS and malaria. After Chingola the next lowest incidence was in Chililabombwe (276.1 per 1000 population) and Mufulira (303.4 per 1000 population). The incidence rate was about three times higher among the under-fives than among the older population in the province and the districts. The incidence rate in the province was 819.9 among the under-fives and 233.3 among the older population per 1000 population.

The case fatality rate among the malaria cases admitted in the hospitals in 2007 per 1000 cases was 45.0 among the under-fives and 20.0 among the older age group. The case fatality rate was higher among the under-fives than among the older age group in all the districts except in Chililabombwe and in Chingola. The case fatality rate in Chililabombwe was 13.8 per 1000 admissions among the under-fives and 20.2 among the older population. Respective rates in Chingola were 9.6 and 19.4 per 1000 admissions.

Table 2.2: Malaria incidence and case fatality rates by age group in Copperbelt Province, 2007

District	Incidence rate per 1,000 population (All health facilities)			Case fatality rate per 1,000 admissions (Hospitals only)		
	Under 5	5 years and above	Total	Under 5	5 years and above	Total
Chililabombwe	581.2	199.8	276.1	13.8	20.2	16.7
Chingola	471.6	105.7	178.9	9.6	19.4	14.5
Kalulushi	813.0	258.3	369.2	11.5	26.7	19.5
Kitwe	963.2	239.0	383.8	12.9	7.1	9.3
Luanshya	701.6	212.6	310.4	36.6	26.5	30.7
Lufwanyama	894.7	248.4	377.7	21.2	21.5	21.3
Masaiti	1,071.5	275.6	420.0	20.2	11.4	16.0
Mpongwe	1,378.3	338.3	535.3	28.1	42.5	33.2
Mufulira	611.4	226.4	303.4	18.7	17.3	17.7
Ndola	843.2	266.0	381.4	78.4	20.7	47.4
Province	819.9	233.3	349.7	45.0	20.0	31.5

Source: HMIS

Figure 2.1 shows the trend of malaria incidence for the period 2005 to 2007. There was a yearly reduction in the incidence rate in Ndola, Mufulira and Chingola. In Ndola the incidence rate reduced from 454.7 in 2005 to 433.6 in 2006 and to 381.4 in 2007. In Mufulira the incidence rate reduced from 361.1 in 2005 to 349.5 in 2006 and to 303.4 in 2007 while in Chingola the reduction was from 250.3 in 2005 to 213.7 in 2006 and to 178.9 in 2007.

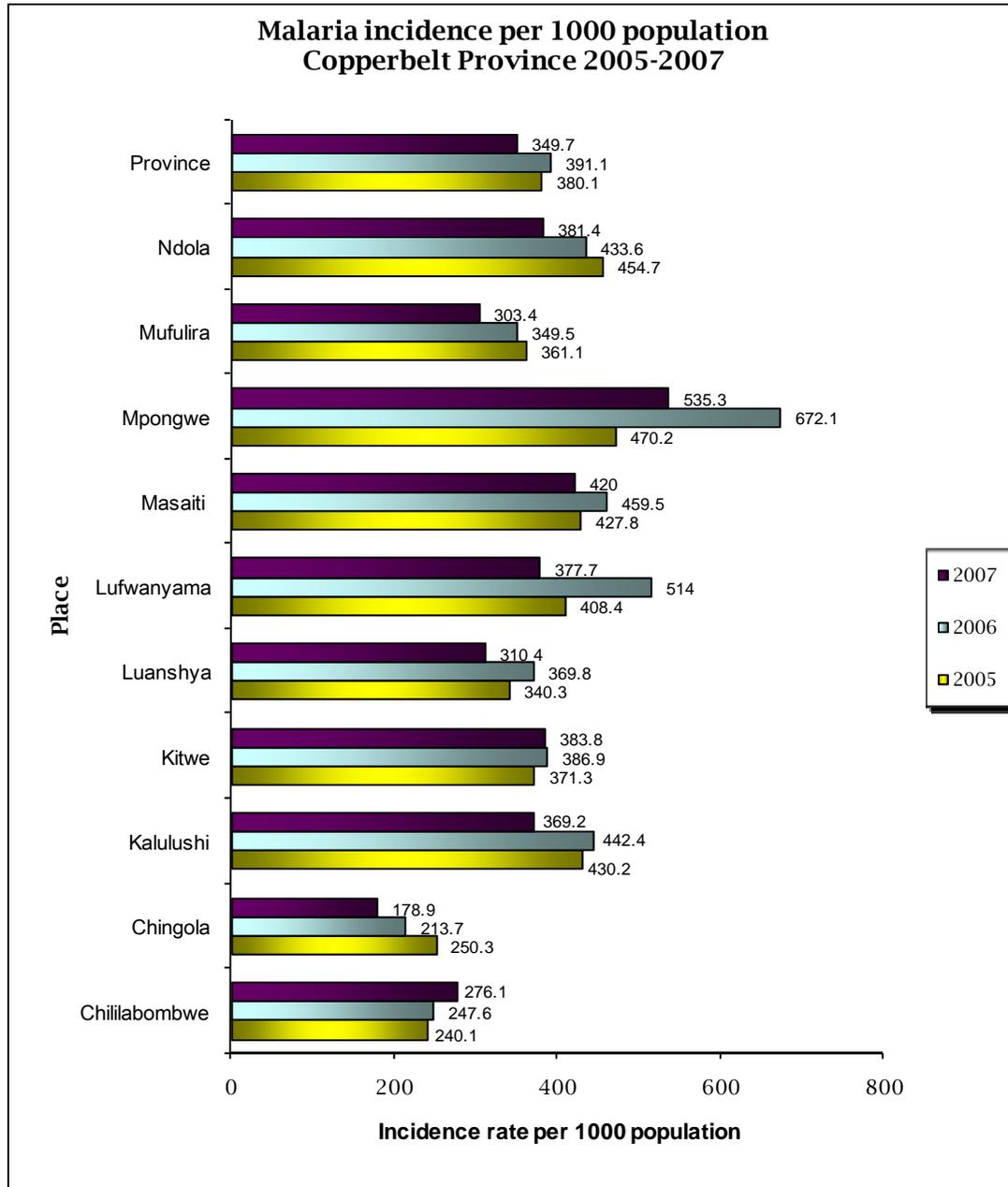


Figure 2.1: Malaria incidence rate by district, 2005-2007

2.1.2 Respiratory infections (non-pneumonia)

As shown in Table 2.3, the incidence rate of non pneumonia respiratory infections was higher among the under-fives than among the older age group in all the districts. The case fatality rate was lower among the under-fives than among the older age groups in most of the districts.

In 2007, the incidence rate of non-pneumonia respiratory infections in the province among the under-fives at 551.7 per 1000 population was more than three times higher than the incidence rate among the older age group at 145.9 per 1000 population. Among the districts, the incidence rate was the highest among the under-fives and the older population in Mpongwe followed by Masaiti. Among the under-fives it was 1036.0 per 1000 population and among the older population 275.7 per 1000 population in Mpongwe. Respective rates were 773.0 and 226.9 in Masaiti. The total case fatality rate in the province was 46.3 per 1000 population. Among the districts, total case fatality rates were the highest in Kitwe (68.4 per 1000 population), Chingola (56.1 per 1000 population) and in Ndola (53.6 per 1000 population). No deaths were reported in Masaiti because serious cases were referred to Mpongwe and Ndola hospitals. As can be seen, the highest incidence of 419.8/1000 was in Mpongwe.

Table 2.3: Respiratory infections (non-pneumonia) incidence per 1,000 population, 2007

District	Incidence rate per 1,000 population (All health facilities)			Case fatality rate per 1,000 admissions (Health centres and hospitals)		
	Under 5	5 years and above	Total	Under 5	5 years and above	Total
Chililabombwe	567.6	200.2	273.7	9.9	15.7	12.2
Chingola	430.8	115.7	178.7	40.5	69.5	56.1
Kalulushi	463.1	145.8	209.3	7.6	6.2	6.8
Kitwe	588.5	120.1	213.8	18.4	104.8	68.4
Luanshya	538.4	130.6	212.1	41.7	15.1	30.8
Lufwanyama	386.5	132.7	183.4	-	-	-
Masaiti	773.0	226.9	326.0	-	-	-
Mpongwe	1036.0	275.7	419.8	15.3	35.1	25.9
Mufulira	646.2	181.6	274.5	6.5	63.3	34.7
Ndola	443.2	123.3	187.3	63.2	38.7	53.6
Province	551.7	145.9	226.4	43.4	49.8	46.3

Source: HMIS

Note: There was no district hospital in Lufwanyama and Masaiti

Figure 2.2 shows that the total incidence rate in the province of non-pneumonia respiratory infections per 1000 population increased from 191.8 in 2005 to 205.2 in 2006 and to 226.4 in 2007. Among the districts, yearly increases occurred in Chililabombwe, Kalulushi, Kitwe, Lufwanyama, Masaiti and Mpongwe. The sharpest increase was in Lufwanyama where the incidence increased from 84.2 in 2005 to 109.1 in 2006 and to 183.4 in 2007. It was followed by Mpongwe where the incidence increased from 209.1 in 2005 to 365.7 in 2006 and to 419.8 in 2007. In Luanshya, the increase was from 121.9 in 2005 to 152.6 in 2006 and to 212.1 in 2007. In Kitwe, the increase was from 209.1 in 2005 to 365.7 in 2006 and to 419.8 in 2007. In Kalulushi, it was from 173.2 in 2005 to 201.1 in 2006 and to 209.3 in 2007.

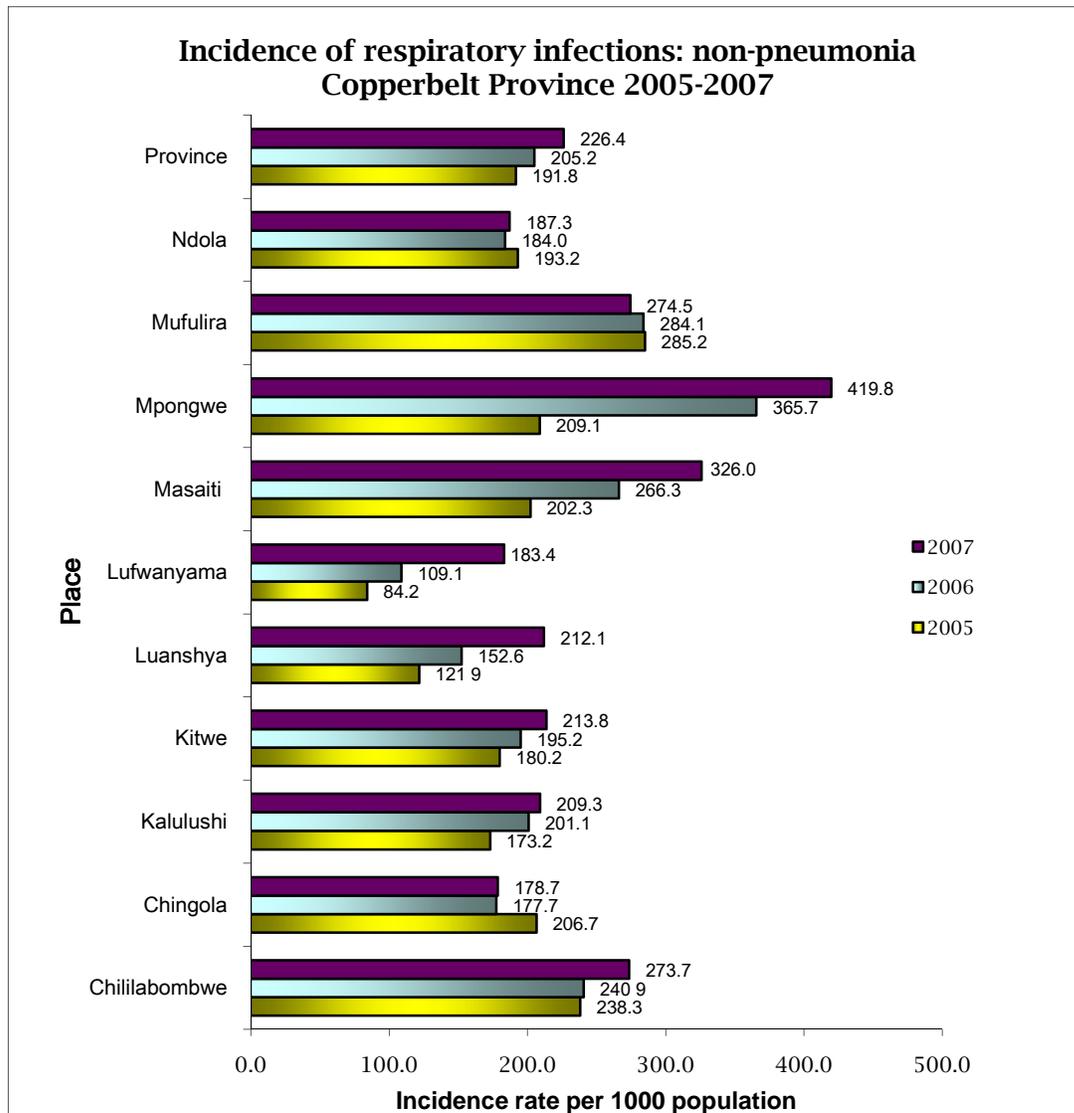


Figure 2.2: Incidence of respiratory infections: non-pneumonia

2.1.3 Respiratory infections (pneumonia)

Respiratory infections pneumonia was the fifth leading cause of attendance in health facilities in the province in 2007. Table 2.4 shows the incidence and case fatality rates of respiratory infections (pneumonia) incidence and case fatality rates among under-fives and the older population in 2007 in the province and its districts. The total incidence rate in the province was 40.6 per 1000 population and the

total case fatality rate was 101.7 per 1000 admissions. The incidence rate among the under-fives in the province at 115.5 per 1000 population was more than five times higher than among the older population at 22.1 per 1000 population. However, the case fatality rate in the province at 91.1 per 1000 admissions was lower among the under-fives than among the older population at 114.5 per 1000 admissions.

Among the districts, the incidence rate was also higher among the under-fives than among the older population in all of them. In case fatality, the opposite was the case except in Chililabombwe, and in Luanshya.

Table 2.4: Respiratory infections: pneumonia incidence and case fatality rates by age group, 2007

District	Incidence rate per 1,000 population (All health facilities)			Case Fatality rate per 1,000 admissions (Health centres and hospitals)		
	Under 5	5 years and above	Total	Under 5	5 years and above	Total
Chililabombwe	45.4	13.6	20.0	110.0	60.8	86.6
Chingola	48.8	9.7	17.5	79.8	89.0	84.7
Kalulushi	113.4	22.8	40.9	7.0	42.2	25.9
Kitwe	213.4	30.4	67.0	141.0	239.7	176.9
Luanshya	86.6	18.5	32.1	132.1	63.9	96.1
Lufwanyama	51.5	17.9	24.6	19.2	65.3	40.7
Masaiti	66.2	20.2	28.6	0.0	40.0	24.7
Mpongwe	125.6	31.2	49.1	71.7	99.1	85.7
Mufulira	41.4	12.6	18.4	72.6	102.3	89.8
Ndola	123.2	25.7	45.2	70.5	96.7	81.7
Province	115.5	22.1	40.6	91.1	114.5	101.7

Source: HMIS

Figure 2.3 shows the trend of respiratory infections pneumonia from 2005 to 2007. The incidence rate reduced in the province from 46.6 in 2005 to 43.1 in 2006 and to 40.6 in 2007. Among the districts, there were yearly reductions in Mufulira and Ndola. The reduction in Mufulira was from 31.4 in 2005 to 23.9 in 2006 and to 18.4 in 2007. In Ndola, the yearly reduction was from 45.2 in 2005 to 53.3 in 2006 and to 64.9 in 2007. In Mpongwe, there was a yearly increase from 27.7 in 2005 to 42.4 in 2006 and to 49.1 in 2007.

The graph shows high levels of incidence of pneumonia in Ndola, Kitwe, Mpongwe and Luanshya. The reason could be that these districts have referral hospitals that receive patients from other districts.

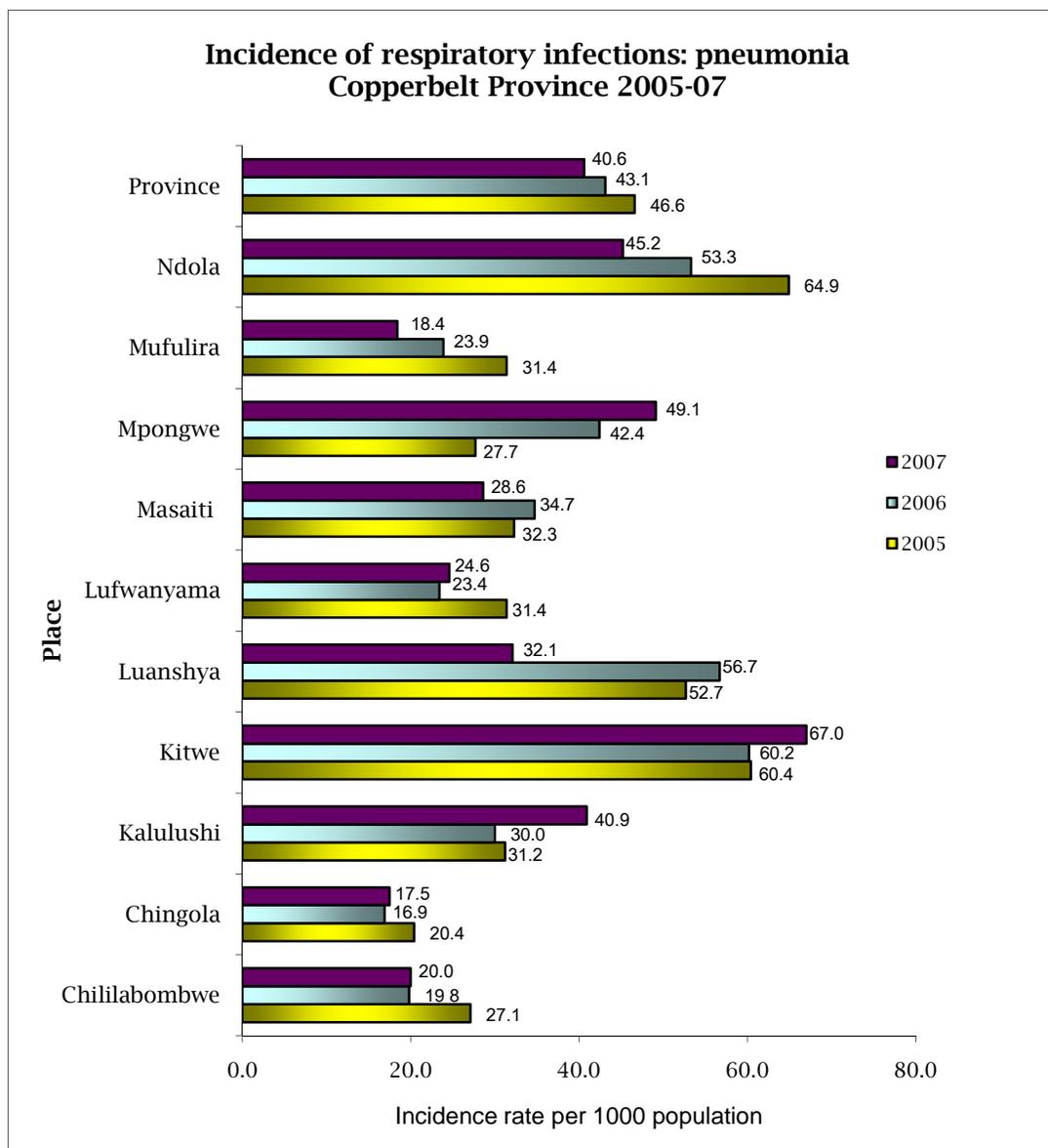


Figure 2.3: Incidence rate of respiratory infections: pneumonia

2.1.4 Diarrhoea non-bloody

Table 2.5 shows that the total incidence rate for diarrhoea (non-bloody) was 76.2 per 1000 population. The incidence rate was more than five times higher among the under-fives (215.7 per 1000 population) than among the older population (41.6 per 1000 population).

Among the districts, the highest incidence rate was in Mpongwe (147.3), Chililabombwe (95.6) and Ndola (89.3). In Mpongwe most of the water sources are unprotected and shallow wells. Ndola is characterised by long hours in which there is no running water from the taps. Incidence was higher among the under-fives than among the older population in all the districts.

The total case fatality rate was the highest in Masaiti (152.2 per 1000 admissions) followed by Ndola (108.4 per 1000 admissions). In some districts the case fatality rate was higher among the under-fives than among the older population and in others among the older population.

Table 2.5: Diarrhoea-non-bloody incidence and case fatality rates by age group, 2007

District	Incidence rate per 1,000 population (All health facilities)			Case Fatality rate per 1,000 admissions (All health facilities)		
	Under 5	5 years and above	Total	Under 5	5 years and above	Total
Chililabombwe	175.0	75.8	95.6	18.7	23.3	20.5
Chingola	146.8	22.1	47.1	22.5	17.1	19.9
Kalulushi	153.4	26.0	51.4	60.6	23.1	39.3
Kitwe	237.3	40.1	79.6	53.5	142.7	99.9
Luanshya	163.8	30.2	56.9	85.6	89.3	87.7
Lufwanyama	131.6	24.1	45.6	24.4	0.0	13.3
Masaiti	257.8	39.7	79.3	130.4	173.9	152.2
Mpongwe	479.4	69.7	147.3	25.5	30.3	27.5
Mufulira	182.0	38.2	67.0	22.6	47.2	36.2
Ndola	236.3	52.5	89.3	133.9	84.3	108.4
Province	215.7	41.6	76.2	84.2	84.9	84.5

Source: HMIS

Figure 2.4 shows the trend of incidence of diarrhoea non-bloody. The district with the highest incidence was Mpongwe, Ndola and Chililabombwe.

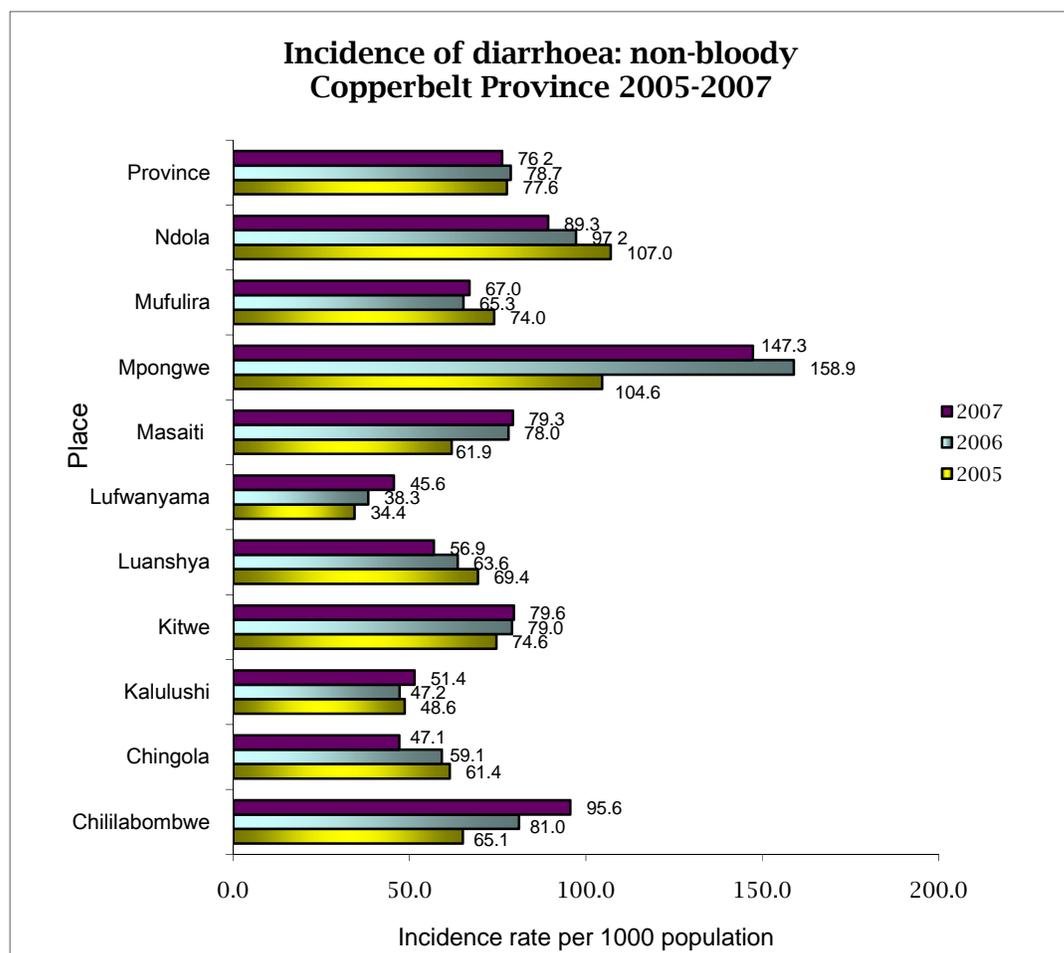


Figure 2.4: Incidence of diarrhoea non-bloody

2.1.5 Diarrhoea bloody (suspected dysentery)

As shown in Table 2.6, the incidence rate of diarrhoea bloody (suspected dysentery) in the province in 2007 was higher among the under-fives at 9.1 per 1000 population than among the older population at 3.6 per 1000 population. The total incidence rate was 4.7 per 1000 population.

Among the districts, the total incidence rate was the highest in Mpongwe at 8.9 per 1000 population followed by Lufwanyama at 8.5 per 1000 population and Chililabombwe at 6.5 per 1000 population. Mpongwe and Lufwanyama are predominantly rural while Chililabombwe is predominantly urban.

Figure 2.5 shows that the incidence of dysentery per 1000 population in the province increased yearly from 4.5 in 2005 to 4.6 in 2006 and to 4.7 in 2007.

District	Incidence rate per 1,000 population (All health facilities)		
	Under 5	5 years and above	Total
Chililabombwe	10.1	5.6	6.5
Chingola	5.2	2.0	2.7
Kalulushi	9.0	4.6	5.5
Kitwe	13.6	4.1	6.0
Luanshya	6.2	2.3	3.1
Lufwanyama	13.4	7.3	8.5
Masaiti	10.1	5.1	6.0
Mpongwe	18.1	6.8	8.9
Mufulira	4.5	1.8	2.3
Ndola	6.8	2.8	3.6
Province	9.1	3.6	4.7

Source HMIS

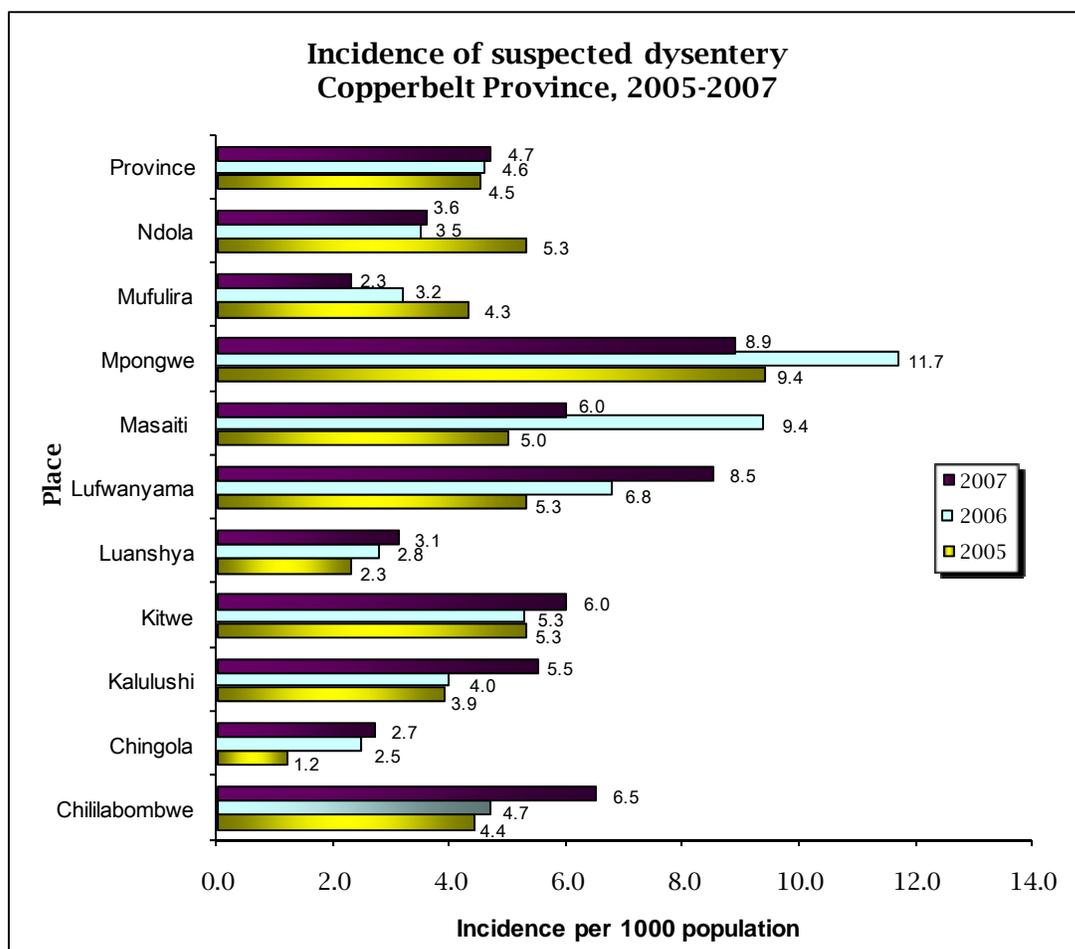


Figure 2.5: Incidence of suspected dysentery, 2005-2007

2.1.6 Trauma (accidents, injuries, wounds, burns e.t.c.)

Trauma was among the top ten causes of visitations to health facilities in 2007 in Copperbelt Province. It was the fourth highest cause of attendance at health facilities. Table 2.7 shows trauma incidences and case fatality rates by age groups per district in 2007. There was hardly a difference in the incidence rate of trauma among the under-fives and the older age group. The incidence rate among the under-fives was 67.3 per 1000 population. Among the older population, it was 68.5 per 1000 population.

In six of the ten districts, the incidence of trauma was lower among the under-fives than among the older population. The six districts were Chililabombwe, Chingola, Kalulushi, Kitwe, Luanshya and Mufulira. There is a high level of mining activity in these districts than in the four districts where the incidence rate of trauma was higher among the under-fives than among the older population. The four districts were Lufwanyama, Masaiti, Mpongwe and Ndola. The incidence rate of trauma in Mpongwe was about the levels in urban areas because the two hospitals in the district also deal with cases from Masaiti and Lufwanyama where there are no hospitals and cases from areas in Kapiri Mposhi which are proximity than to the hospital in Kapiri Mposhi.

The case fatality rate per 1000 admissions in all the health facilities in the province was 8.1 among the under-fives and 9.0 among the older population. Among the districts, it was the highest in Kitwe (20.2 per 1000 admissions) and the lowest in Ndola (4.4 per 1000 admissions).

Table 2.7: Trauma (accidents, injuries, wounds, burns) incidence and case fatality rates by age group, 2007

District	Incidence rate per 1,000 population (All health facilities)			Case Fatality rate per 1,000 admissions (All health facilities)		
	Under 5	5 years and above	Total	Under 5	5 years and above	Total
Chililabombwe	46.8	71.5	66.6	0.0	12.4	10.6
Chingola	48.3	60.2	57.8	8.4	7.0	7.2
Kalulushi	57.1	74.5	71.0	0.0	12.2	9.4
Kitwe	57.9	64.9	63.5	30.7	18.5	20.2
Luanshya	55.5	60.9	59.8	0.0	9.8	8.2
Lufwanyama	55.9	54.7	55.0	0.0	15.6	11.6
Masaiti	81.1	64.2	67.3	0.0	0.0	0.0
Mpongwe	94.9	71.8	76.2	0.0	8.1	6.7
Mufulira	48.2	63.9	60.8	6.3	6.9	6.8
Ndola	97.2	81.8	84.8	5.7	3.4	4.4
Province	67.3	68.5	68.2	8.1	9.0	8.7

Source HMIS

As shown in Figure 2.6, the total incidence rate of trauma hardly changed in the province from 2005 to 2007. It was 66.8 in 2005, 66.7 in 2006 and 68.2 in 2007. Among the districts, it reduced from 71.7 in 2005 to 67.4 in 2006 and to 60.8 in 2007 in Mufulira. It also reduced in Chingola from 59.9 in 2005 to 58.5 in 2006 and to 57.8 in 2007. There were yearly increases in Masaiti, Lufwanyama and Luanshya. The rate increased from 52.8 in 2005 to 61.9 in 2006 and to 67.3 in 2007 in Masaiti. In Lufwanyama, it increased from 38.3 in 2005 to 40.6 in 2006 and to 55.5 in 2007. The increase in Luanshya was from 52.6 in 2005 to 57.9 in 2006 and to 59.8 in 2007. The increase in Luanshya was from 52.6 in 2005 to 57.9 in 2006 and to 59.8 in 2007.

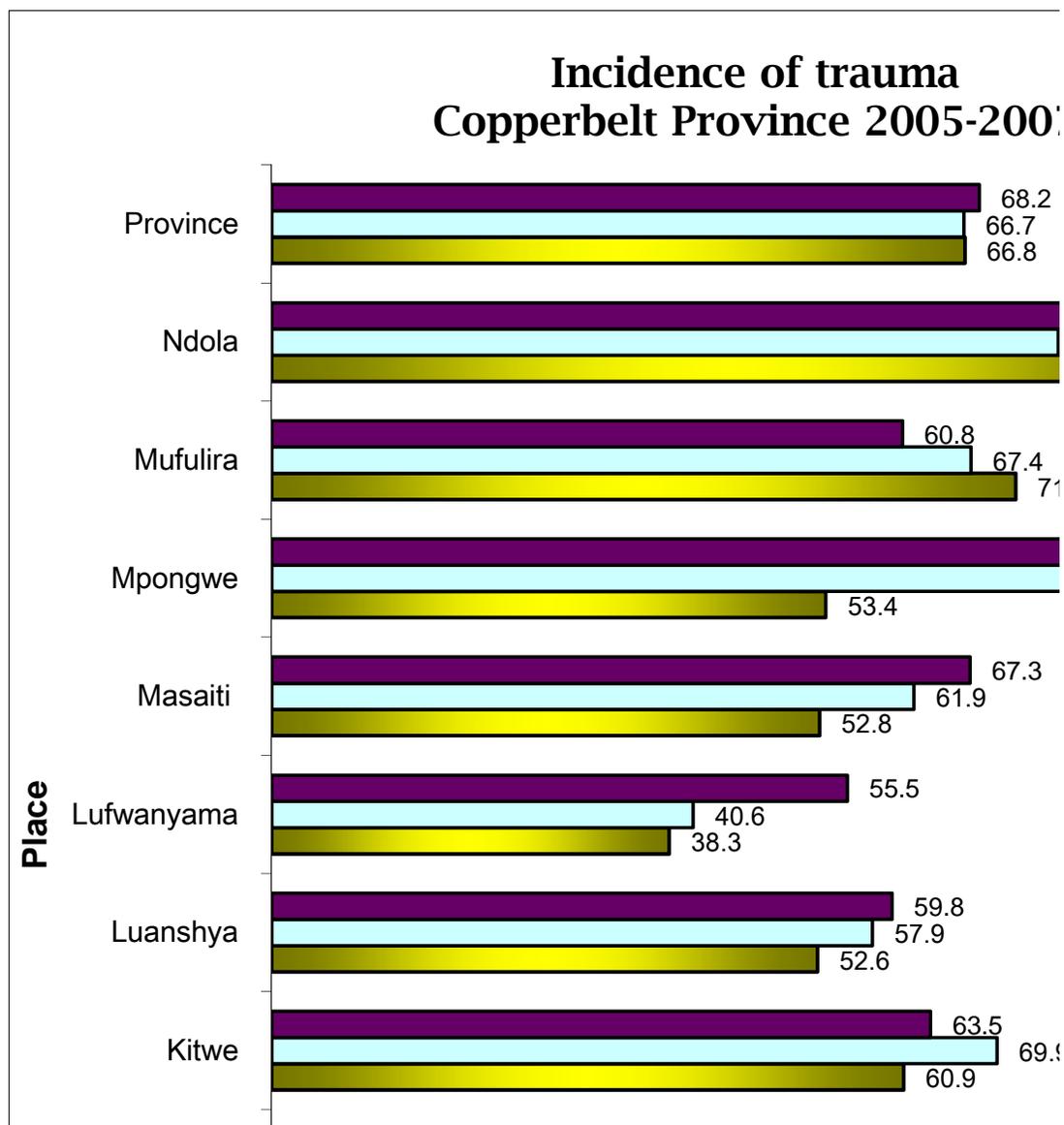


Figure 2.6: Incidence of trauma, 2005-2007

2.1.7 Eye infections

Table 2.8 shows incidence rate of eye infections by the two broad age groups per district in 2007. The incidence rate of eye infections in the province was about four times higher among the under-fives (58.0 per 1000 population) than among the older population 13.9 per 1000 population. This was also the minimum ratio among the districts except in Chililabombwe where the incidence rate was slightly more

than twice as high among the under-fives (26.0 per 1000 population) than among the older population (12.5 per 1000 population).

The highest incidence rate of eye infections was in the rural districts of Mpongwe (70.9 per 1000 population), Masaiti (49.1 per 1000 population) and Lufwanyama (21.7 per 1000 population). The lowest incidence rate was in the predominantly urban districts of Chingola (10.7 per 1000 population), Luanshya (13.3 per 1000 population) and Chililabombwe (14.4 per 1000 population).

Table 2.8: Incidence rate of eye infections by broad age group and district, 2007

District	Incidence rate per 1,000 population (All health facilities)		
	Under 5	5 years and above	Total
Chililabombwe	26.0	11.5	14.4
Chingola	28.2	6.3	10.7
Kalulushi	39.3	11.6	17.1
Kitwe	51.2	12.8	20.5
Luanshya	45.1	11.7	13.3
Lufwanyama	58.5	12.5	21.7
Masaiti	160.9	24.3	49.1
Mpongwe	220.8	35.9	70.9
Mufulira	48.2	12.0	19.3
Ndola	44.3	14.2	20.2
Province	58.0	13.9	22.6

Source: HMIS

The incidence rate of eye infections per 1000 of the total population increased from 28.2 in 2005, to 26.1 in 2006 and to 22.6 in 2007. This is shown in Figure 2.6. Among the districts, there were yearly reductions in Ndola, Mufulira, Lufwanyama and Kalulushi over the same period.

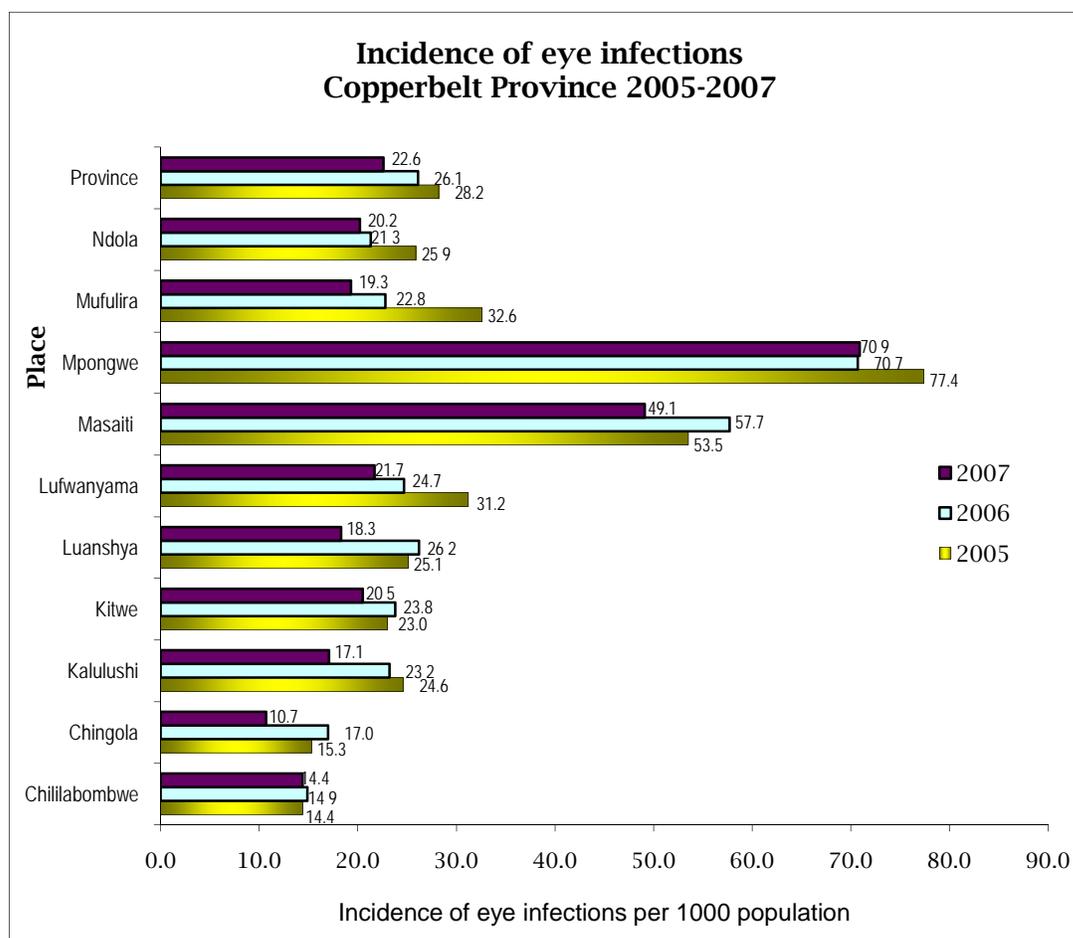


Figure 2.7: Incidence rate of eye infections by district, 2005-2007

2.2 Patient case load

This is the average number of times a person in a catchment area is attended to at a health facility with an ailment in a year.

The proportion of children under 5 years case load measures the number of under-five cases out of the total outpatient department first attendances. This indicator was generated from annual data for the outpatient department first attendances in health facilities.

It appears from Table 2.9 that under-fives attended health facilities less than the older population did. The proportion of under-five attendances at health facilities reduced yearly from 41.0 per cent in 2005 to 39.3 per cent in 2006 and to 37.9 per cent in 2007. Barring data errors, the reduction could be attributed to a reduction in fertility which increases the proportion of the population in the older ages.

Table 2.9: Proportion of children under 5 years case load by district, 2005-2007			
District	Proportion of children under 5 years case load		
	2005	2006	2007
Chililabombwe	29.2	29.4	30.6
Chingola	40.4	37.8	37.0
Kalulushi	41.2	37.8	37.2

Kitwe	41.8	42.4	41.2
Luanshya	43.7	39.7	39.0
Lufwanyama	54.6	45.9	38.0
Masaiti	51.9	44.7	39.2
Mpongwe	51.2	45.0	41.9
Mufulira	33.4	32.6	33.6
Ndola	39.7	37.7	36.0
Province	41.0	39.3	37.9

Source HMIS

2.3 Under-five case fatality rates

The under-five case fatality rate in Table 2.10 refers to the total number of children aged less than 5 years who die per 1000 admissions in all health facilities per year. The under-five case fatality rate in the province was 54.7 in 2005, 48.9 in 2006 and 69.8 in 2007.

Most of the case fatalities were from diseases like malaria, diarrhoea non-bloody, HIV/AIDs and pneumonia. The referral hospitals were the major contributors for these deaths. The probable reasons for the high case fatality rate are late referrals, problems of case management and complications from HIV and AIDs.

Table 2.10: Under-five years case fatality rate by district, 2005–2007

District	Under 5 years mortality rate per 1000 admissions		
	2005	2006	2007
Chililabombwe	39.0	29.1	30.9
Chingola	50.7	49.7	58.4
Kalulushi	17.4	21.0	18.3
Kitwe	100.6	101.9	95.5
Luanshya	80.9	70.1	69.1
Lufwanyama	54.8	21.3	28.3
Masaiti	22.3	15.4	34.1
Mpongwe	77.7	45.8	47.0
Mufulira	58.9	51.0	58.0
Ndola	40.4	34.7	72.4
Province	54.7	48.9	69.8

Source: HMIS

2.4 Selected notifiable diseases

These are diseases that are reported to other levels of care immediately they are diagnosed. These diseases can quickly spread within the community causing high morbidity and mortality. They have been classified in the IDSR strategy to effectively prevent, manage and control them. There are ten notifiable diseases in the HMIS namely; acute flaccid paralysis, measles, neonatal tetanus, dysentery, cholera, plague, rabies, typhoid fever, yellow fever and tuberculosis.

2.4.1 Acute flaccid paralysis

This is a condition that affects those younger than 15 years. It presents with sudden onset of weakness of the limbs without a history of injury. The two main acute flaccid paralysis surveillance indicators are non acute flaccid paralysis rate measured per 100,000 children less than 15 years and stool adequacy rate. A non acute flaccid paralysis cases is determined by an investigation of 2 stools collected within 14 days after

onset of paralysis. According to WHO, a surveillance system that is able to detect at least one non-polio acute flaccid paralysis case for every 100,000 children less than 15 years old (non polio acute flaccid paralysis rate) will also be able to detect any wild polio virus.

Table 2.11 shows acute flaccid paralysis surveillance performance indicators by all the districts within the province in 2007. In the province 10 acute flaccid paralysis cases out of the expected target of 18 were detected. A 100 per cent stool adequacy rate was achieved. An annualised non-acute flaccid paralysis rate of 1.1 per 100000 children aged less than 15 years was also achieved.

Table 2.11: Acute flaccid paralysis surveillance performance indicators by district, 2007

District	Number of Acute flaccid paralysis cases		Annualised non-polio Acute flaccid paralysis rate *	(Stool adequacy)*	
	Expected	Detected		Number	Percent
Chililabombwe	1	0	0	0	0
Chingola	2	0	0	0	0
Kalulushi	1	1	2.4	1	100
Kitwe	4	2	0.9	2	100
Luanshya	2	1	1.2	1	100
Lufwanyama	1	0	0	0	0
Masaiti	1	4	7.3	4	100
Mpongwe	1	0	0	0	0
Mufulira	2	1	1.2	1	100
Ndola	4	1	0.5	1	100
Province	18	10	1.1	10	100

Source: Acute flaccid paralysis surveillance database

* Acute flaccid paralysis cases with 2 stools within 14 days of onset (1 per 100,000 children less than 15 years of age)

Among the districts, the highest number of acute flaccid paralysis cases was detected in Masaiti. In Ndola 1 out of 4 expected cases were detected. The set target of the annualised non polio acute flaccid paralysis rate was attained in Kalulushi (2.4), Luanshya (1.2), Masaiti (7.3) and Mufulira (1.2). Below target were Ndola (0.5) and Kitwe (0.9). No cases were detected in Chililabombwe, Chingola, Lufwanyama and Mpongwe.

2.4.2 Measles

Table 2.12 shows that suspected measles cases among the under-fives in the province drastically reduced from 102 in 2005 to 34 in 2006. There was a further reduction to 25 in 2007. Suspected cases were higher among the under-fives as expected than among the older population in all the years except in 2007 when they were the same (25).

In 2005, 2006 and 2007, the highest number of suspected measles cases among the under fives were in Kitwe. There were 36 cases in 2005, 16 in 2006 and 14 in 2007. This was also the case among the older population with 39 cases in 2005, 12 in 2006 and 14 in 2007. The highest incidence rate among the under-fives was also in Kitwe in 2006 and 2007 (0.2 per 1000 population in both years). However, the incidence rate was the highest in Mpongwe in 2007 (0.7 per 1000 population).

Table 2.12: Measles (suspected) cases reported to health facilities by age and district, 2005-2007

District	Under-five years			5 years and above			Under-five Incidence rate		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chililabombwe	0	1	3	2	2	3	0.0	0.1	0.2
Chingola	14	0	4	24	2	2	0.3	0.0	0.1
Kalulushi	0	0	0	1	0	0	0.0	0.0	0.0
Kitwe	36	16	14	39	12	14	0.4	0.2	0.2

Luanshya	14	3	3	5	0	5	0.4	0.1	0.1
Lufwanyama	5	0	0	6	1	0	0.4	0.0	0.0
Masaiti	0	3	0	2	5	0	0.0	0.1	0.0
Mpongwe	11	0	0	2	1	0	0.7	0.0	0.0
Mufulira	22	4	1	9	1	1	0.6	0.1	0.1
Ndola	0	7	0	0	1	0	0.0	0.1	0.0
Province	102	34	25	90	25	25	0.3	0.1	0.1

Source HMIS

Chapter 3: HIV, AIDS, Tuberculosis and Sexually Transmitted Infections

The primary objective of the health sector for HIV, AIDS, tuberculosis and STIs is to provide prevention, care, and treatment and supportive interventions to at least 80 per cent of people who need them as interim targets towards universal access by 2010.

3.1 Counselling and testing

The number of people being counselled for HIV testing in the whole province increased from 13611 in 2005 to 41700 in 2006 and to 43714 in 2007. There were also yearly increases in the districts. The percentage tested among those counselled in the province increased from 86 in 2005 to 93 in 2006 and to 97 in 2007. Among the districts, the percentage tested was nearly universal in all the three years except in Mpongwe (74 per cent in 2005, 89 per cent in 2006 and 79 per cent in 2007), Lufwanyama in 2007 (88 per cent), Kitwe in 2006 (89 per cent) and Ndola in 2005 (76 per cent).

Table 3.1: Proportion of clients taking an HIV test

District	Number of counselling clients								
	2005			2006			2007		
	Attended	Testing	Percentage of clients taking an HIV test	Attended	Testing	Percentage of clients taking an HIV test	Attended	Testing	Percentage of clients taking an HIV test
Chililabombwe	695	692	99	1,631	1,435	88	2,162	2,035	94
Chingola	2,080	1,990	96	2,123	2,114	99	1,414	1,384	98
Kalulushi	263	258	98	1,826	1,823	100	1,632	1,632	100
Kitwe	4,398	4,234	96	16,326	14,476	89	24,220	23,978	99
Luanshya	-	-	-	-	-	-	-	-	-
Lufwanyama	396	396	100	858	801	93	867	765	88
Masaiti	569	569	100	1,308	1,308	100	705	700	99
Mpongwe	840	623	74	966	862	89	447	353	79
Mufulira	1,381	1,237	90	2,197	2,113	96	2,189	2,168	99
Ndola	4,750	3,612	76	10,098	9,556	95	10,078	9,773	97
Province	15,372	13,611	86	41,700	38,784	93	43,714	42,788	97

Source: ZVCT database

Luanshya data was not verified

Table 3.2 shows that the number of clients that were tested for HIV in the province increased about four times between 2005 and 2007 from 13611 in 2005 to 42788 in 2007. This can be attributed to the rapid scale up in the number of sites providing counselling and testing services. HIV prevalence among the clients was lower in 2007 (36 per cent) than in 2005 (53 per cent). At the start of the programme, the major entry point was the diagnostic clinic. Testing was motivated by the need to prescribe an effective treatment regimen which could best be done by establishing the HIV status. As more people opt to test for HIV, it is less likely that only those who are quite sick are the ones testing.

Table 3.2: Proportion of clients that took an HIV test and were found to have HIV by district and year, 2005-2007

District	Number of counselling and testing clients								
	2005			2006			2007		
	Tested	Positive	Percentage tested positive	Tested	Positive	Percentage tested positive	Tested	Positive	Percentage tested positive
Chililabombwe	692	235	34	1,435	776	54	2,035	862	42
Chingola	1,990	1,459	73	2,114	1,666	79	1,384	768	55
Kalulushi	258	195	76	1,823	612	34	1,632	679	42
Kitwe	4,234	2,411	56	14,476	6,872	47	23,978	6,116	26
Luanshya	*	*	*	4,296	1,937	45	89*	59*	66
Lufwanyama	396	180	45	801	340	42	765	293	38
Masaiti	569	203	36	1,308	695	53	700	304	43
Mpongwe	623	415	67	862	506	59	353	194	55
Mufulira	1,237	663	54	2,113	1,336	63	2,168	1,255	58
Ndola	3,612	2,827	78	9,556	4,448	47	9,773	5,112	52
Province	13,611	8,588	53	38,784	19,188	49	42,788	15,583	36

Source: ZVCT database

3.2 Prevention of HIV transmission from mothers to infants

There are many stages in the prevention of HIV transmission from mothers to their infants because HIV can be transmitted at many stages. The means to prevent HIV transmission at these stages is different. In order for pregnant women to make informed decisions that would favour a healthy pregnancy and delivery, they need information. HIV counselling is routinely offered to all antenatal care attendees in order to maximise the opportunities to prevent the transmission of HIV from mothers to their infants.

3.2.1 Antenatal HIV testing

All pregnant women attending antenatal clinic for the first time during a pregnancy are offered an HIV test. They are free to accept to take the test or refuse after being informed about the benefits of taking the test. This is the so called opt out strategy of HIV testing. Table 3.3 shows the percentage of women who were tested for HIV during the first antenatal visit of the pregnancy. The percentage who took the test in the whole province in 2007 was 60. Among the districts, the percentage was highest in Luanshya (90) and lowest in Lufwanyama (25). The percentage who took the test was below the average of 60 for the whole province in Chililabombwe (31), Kalulushi (31), Masaiti (34), Mpongwe (48) and Chingola (57).

Table 3.3: Proportion of women starting antenatal care who took an HIV test by district, 2007.

District	Antenatal first visits	Tested for HIV	Percentage tested for HIV
Chililabombwe	3,494	1,096	31
Chingola	8,720	4,972	57
Kalulushi	3,995	1,233	31
Kitwe	19,113	12,616	66
Luanshya	5,750	5,168	90
Lufwanyama	3,800	942	25
Masaiti	5,749	1,983	34
Mpongwe	4,404	2,112	48
Mufulira	6,305	4,441	70
Ndola	18,393	12,918	70
Province	79,723	47,481	60

Source: PMTCT/HMIS database

3.2.2 Proportion of pregnant women with HIV

Table 3.4 shows that 23 per cent of pregnant women tested were found with HIV in 2007. Among the districts, the highest percentage of pregnant women found with HIV was in Mpongwe (38 per cent) followed by Kalulushi (35 per cent). In fact, the percentage of pregnant women found with HIV was relatively much higher in districts with a mix of rural and urban populations namely Chililabombwe (23 per cent), Chingola (31 per cent), Kalulushi (35 per cent), Mpongwe (38 per cent), Mufulira (23 per cent) and Ndola (23 per cent) than in districts whose population was almost exclusively urban namely Kitwe (19 per cent), Luanshya (19 per cent) or almost exclusively rural namely Masaiti (12 per cent) and Lufwanyama (9 per cent). The lowest percentage of pregnant women found with HIV was in Lufwanyama whose population is virtually rural.

Table 3.4: Proportion of pregnant women testing HIV positive by district, 2007.

District	Tested for HIV	Tested positive	Percentage positive
Chililabombwe	1,096	254	23
Chingola	10,758	3,312	31
Kalulushi	1,233	435	35
Kitwe	12,616	2,388	19
Luanshya	5,168	994	19
Lufwanyama	942	88	9
Masaiti	1,983	237	12
Mpongwe	2,112	793	38
Mufulira	4,441	1,034	23
Ndola	12,918	2,959	23
Province	53,267	12,494	23

Source: PMTCT database

3.2.3 Antiretroviral prophylaxis

This refers to the administration of antiretroviral drugs to women with HIV both during pregnancy and after birth and to babies born to mothers with HIV immediately after birth or within 72 hours of birth to prevent HIV transmission from mother to her newborn.

Table 3.5 shows that 89 per cent of babies exposed to HIV were given antiretroviral prophylaxis in 2007. Among the districts, only in Ndola were all babies exposed to HIV given antiretroviral prophylaxis. On the poor extreme, no babies exposed to HIV in Lufwanyama were given a prophylaxis because this service was not available. More than 90 per cent of the babies in the other districts were given a prophylaxis except in Kitwe (77 per cent) and Luanshya (89 per cent).

Table 3.5: Proportion of babies exposed to HIV given antiretroviral prophylaxis by district, 2007.

District	Number of births exposed to HIV	Number given prophylaxis	Percentage of exposed babies given prophylaxis
Chililabombwe	168	163	97
Chingola	701	641	91
Kalulushi	150	143	95
Kitwe	986	758	77
Luanshya	428	381	89
Lufwanyama	3	0	0
Masaiti	65	64	98
Mpongwe	36	34	94
Mufulira	420	420	100
Ndola	1,366	1,241	91
Province	4,323	3,845	89

Source: Zambia Voluntary and Counselling Testing services database

3.2.4 Ever enrolled on antiretroviral therapy

Table 3.6 shows that the number of people ever enrolled on antiretroviral therapy has been increasing. The increase by 27,188 from 31,931 in 2006 to 59,119 is due to more health facilities offering the therapy on the heavily subsidised public treatment programme.

Table 3.6: Cumulative number of patients ever enrolled on antiretroviral therapy by district, 2006-2007.

District	2006			2007		
	Males	Females	Total	Males	Females	Total
Chililabombwe	537	383	920	972	872	1,844
Chingola	1,407	2,055	3,462	1,453	2,142	3,595
Kalulushi	669	1,010	1,679	1,356	1,968	3,324
Kitwe	3,248	3,970	7,218	6,735	10,912	17,647
Luanshya	123	178	301	2,133	3,067	5,200
Lufwanyama	137	213	350	310	297	607
Masaiti	464	708	1,172	716	1,051	1,767
Mpongwe	1,391	1,229	2,620	1,938	1,917	3,855
Mufulira	2,219	3,359	5,578	2,434	3,734	6,168
Ndola	3,623	5,008	8,631	6,163	9,055	15,218
Province	13,818	18,113	31,931	24,110	35,009	59,119

Source: Antiretroviral Information System (ARTIS)

3.2.5 Ever enrolled on antiretroviral therapy against target

Table 3.7 shows that the target number to enrol on antiretroviral therapy by 2006 and 2007 was exceeded. The number to be enrolled by the end of 2006 in the province was 25073 but 31931 were enrolled. The number to be enrolled by the end of 2007 was 30,732 but 59,119 were enrolled. This was also the case among the districts except in Chingola where the target was not achieved by the end of 2007 although it was by the end of 2006.

District	2006			2007		
	Target	On therapy	Percentage on therapy	Target	On therapy	Percentage on therapy
Chililabombwe	345	920	267	1,184	1,844	156
Chingola	3,309	3,462	105	4,054	3,595	89
Kalulushi	1,028	1,679	163	1,265	3,324	263
Kitwe	7,074	7,218	102	8,669	17,647	204
Luanshya	207	301	145	2,460	5,200	211
Lufwanyama	273	350	128	580	607	105
Masaiti	712	1,172	165	873	1,767	202
Mpongwe	494	2,620	530	605	3,855	637
Mufulira	2,000	5,578	279	2,450	4,129	169
Ndola	7,011	8,631	123	8,593	15,218	177
Province	25,073	31,931	127	30,732	59,119	192

Source HMIS

3.2.6 Antiretroviral therapy patient outcomes at 12 months

Although very few clients in the province stopped the antiretroviral therapy after 12 months (34), a lot of them were lost to follow-up (1200) which suggests that they might have also stopped treatment or died. The number lost to follow-up is extremely high and should raise concerns about the development of resistant strains of the virus.

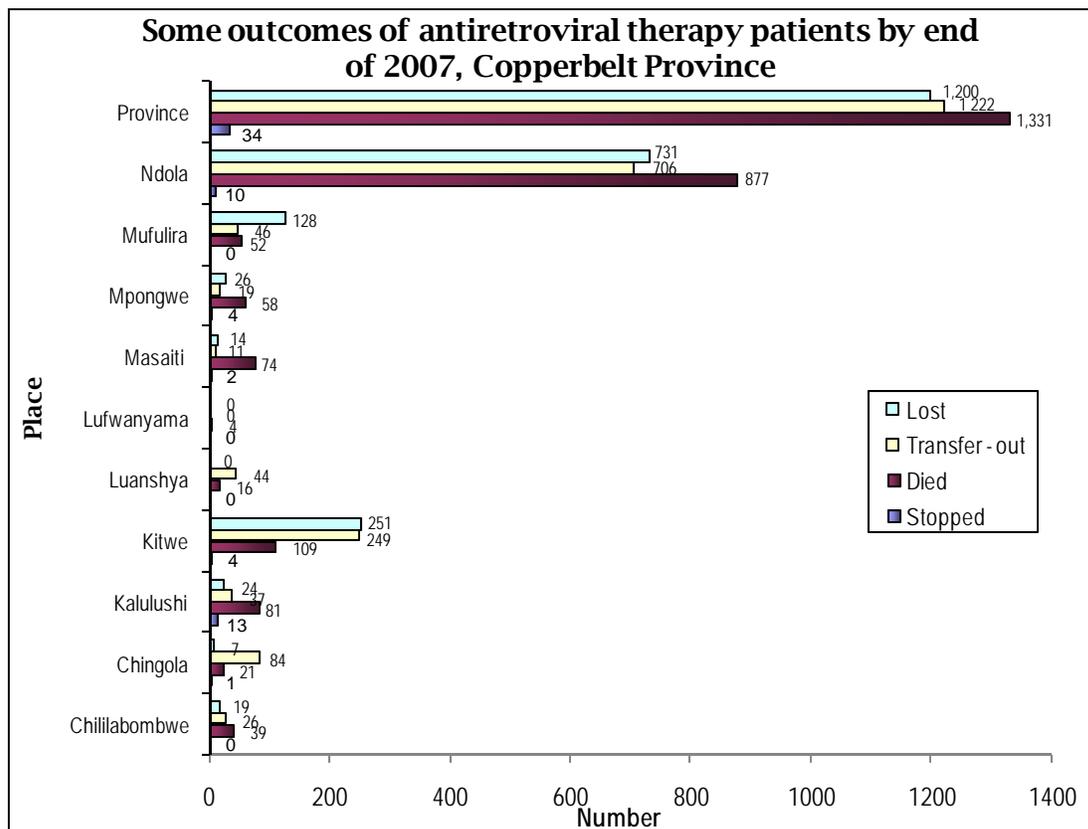


Figure 3.1: Some outcomes of patients enrolled on antiretroviral therapy

3.3 Tuberculosis

Tuberculosis is also a notifiable disease caused by bacteria *Mycobacterium Tuberculosis*. It usually affects the lungs although other parts of the body are also affected. Currently in the province the notifications have increased posing a threat on the community and a possible epidemic. The diagnosis is based on laboratory investigation (sputum smear) on anyone who has been coughing for more than two weeks, has night sweats and has lost weight. Sputum examination confirms the diagnosis and gives an indication of the correct drug regimen to use for treatment.

3.3.1 Tuberculosis notifications from 2005 to 2007

As shown in Table 3.9, there were more males (1,887) than females (1,458) infected with tuberculosis in the province. This is also the case among the districts except in Mpongwe where the number was the same for both sexes. There were more sputum smear negative (1,368) than sputum smear positive (1,122) cases in the whole province and in most of its districts. This was due to the high rate of tuberculosis cases among those with HIV.

Table 3.8: Tuberculosis notifications by type, district and sex, 2007

District	Sex	Notifications by Type							Total
		Sputum smear		Extra pulmonary tuberculosis	Relapse positive	Others previously treated	Treatment after default	Treatment after failure	
		Positive	Negative						
Chililabombwe	Male	54	118	19	6	0	0	1	198
	Female	42	85	28	4	0	0	0	159
	Total	96	203	47	10	0	0	1	357
Chingola	Male	105	104	15	2	6	0	0	232
	Female	87	77	4	0	8	0	0	176
	Total	192	181	19	2	14	0	0	408
Kalulushi	Male	16	29	5	0	4	0	0	54
	Female	3	29	4	1	2	0	0	39
	Total	19	58	9	1	6	0	0	93
Kitwe	Male	73	152	58	10	62	3	0	358
	Female	58	121	30	10	34	1	0	254
	Total	131	273	88	20	96	4	0	612
Luanshya	Male	20	20	11	3	10	0	1	65
	Female	20	12	11	2	3	0	0	48
	Total	40	32	22	5	13	0	1	113
Lufwanyama	Male	4	2	6	0	0	0	0	12
	Female	3	7	1	0	0	0	0	11
	Total	7	9	7	0	0	0	0	23
Masaiti	Male	13	14	4	1	0	0	0	32
	Female	12	11	3	1	0	0	0	27
	Total	25	25	7	2	0	0	0	59
Mpongwe	Male	7	6	7	2	5	0	1	28
	Female	4	4	16	2	2	0	0	28
	Total	11	10	23	4	7	0	1	56
Mufulira	Male	44	55	28	1	0	0	0	128
	Female	6	28	15	1	0	0	0	50
	Total	50	83	43	2	0	0	0	178
Ndola	Male	303	261	101	67	26	12	10	780
	Female	248	233	86	53	14	20	12	666
	Total	551	494	187	120	40	32	22	1,446
Province	Male	639	761	254	92	113	15	13	1,887
	Female	483	607	198	74	63	21	12	1,458
	Total	1,122	1,368	452	166	176	36	25	3,345

Source: Tuberculosis database

3.3.2 Tuberculosis cure, completion and success rate

Table 3.10 shows tuberculosis cure, completion and success rates. In the whole province, the national target of 85 per cent cure rate was not attained in 2005, 2006 and 2007 due to inadequate diagnostic centres in some districts. However, the target on the treatment success rate was attained in 2006 and 2007.

Table 3.9: Tuberculosis cure rate 2005 to 2007

District	Cure Rate (percentage)			Completion Rate (percentage)			Treatment Success (percentage)		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chililabombwe	76	88	83	0	4	0	76	91	83
Chingola	59	75	70	22	10	15	91	85	85
Kalulushi	78	90	83	5	1	13	83	91	96
Kitwe	82	79	77	7	4	4	89	83	80
Luanshya	62	56	77	7	8	5	69	65	82
Lufwanyama	74	74	78	7	13	15	81	87	93
Masaiti	78	81	73	8	11	12	80	92	85
Mpongwe	66	77	72	9	5	9	74	82	81
Mufulira	73	76	75	5	8	4	78	84	79
Ndola	77	83	83	4	5	4	81	88	88
Province	76	79	78	7	6	6	82	85	85

Source Tuberculosis database

3.4 Sexually transmitted infections

As shown in Table 3.11, the incidence rate for these infections was lower among the under-fives (0.8 per 1000 population) than among the older population (15.0 per 1000 population). Among the districts, the incidence rate among those aged 5 years and above was the highest in Mpongwe (19.6) followed by Ndola (16.9) and Kalulushi (16.4).

Table 3.10: Sexually transmitted infection Incidence, 2007

District	Incidence rate per 1,000 population (All health facilities)		
	Under 5	5 years and above	Total
Chililabombwe	0.5	14.3	11.5
Chingola	0.7	15.6	12.6
Kalulushi	0.4	16.4	13.2
Kitwe	1.2	14.6	11.9
Luanshya	0.5	12.3	9.9
Lufwanyama	1.9	9.6	8.1
Masaiti	0.8	12.1	10.0
Mpongwe	0.5	19.6	16.0
Mufulira	1.4	14.1	11.6
Ndola	0.3	16.9	13.6
Province	0.8	15.0	12.1

Source HMIS

Figure 3.2 shows that the incidence rate in Kitwe, Ndola, Mufulira and Masaiti was downward between 2005 and 2006. On the other hand, the trend in the incidence rate was upward in Mpongwe, Kalulushi and Chililabombwe. In the whole province, the total incidence rate reduced from 15.0 in 2005, to 13.2 in 2006 and to 12.1 per 1000 population in 2007.

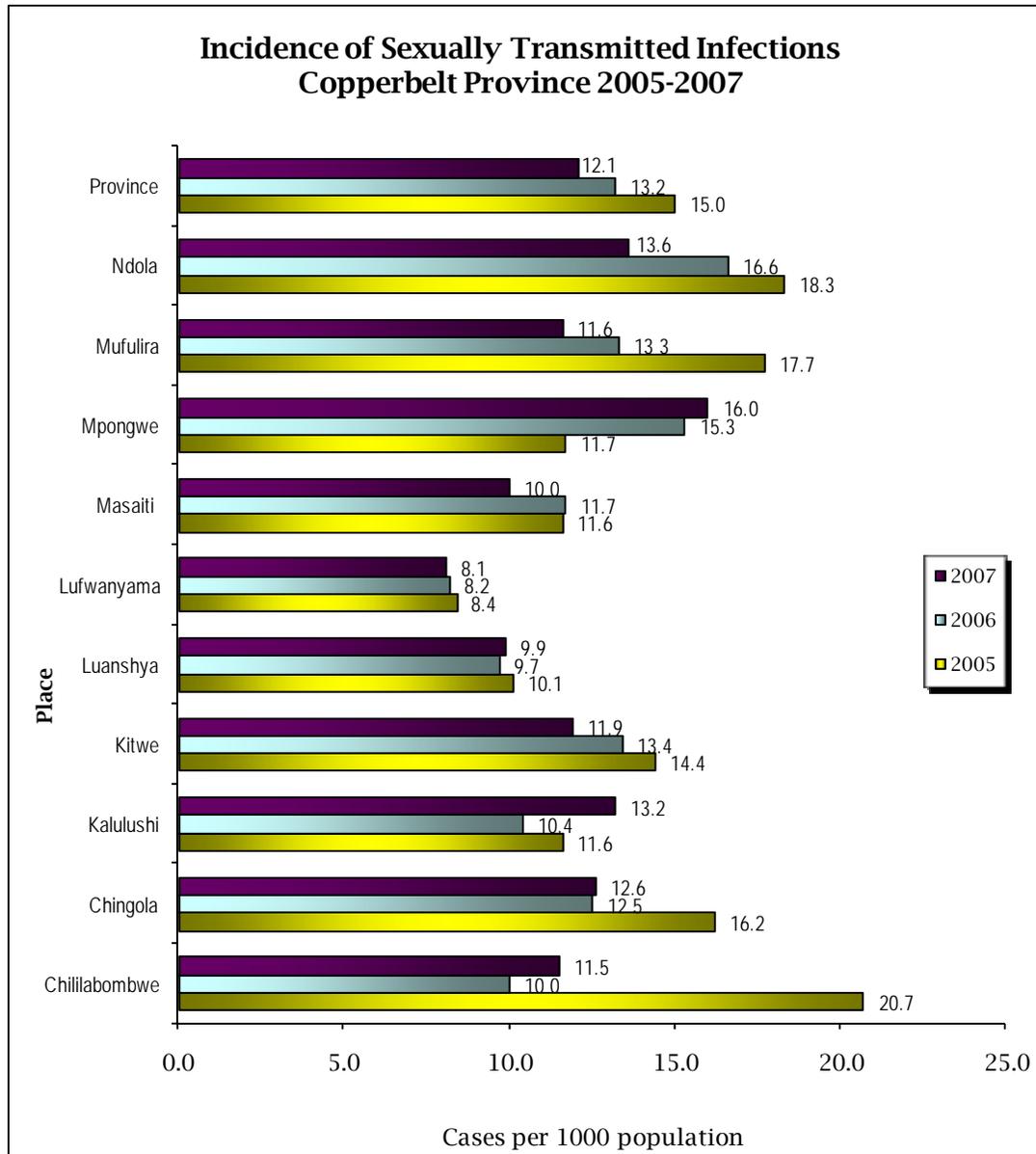


Figure 3.2: Incidence of sexually transmitted infections

Chapter 4: Human resources

This chapter discusses human resource indicators derived from the HMIS such as staff work load, health centre daily staff contact as well as active community based volunteers (tTBAs and community health workers). Data was obtained from end of year 2007 district human resource registers and staff returns reports. Adequate human resources are essential in the provision of health services because they affect the ability to provide quality health services.

4.1 Number of medical personnel by district

Table 4.1 shows the number of health workers by cadre, in each district in the province, in the year 2007. The data in the table is based on the 2006 interim establishment.

Districts	Staff cadre								Total
	Medical Doctors	Clinical Officers	Nurses	Mid-wives	Environmental Health Officers/Technicians	Pharmacists/Pharmacy Technicians	Laboratory Technicians	Others	
Chililabombwe	2	6	44	18	4	0	3	10	87
Chingola	6	13	138	53	2	0	4	52	268
Kalulushi	3	10	56	31	1	1	3	50	155
Kitwe	67	13	368	61	4	0	9	143	665
Luanshya	11	12	108	45	7	0	6	209	398
Lufwanyama	3	4	26	13	10	0	3	3	62
Masaiti	2	3	22	4	8	0	2	17	58
Mpongwe	6	11	56	7	7	0	6	17	110
Mufulira	9	15	149	59	13	0	6	63	314
Ndola	91	39	348	143	16	0	10	277	924
Province	200	126	1315	434	72	1	52	841	3041

Source: District Human Resource Register

4.2 Health centre staff daily contacts

Health centre daily staff contacts measures the average number of contacts each qualified worker in an institution attends to over a period such as quarterly or annually. The total number of contacts in a period is divided among the total number of qualified health workers available in the same period excluding holidays and weekends. One qualified health worker such as a medical doctor, nurse and clinical officers working in the outpatient department, maternal and child health unit and inpatient departments is by standard supposed to see 10 to 12 clients per day.

As can be seen in Figure 4.1, the highest average number of total daily staff contacts in 2007 were in Masaiti (22) followed by Mpongwe (19) and Lufwanyama (14). Quite clearly, the staffing levels in these predominantly rural districts in the province were less inadequate compared to those in the predominantly urban districts. In Masaiti, staffing levels did not improve such that the average number of daily staff contacts increased from 18 in 2005, to 21 in 2006 and to 22 in 2007. In contrast, staffing levels in the predominantly urban districts of Ndola, Luanshya, Kitwe, Kalulushi and Chingola saw a reducing number of daily contacts from 2005 to 2007. Age daily staff contacts reduced from 16 in 2005, to 15 in 2006 and to 13 in 2007. In Kitwe, the reduction was from 13 in 2005, to 12 in 2006 and to 10 in 2007. In Kalulushi,

there were 12 average total contacts in 2005 and 2006 and 10 in 2007. In Chingola, there were 10 average total contacts in 2005 and 2006 and 9 in 2007.

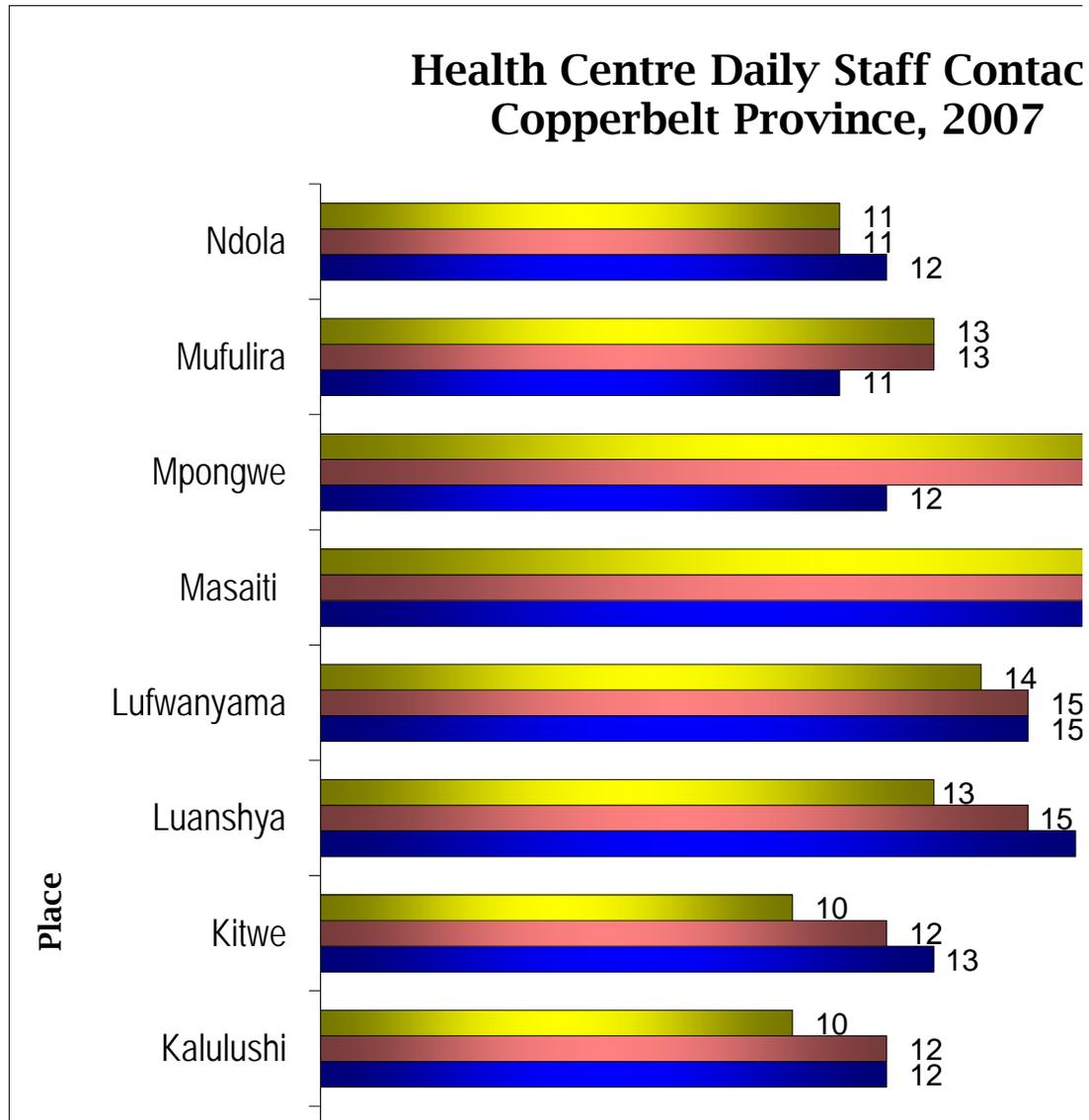


Figure 4.1: Daily staff contacts

4.3 Community Health Volunteers

These are community based health providers trained to offer basic primary health care within the community. They are trained for six (6) weeks and are identified by local communities. The ones referred to in this section are community health workers and Trained Traditional Birth Attendants (tTBAs). One community health worker is supposed to service a population of 500 and one traditional birth attendant services a population of 1000.

4.3.1 Trained Traditional Birth Attendants

Table 4.2 shows the number of active tTBAs and deliveries they carried out in 2005, 2006 and 2007. Current policy places emphasis on tTBAs promoting maternal and reproductive health services and encouraging women to utilise professionals at health facilities than on conducting deliveries. One tTBA is by standard supposed to serve a population of 1000 people. In areas where health facilities are sparsely located such as in rural areas and staffing levels in health facilities are low, the utilisation of tTBAs is high. However, in Copperbelt province the average number of deliveries carried out by tTBAs was above the provincial average in some of the urban districts where it would have been expected that deliveries would be in health facilities under midwives or medical doctors.

The average number of deliveries carried out by tTBAs in the province was 18 in 2005, 17 in 2006 and 19 in 2007. In the predominantly urban districts of Chingola, tTBAs carried out an average of 30 deliveries in 2005, 35 in 2006 and 32 in 2007. In Luanshya, they carried out 27 in 2005, 22 in 2006 and 32 in 2007. In Ndola, they carried out 22 in 2005, 16 in 2006 and 31 in 2007.

Table 4.2: Number of active tTBAs and deliveries conducted, 2005-2007

District	2005			2006			2007		
	Active tTBAs	Deliveries		Active tTBAs	Deliveries		Active tTBAs	Deliveries	
		Actual	Average		Actual	Average		Actual	Average
Chililabombwe	63	668	11	70	551	8	55	734	13
Chingola	47	1,413	30	38	1,331	35	41	1,307	32
Kalulushi	44	588	13	46	716	16	35	444	13
Kitwe	50	500	10	46	482	10	32	406	13
Luanshya	61	1,638	27	66	1,433	22	53	1,705	32
Lufwanyama	64	1,208	19	87	1,482	17	102	1,633	16
Masaiti	133	2,100	16	124	1,942	16	129	1,819	14
Mpongwe	30	816	27	38	710	19	43	642	15
Mufulira	33	565	17	36	973	27	42	1,154	27
Ndola	36	799	22	61	993	16	40	1,246	31
Province	558	10,295	18	610	10,613	17	572	11,090	19

Source HMIS 2005 to 2007

4.3.2 Community Health Workers

These are community health volunteers trained to offer the primary basic health care package within the community. They are trained for a period of six to eight weeks. Table 4.3 shows the number of active community health workers and the number of clients attended to from 2005 to 2007.

At provincial level there was an increase in the number of active community health workers from 296 in 2005, to 310 in 2006 and to 380 in 2007. Partly as a result, the average number of patients attended to by community health workers in the province reduced from 693 in 2005, to 591 in 2006 and to 278 in 2007.

As can be seen in Table 4.3 community health workers in the rural districts were more utilised than those based in urban areas. This could be attributed to inadequate staffing levels and sparse distribution of health facilities in rural areas.

Table 4.3: Number of active community health workers and patients attended to by community health workers, 2005-2007

District	2005			2006			2007		
	Number of active community health workers	Number of patients		Number of active community health workers	Number of patients		Number of active community health workers	Number of patients	
		Total	Average		Total	Average		Total	Average
Chililabombwe	40	5,249	131	43	3,801	88	42	4,326	103
Chingola	31	23,407	755	18	20,264	1,126	19	9,607	506
Kalulushi	20	9,605	480	23	10,301	448	28	9,111	325

Kitwe	13	234	18	10	856	86	130	3,514	27
Luanshya	24	15,065	628	21	12,370	589	18	5,314	295
Lufwanyama	48	58,262	1,214	40	59,955	1,499	37	37,371	1,010
Masaiti	59	53,911	914	79	40,291	510	75	27,873	372
Mpongwe	44	31,870	724	30	25,930	864	22	3,828	174
Mufulira	2	21	11	1	5	5	1	408	408
Ndola	16	7,576	474	45	9,367	208	9	4,473	497
Province	296	205,200	693	310	183,140	591	380	105,825	278

Source HMIS 2005 to 2007

Chapter 5: Availability of drugs

The demand for provision of quality health services is determined by among other factors, availability of essential drugs and equipment. The drugs and supplies indicators show utilisation of basic drugs and supplies and whether stocks, logistics and procurement are well managed so that there are no stock outs and overstocking. The indicators also provide information on consumption and rationality in the use of pharmaceuticals.

5.1 Medical supplies in stock at health facilities

This is measured by the percentage of months in which specific drugs were not in stock for the whole month. The specific drugs in health centres include essential items such as first line anti-malarial drugs Coartem or Fansidar, Paracetamol, Cotrimoxazole, Oral contraceptives, Vaccines (Bacillus Calmette Guerin, Oral Polio Vaccine, Diphtheria, Pertusis, Tetanus, Haemophilus Influenza and Hepatitis B, Measles and Tetanus Toxoid). In the hospitals, Fansidar, Benzyl Penicillin, Amoxicillin, Refampcin /Isoniazid, Ketamine, Lancets, Rapid Plasma Reagent and HIV kits are considered essential items. Stocks are by standard expected to be e time. Possible reasons that may lead to stock outs include: poor logistical planning and management, pilferage, over prescribing by staff and unusual disease trends.

Table 5.1 shows the percentage of months in which drugs were in stock for the whole month in 2005, 2006 and in 2007. Drugs were in stock for the whole month in 75 per cent of the months in 2005, 78 per cent in 2006 and 86 per cent in 2007.

District	Percentage of months in stock at health centres			Percentage of months in stock at hospitals			Percentage of months in stock at health centres and hospitals		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chililabombwe	100	100	100	100	100	100	100	100	100
Chingola	98	99	94	100	100	88	98	99	93
Kalulushi	99	99	100	100	100	100	99	99	100
Kitwe	58	65	86	94	78	92	60	66	86
Luanshya	80	88	87	100	100	100	83	89	89
Lufwanyama	81	89	83	0	0	0	0	0	0
Masaiti	89	87	90	0	0	0	0	0	0
Mpongwe	82	78	83	100	93	97	84	80	85
Mufulira	87	86	89	98	99	98	88	88	90
Ndola	55	55	76	94	100	100	57	57	77
Province	75	78	86	98	95	96	77	79	87

Source: HMIS and pharmacy reports 2005 to 2007

Chililabombwe is a good example where Medical Stores continued to base supplies on old requisitions hence creating overstocks, while Ndola had the lowest percentages because some private clinics did not offer maternal (contraceptives) and child health (vaccines) services. Only 2 out of 20 private clinics offered the services.

5.1.1 Availability of tracer drugs

Table 5.2 shows the availability of tracer drugs by health centres and hospitals in the year 2007. A comparison on anti-malarial drugs indicates that Chililabombwe was well stocked while other districts faced a shortfall and this is attributed to lack of supplies from the central level during the first and second quarters of 2007.

Table 5.2: Percentage of months in which tracer drugs were available, 2007

District	Health centre			Hospital		
	Anti-malarial	Paracetamol	Cotrimoxazole	Fansidar	Amoxicillin	Benzyl Penicillin
Chililabombwe	100	100	100	100	100	100
Chingola	76	94	90	88	88	88
Kalulushi	99	98	99	100	100	100
Kitwe	93	95	95	100	100	97
Luanshya	95	95	95	100	100	100
Lufwanyama	86	91	79	-	-	-
Masaiti	89	97	71	-	-	-
Mpongwe	69	86	83	79	100	100
Mufulira	79	89	88	100	100	100
Ndola	92	95	95	100	100	100
Province	88	94	90	96	99	98

Source: HMIS 2007

Note: There was no district hospital in Lufwanyama and Masaiti

Chapter 6: Health Services Delivery Indicators

These indicators reflect the amount and kind of services that are being offered by health personnel in the health care system. They include health service performance indicators such as health centre utilisation, maternal health, family planning indicators and child health indicators.

6.1 Health facility utilisation

Table 6.1 shows trends of selected service delivery indicators for the whole province from 2005 to 2007. There was an improvement in a number of health facility utilisation indicators. The health centre under-five per capita attendance reduced from 2.97 in 2005 to 2.55 in 2006 and to 2.40 in 2007. The health centre bed occupancy rate reduced from 27 in 2005 to 17 in 2006 and to 15 in 2007. The average number of days patients were admitted in hospitals reduced from 4.6 in 2005 to 4.2 in 2006. It was 4.2 days in 2007 as well.

Indicator	Period in years		
	2005	2006	2007
Health centre outpatient department utilisation	1.29	1.18	1.18
Health centre under 5 per capita attendance	2.97	2.55	2.40
Health centre over 5 per capita attendance	0.87	0.84	0.87
Health centre bed occupancy rate	27	17	15
Hospital bed occupancy rate	54	49	49
Hospital average length of Stay	4.6	4.2	4.2

Source HMIS

6.2 Outpatient department utilisation

Outpatient department utilisation is defined as the average number of outpatient department attendances in health facilities by the catchment population in a period. Critical trend analysis comparing health facilities needs to be done to see how health facilities are being utilised. If the health facility outpatient department is underutilised, measures to improve the quality of service and accessibility by the general public need to be taken.

Data presented in Table 6.2 utilisation rates in rural districts namely Mpongwe, Masaiti and Lufwanyama increased annually from 2005 to 2006 and to 2007. There was a reduction in the urban districts of Chingola, Mufulira, Luanshya and Kitwe. The overall utilisation in the province was higher in 2005 was 1.29 times. It decreased to 1.18 times in 2006. It was also 1.18 times in 2007.

District	Outpatient department utilisation rate		
	2005	2006	2007
Chililabombwe	1.04	1.00	1.27
Chingola	1.21	1.09	0.97
Kalulushi	1.31	1.27	1.36
Kitwe	1.42	1.26	1.13
Luanshya	1.56	1.45	1.36
Lufwanyama	0.97	1.19	1.20
Masaiti	1.35	1.58	1.65
Mpongwe	0.75	1.52	1.54
Mufulira	1.25	1.12	1.01
Ndola	1.29	0.93	1.07
Province	1.29	1.18	1.18

6.2.1 Health centre per capita attendance

In rural areas, the per capita outpatient department attendance should not be less than 1 per year while in urban areas it should not be less than 3.

Data in Table 6.3 indicate that there is higher per capita attendance among the under-fives than among the older population. In all the rural districts, namely Lufwanyama, Masaiti and Mpongwe, the per capita attendance was above the threshold of 1 visit per annum in 2005 2006 and 2007. In the urban districts, the threshold of 3 visits per annum was only attained in Luanshya although it reduced from 3.50 in 2005 to 3.25 in 2006 and 3.06 in 2007. In Kitwe, the threshold was attained in 2005 (3.32) and in 2006 (3.15). In Ndola, it was attained in 2005 (3.31).

Table 6.3: Health centre per capita attendances Copperbelt Province, 2005-2007

District	2005			2006			2007		
	Under 5 year	5 years and above	Total	Under 5 year	5 years and above	Total	Under 5 year	5 years and above	Total
Chililabombwe	1.88	0.83	1.04	1.62	0.84	1.00	1.91	1.11	1.27
Chingola	2.53	0.89	1.21	2.23	0.80	1.09	1.99	0.72	0.97
Kalulushi	2.79	0.94	1.31	2.59	0.94	1.27	2.96	0.96	1.36
Kitwe	3.32	0.94	1.42	3.15	0.79	1.26	2.67	0.74	1.13
Luanshya	3.50	1.08	1.56	3.25	1.00	1.45	3.06	0.93	1.36
Lufwanyama	2.72	0.59	0.97	2.60	0.83	1.19	2.28	0.93	1.20
Masaiti	3.26	0.87	1.35	3.48	1.10	1.58	3.57	1.22	1.65
Mpongwe	1.84	0.50	0.75	3.47	1.07	1.52	3.19	1.16	1.54
Mufulira	2.25	0.99	1.25	2.06	0.89	1.12	1.81	0.81	1.01
Ndola	3.31	0.79	1.29	1.78	0.72	0.93	1.89	0.86	1.07
Province	2.97	0.87	1.29	2.55	0.84	1.18	2.40	0.87	1.18

Source HMIS

In the older population, the threshold of 1 was attained in rural districts only in Mpongwe and Masaiti in 2006 and 2007. None of the urban districts attained the threshold of 3 visits per annum in 2005, 2006 and 2007.

Generally, the table shows that catchment populations did not utilise the health centres the number of times they were expected to in the urban districts of Chililabombwe, Chingola, Kalulushi, Kitwe, Luanshya, Mufulira and Ndola. One reason could be that some of the patients purchase medicines directly from chemists without consulting health centres. Long queues at health centres could also dissuade patients. Inability to afford transport fares let alone the fees charged in urban health centres could be a factor as well.

6.2.2 Bed occupancy rate–health centre and hospital

The bed occupancy rate is defined as the average percentage of available beds occupied during a period. The purpose of the indicator is to maximise the utilisation of facilities for inpatient treatment. Ideally the bed occupancy rate should not be less than 80 per cent. As shown in Table 6.4, there was no district in the province in which beds were occupied at the threshold level or more in 2005, 2006 and 2007. The average percentage of beds occupied in health centres in the province was 27 in 2005, 17 in 2006 and 15 in 2007. In hospital it was 54 per cent in 2005, 49 per cent in 2006 and 49 per cent in 2007.

Table 6.4: Bed occupancy rate per district and year, 2005-2007

Health centre bed occupancy rate	Hospital bed occupancy rate	Summary bed occupancy rate
----------------------------------	-----------------------------	----------------------------

District	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chililabombwe	40	30	29	39	35	37	39	32	33
Chingola	20	20	15	30	35	33	28	31	28
Kalulushi	34	28	29	9	11	7	20	19	16
Kitwe	6	7	5	62	49	50	56	45	44
Luanshya	25	60	22	45	38	42	44	38	43
Lufwanyama	11	16	12	-	-	-	11	16	12
Masaiti	8	5	4	-	-	-	8	5	4
Mpongwe	8	7	19	53	46	37	43	37	29
Mufulira	10	11	8	51	46	45	45	43	42
Ndola	31	20	17	82	74	77	42	59	63
Province	27	17	15	54	49	49	40	41	40

Source HMIS

Note: There was no hospital in Lufwanyama and in Masaiti

Table 6.5 shows trends of hospital outpatient department first attendance utilisation by districts from 2005 to 2007 in the Copperbelt province. The hospital outpatient department first attendances should be less than one tenth of the average health centre attendances because not more than a tenth of first attendances at the health centres are referred to hospitals. The proportion of outpatient department first attendance utilisation was 0.28 in 2005, 0.28 in 2006 and 0.31 in 2007.

Among the districts, the rate reduced only in Chililabombwe from 0.23 in 2005 to 0.12 in 2006 and to 0.07 in 2007. Charging of bypass fees at hospitals deter a number of people from going directly to the hospitals.

District	Outpatient department utilisation rate		
	2005	2006	2007
Chililabombwe	0.23	0.12	0.07
Chingola	0.14	0.16	0.18
Kalulushi	0.19	0.21	0.19
Kitwe	0.47	0.49	0.51
Luanshya	0.13	0.20	0.26
Lufwanyama	-	-	-
Masaiti	-	-	-
Mpongwe	0.65	0.67	0.53
Mufulira	0.25	0.24	0.29
Ndola	0.28	0.29	0.36
Province	0.28	0.28	0.31

Source HMIS

Note: There was no district hospital in Lufwanyama and Masaiti

6.2.3 Hospital outpatient department percentage by-pass first attendances

The hospital by-pass first attendance is the proportion of hospital outpatient department first attendants who by-pass the health centres. When the percentage by-pass is high, this signals a problem at the health centre level or that the hospital may also be performing health centre functions.

Table 6.6 shows that the overall by-pass percentage in the province fluctuated from 39 in 2005 to 36 in 2006 and to 37 in 2007. Among the districts, the percentage reduced from 46 in 2005 to 42 in 2006 and to 37 in 2007 in Chililabombwe. The decrease in the by-pass percentage could be attributed to scheduled visits by medical doctors to the health facilities. The introduction of by-pass fees in 1995 hospitals could also have contributed to the decrease in by-pass percentages. Another possible reason could be that referred patients are attended to early at hospitals and this has discouraged patients from by-passing health centres.

The by-pass percentage increased in Mufulira and Chingola. In Mufulira, it increased from 37 per cent in 2005 to 38 per cent in 2006 and to 44 per cent in 2007. In Chingola, it increased from 19 per cent in 2005 to 22 per cent in 2006 and almost doubling to 42 per cent in 2007. In Kalulushi, the by-pass percentage remained static at 49 during the period under review.

District	Under 5 Years			5 Years and above			Total by-pass attendance		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chililabombwe	38	35	44	23	20	45	46	42	37
Chingola	8	22	42	8	8	19	19	22	42
Kalulushi	48	48	48	33	34	30	49	49	49
Kitwe	43	27	46	16	5	20	36	27	38
Luanshya	24	30	23	26	25	17	32	38	32
Lufwanyama	-	-	-	-	-	-	-	-	-
Masaiti	-	-	-	-	-	-	-	-	-
Mpongwe	60	67	17	27	26	13	60	64	18
Mufulira	34	35	42	28	26	26	37	38	44
Ndola	20	21	13	23	21	19	37	41	37
Province	37	31	32	20	19	20	39	36	37

Source HMIS

*Note: There was no district hospital in Lufwanyama and Masaiti

6.2.4 In-patient turnover rate

In-patient turnover rate defines the number of admissions per bed during a given period of time. It is the total number of admissions during a period over total number of beds in a health institution. The goal is to maximize the utilisation of facilities for in-patient facilities. The bed turnover is ideally around 50 per cent in a district hospital.

In both the health centres and hospitals in the province, the in-patient turnover rate was below the threshold. Table 6.7 shows the total rate in the province in health facilities was 3.3 in 2005, 9.1 in 2006 and 5.8 in 2007. In hospitals it was 10.6 in 2005, 10.4 in 2006 and 10.6 in 2007.

Among the districts, the in-patient turnover rate was above the threshold in health centres in Luanshya in 2005 and in 2006. It was 66.4 in 2005 and 54.0 in 2006. The rate was below the threshold in all the three years in both health centres and hospitals in the rest of the districts.

Table 6.7: Health centre and hospital inpatient turnover rate per district and year, 2005-2007

District	Health centre inpatient turnover rate			Hospitals inpatient turnover rate		
	2005	2006	2007	2005	2006	2007
Chililabombwe	14.3	11.6	11.7	7.3	8.1	7.0
Chingola	15.6	10.5	7.7	6.3	8.4	8.5
Kalulushi	12.9	8.4	12.4	2.7	2.8	2.4
Kitwe	20.5	13.5	4.6	13.2	11.4	11.7
Luanshya	66.4	54.0	18.8	10.2	9.4	9.4
Lufwanyama	6.6	5.8	4.4	-	-	-
Masaiti	2.6	2.3	1.8	-	-	-
Mpongwe	2.9	3.1	3.6	8.0	7.4	6.5
Mufulira	7.2	9.8	5.6	8.4	8.6	9.2
Ndola	0.9	11.8	6.3	15.4	14.8	15.2
Province	3.3	9.1	5.8	10.6	10.4	10.6

Source HMIS

Note: There was no district hospital in Lufwanyama and Masaiti

6.2.5 Average length of stay

This is the average length of stay of patients in an in-patient facility during a period. It is calculated by dividing the total number of patient bed days during the period by the total number of admissions during the same period. The purpose of this indicator is to optimise the appropriate use of facilities by each patient. The recommended average length of stay in a district hospital is 6 days or less. The average length of stay in hospitals in the province was below 6 days. It was 4.6 days in 2005, 4.2 days in 2006 and 4.4 days in 2007.

As shown in Table 6.8, the average length of stay in all the districts was also below 6 days in 2005, 2006 and 2007. The longest length of stay in all these years was in Mpongwe (5.9 days in 2005, 5.6 days in 2006 and 5.1 days in 2007). The lowest in all these years was in Kalulushi (3.0 days in 2005, 3.5 days in 2006 and 2.7 days in 2007). It is more likely that complicated cases are quickly referred out of Kalulushi because the hospital has little capacity while the hospitals in Mpongwe are the referral centres for cases from health centres in the vast district and from health centres in other districts where there are no hospitals such as Masaiti and Lufwanyama.

District	Hospital average length of stay		
	2005	2006	2007
Chililabombwe	4.8	3.9	4.8
Chingola	4.3	3.7	3.5
Kalulushi	3.0	3.5	2.7
Kitwe	4.2	3.9	3.9
Luanshya	4.0	3.6	4.1
Lufwanyama	*	*	*
Masaiti	*	*	*
Mpongwe	5.9	5.6	5.1
Mufulira	5.4	4.8	4.4
Ndola	4.8	4.5	4.6
Province	4.6	4.2	4.4

Source HMIS

*Lufwanyama and Masaiti have no district hospitals

6.3 Maternal health and family planning

The aspects of maternal health indicators presented in this section are antenatal care; average number of antenatal visits; and proportion of births delivered in health facilities, by tTBAs and those which were supervised. Good maternal health provides the foundation for good child health.

6.3.1 Summary of maternal health indicators

Table 6.9 presents a provincial summary of maternal health indicators over a three year period.

Indicator	Year			Average 2005-2007
	2005	2006	2007	
First antenatal visit coverage (percentage)	72	72	76	73
Average number of antenatal visits	3.4	3.2	3.1	3.2
Institutional deliveries (percentage)	52	52	54	53
Deliveries by tTBAs (percentage)	11	11	11	11
Percentage of deliveries that were supervised	63	63	65	64
First postnatal attendance (percentage)	55	54	59	56

Source HMIS

6.3.2 Antenatal care

First antenatal coverage is the percentage of expected pregnancies in the catchment population who present themselves to the health facilities for antenatal services for the first time during a pregnancy in a period. It indicates the utilisation of antenatal care, determined by availability, accessibility and acceptability of the services. The target in Zambia is 90 per cent and if the figure falls below 80 per cent the delivery system in the area should be investigated.

Table 6.10 shows that the percentage was less than the threshold of 80 per cent in the province in 2005, 2006 and 2007. It was 72 per cent in 2005, 72 per cent in 2006 and 76 per cent in 2007. Among the districts, the coverage was below the threshold of 80 per cent in the three years in Chililabombwe, Chingola, Kitwe, Luanshya, Mufulira and Ndola. In Kalulushi, the coverage was above the threshold in 2006 (84 per cent) and in 2007 (83 per cent). In the three rural districts namely Mpongwe, Lufwanyama and Masaiti, the coverage was above the threshold in all the three years. I was even above the national target of 90 per cent in Mpongwe in all the three years.

District	2005			2006			2007		
	Contacts	Target	Percentage	Contacts	Target	Percentage	Contacts	Target	Percentage
Chililabombwe	3,535	4,449	79	3,312	4,598	72	3,494	4,769	73
Chingola	7,390	11,024	67	7,760	11,393	68	8,720	11,748	74
Kalulushi	3,662	4,686	78	3,912	4,662	84	3,995	4,797	83
Kitwe	16,144	23,627	68	17,236	24,318	71	19,113	24,939	76
Luanshya	4,903	8,904	55	5,151	9,195	56	5,750	9,469	61
Lufwanyama	3,454	3,198	108	3,498	4,105	85	3,800	4,224	90
Masaiti	5,021	5,954	84	5,473	6,152	89	5,749	6,319	91
Mpongwe	4,192	3,999	105	4,175	3,749	111	4,404	4,248	104
Mufulira	5,420	9,245	59	6,556	9,560	69	6,305	9,869	64
Ndola	17,139	23,594	73	16,712	24,294	69	18,393	24,974	74
Province	70,860	98,680	72	73,785	102,026	72	79,723	105,406	76

Source HMIS

Some of the contributing factors for the low coverage in urban districts namely Chililabombwe, Chingola, Mufulira, Kalulushi, Luanshya, Kitwe and Ndola include registration fees charged at antenatal first visits. Another factor could be the critical shortage of midwives. As a result, there are long queues leading to long waiting time. This appears to be discouraging women from attending antenatal services.

In the case of Mpongwe district the very high antenatal coverage is due to women from neighbouring districts such as areas of proximity in Kapiri Mposhi attending antenatal clinic in health facilities in Mpongwe. Another probable reason for increased attendance of antenatal care in Masaiti and Lufwanyama is due to the increasing number of tTBAs and community health workers involved in mobilising the communities. Another reason could be the consistent outreach services.

6.3.3 Average number of antenatal visits

This indicator measures the average number of antenatal visits for each pregnancy. Table 6.11 shows that the average number was 3.4 in 2005, 3.2 in 2006 and 3.1 in 2007. The national target was 4.

District	Antenatal attendance types by year								
	2005			2006			2007		
	Total	First	Average	Total	First	Average	Total	First	Average
Chililabombwe	14,894	3,535	4.2	11,667	3,312	3.5	13,615	3,494	3.9
Chingola	23,709	7,390	3.2	24,839	7,760	3.2	27,948	8,720	3.2
Kalulushi	12,705	3,662	3.5	11,558	3,912	3.0	11,950	3,995	3.0
Kitwe	53,110	16,144	3.3	53,110	17,236	3.1	62,670	19,113	3.3
Luanshya	18,755	4,903	3.8	17,426	5,151	3.4	16,768	5,750	2.9
Lufwanyama	10,950	3,454	3.2	10,500	3,498	3.0	11,291	38,100	3.0
Masaiti	18,797	5,021	3.7	17,863	5,473	3.3	16,703	5,749	2.9
Mpongwe	12,080	4,182	2.9	12,157	4,175	2.9	13,179	4,404	3.0
Mufulira	19,254	5,420	3.6	20,926	6,556	3.2	20,747	6,305	3.3
Ndola	54,638	17,139	3.3	52,619	16,712	3.1	54,049	18,393	2.9
Province	240,892	70860	3.4	232,665	73,785	3.2	248,920	79,723	3.1

Source HMIS

6.3.4 Supervised deliveries

This indicator measures the proportion of estimated deliveries in a catchment population of women who deliver at health facilities assisted by skilled health personnel or are assisted by tTBAs at home or in a health facility. The national target for supervised deliveries is 50 per cent for rural areas and 80 per cent for urban areas. If the proportion falls below 40 per cent in rural areas and 70 per cent in urban areas the delivery of this service should be investigated.

As shown in Table 6.12, the national threshold of 70 per cent was not attained in the province which is classified as urban in 2005, 2006 and 2007. The coverage was 63 per cent in 2005 and 2006 and then 65 per cent in 2007. Among the districts the threshold of 50 per cent was exceeded in the three rural districts Mpongwe, Masaiti and Lufwanyama. Coverage was 87 percent in 2005, 62 per cent in 2006 and 65 per cent in Lufwanyama in 2007. In the respective years, coverage was 62 per cent, 57 per cent and 51 per cent in Masaiti and 82 per cent 81 per cent and 75 per cent in Mpongwe. Except in Kitwe in 2007 when the coverage was 74 per cent, the threshold was not attained in any of the six urban districts.

The good coverage in the rural districts could be due to the increase in the number of tTBAs. In urban districts, the poor coverage could be due to lack of privacy during delivery in the open wards, lack of transport and finances for fares prevents expectant mothers not to travel to delivery centres especially at night.

District	Institutional deliveries			trained Traditional Birth Attendants (tTBAs)			Supervised deliveries		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
	Chililabombwe	36	41	41	16	12	16	51	53
Chingola	55	55	56	13	12	12	69	67	68

Kalulushi	43	47	48	13	16	10	56	63	58
Kitwe	65	66	72	2	2	2	67	68	74
Luanshya	43	43	41	19	16	19	62	59	60
Lufwanyama	47	25	25	39	37	40	87	62	65
Masaiti	26	24	21	36	33	30	62	57	51
Mpongwe	61	62	59	21	20	16	82	81	75
Mufulira	42	45	45	6	11	12	49	56	57
Ndola	57	57	60	4	4	5	61	61	65
Province	52	52	54	11	11	11	63	63	65

Source HMIS

6.3.5 Complicated deliveries

Any delivery not through the normal vertex is considered to be complicated. According to WHO standards, 15 per cent of all the deliveries should be by caesarean section in order to avoid potential risks in vertex deliveries.

Table 6.13 shows that the percentage of complicated births was higher in hospitals than in health facilities in all the districts. The total percentage of caesarean sections in the province was 14 per cent. The percentage was above the threshold of 15 per cent in Chililabombwe (18 per cent), Chingola (23 per cent), Kalulushi (28 per cent), Kitwe (19 Per cent) and Ndola (17 percent). Delays in decision making and taking action at all levels (family, community, health facility) can lead to complicated deliveries.

Table 6.13: Percentage of complicated deliveries in health centres and hospitals by district, 2007

District	Health Centre		Hospital		
	All deliveries	Percentage complicated	All deliveries	Percentage complicated	Percentage Caesarean
Chililabombwe	1,560	3.7	334	24.5	18
Chingola	4,986	4.5	1,380	29.5	23
Kalulushi	2,129	2.8	107	28.0	28
Kitwe	12,622	3.5	4,768	24.0	19
Luanshya	1,438	1.1	2,324	14.0	10
Lufwanyama	1,030	3.3	-	-	-
Masaiti	1,307	4.6	-	-	-
Mpongwe	678	3.5	1,743	13.0	4
Mufulira	375	0.8	3,889	12.0	10
Ndola	10,925	2.5	3,499	38.0	17
Total	37,050	3.2	18,044	22.4	14

Source HMIS

Note: There was no district hospital in Lufwanyama and Masaiti

6.3.6 Prevalence of still births

A stillbirth is a baby which dies before it is born or within an hour of delivery. The prevalence of still births is the proportion of still births out of the total births. This indicator gives an inclination of the effectiveness of management of labour as well as the level of sexually transmitted infections in pregnant women.

Table 6.14 presents data on the proportion of total births that were still borne by district in 2005, 2006 and 2007 in Copperbelt Province. The percentage of still births was 2.6 per cent in 2005, 3.7 per cent in 2006 and 2.3 per cent in 2007.

Table 6.14: Proportion of total births that were still borne by district, 2005-2007

District	2005			2006			2007		
	Still Births	Total Births	Percentage	Still Births	Total Births	Percentage	Still Births	Total Births	Percentage
Chililabombwe	43	1,550	2.8	39	1,830	2.1	53	1,913	2.7
Chingola	142	5,960	2.4	115	6,102	1.8	251	6,574	3.8
Kalulushi	34	1,958	1.7	33	2,101	1.5	47	2,250	2.0
Kitwe	495	14,982	3.3	316	15,556	2.0	367	17,556	2.0
Luanshya	79	3,695	2.1	81	3,847	2.1	77	3,791	2.0
Lufwanyama	32	1,455	2.1	26	982	2.6	20	1,044	1.9
Masaiti	13	1,473	0.8	17	1,426	1.1	62	1,342	4.6
Mpongwe	73	2,376	3.0	150	2,377	6.3	57	2,422	2.3
Mufulira	61	3,797	1.6	216	4,257	5.0	104	4,315	2.4
Ndola	375	13,105	2.8	972	14,217	6.8	283	14,490	1.9
Total	1,347	50,331	2.6	1,965	52,704	3.7	1,321	55,697	2.3

Source HMIS

In 2005 the percentage of still births was the highest in Kitwe at 3.3 per cent and the lowest in Masaiti at 0.8 per cent. In 2006, the percentage was the highest in Ndola at 6.8 per cent and the lowest was in Masaiti at 1.1 per cent. The highest was in Masaiti in 2007 at 4.8 per cent and the lowest was in Ndola and Lufwanyama at 1.9 per cent in each.

6.3.7 First postnatal attendance

After delivery, mothers should present themselves to a postnatal clinic conducted by health professionals for the first time within 6 weeks of delivery. The national target is 80 per cent and if the coverage falls below 70 per cent, the delivery of this service should be investigated. During the first postnatal visit the baby should also be given the BCG, OPV I, DPT-Hib+HepBI vaccine.

Table 6.15 shows that the coverage in the province was below the national target of 80 per cent. It was 55 per cent in 2005, 54 per cent in 2006 and 59 per cent in 2007. Among the districts, coverage in Chililabombwe reduced from 76 per cent in 2005, 61 per cent in 2006 and 57 per cent in 2007. It increased from 59 per cent in 2005 to 60 per cent 2006 and to 69 per cent in 2007.

District	2005			2006			2007		
	Contacts	Target	Percentage	Contacts	Target	Percentage	Contacts	Target	Percentage
Chililabombwe	3,238	4,284	76	2,696	4,428	61	2,614	4,592	57
Chingola	6,887	10,616	65	6,692	10,968	61	7,925	11,315	70
Kalulushi	3,024	4,513	67	3,046	4,488	68	3,183	4,620	69
Kitwe	11,088	22,750	49	11,337	23,418	48	12,076	24,064	50
Luanshya	4,190	8,573	49	4,058	8,854	46	3,555	9,119	39
Lufwanyama	1,806	3,078	59	1,808	3,955	46	1,950	4,068	48
Masaiti	2,359	5,759	41	2,751	5,924	46	2,440	6,084	40
Mpongwe	1,271	3,852	33	1,287	3,610	56	4,279	4,090	105
Mufulira	4,587	8,902	52	4,959	9,204	54	5,083	9,507	53
Ndola	13,476	22,720	59	14,057	23,396	60	16,693	24,044	69
Province	51,926	85,047	55	52,691	98,245	54	59,798	101,503	59

Source HMIS

Once mothers have delivered and they don't experience complications, they are unlikely to come to the health facility. That could explain the low coverage in all the districts. The other reason for the low coverage could be the long distance to the health facilities especially in the rural districts of Masaiti, Mpongwe and Lufwanyama. The other explanation could possibly be due to poor attitudes of health workers towards mothers such as shouting at them.

6.3.8 Maternal mortality

Maternal mortality ratio is the number of maternal deaths over the number of live births per 100,000 populations.

Table 6.16 shows that the maternal mortality ratio in health facilities was 192.4 in 2005, 292.5 in 2006 and 212.4 in 2007. The ratio also fluctuated in all the districts in these years. The highest ratio among the districts in 2005 was in Luanshya with 299.4 per 100000 live births. The lowest was in Chililabombwe (65.0 per 100000 live births). In 2006, Kitwe recorded the highest maternal mortality ratio of 431.6 while Chililabombwe recorded the lowest of 55.1. Mpongwe recorded the highest in 2007 at 330.4. The lowest was recorded in Lufwanyama at 97.1. Kalulushi did not record any maternal death in the period under review and Masaiti did not record any in 2005 and Lufwanyama in 2006.

Some of the contributing factors for high maternal mortality could be the few antenatal visits pregnant women make over the course of the pregnancy and delayed decision making in a home on whether to go to the facility early or not.

District	2005			2006			2007		
	Deaths	Deliveries	Rate	Deaths	Deliveries	Rate	Deaths	Deliveries	Rate
Chililabombwe	1	1538	65.0	1	1,815	55.1	3	1,894	158.4
Chingola	11	5891	186.7	13	6,004	216.5	12	6,366	188.5
Kalulushi	0	1956	0.0	0	2,096	0.0	0	2,236	0.0
Kitwe	32	14,827	215.8	67	15,523	431.6	50	17,390	287.5
Luanshya	11	3,674	299.4	4	3,815	104.8	7	3,762	186.1
Lufwanyama	2	1,455	137.5	0	980	0.0	1	1,030	97.1
Masaiti	0	1,473	0.0	1	1,423	70.3	2	1,307	153.0
Mpongwe	6	2,347	255.6	4	2,221	180.1	8	2,421	330.4
Mufulira	7	3,772	185.6	6	4,167	144.0	9	4,264	211.1
Ndola	26	12,964	200.6	54	13,244	407.7	25	14,424	173.3

Province	96	49,897	192.4	150	51,288	292.5	117	55,094	212.4
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Source HMIS

6.3.9 New family planning acceptors

A new family planning acceptor is a person who has never before used a modern family planning method. The new family planning acceptor rate is the proportion of new acceptors among the women of child bearing age (15- 49 years) in the catchment population. The numerator includes both women and men, while the denominator only includes women. This indicator does not include persons who are prescribed a contraceptive method by a private non-registered practitioner or who obtain a non-prescription contraceptive method from commercial outlets.

Table 6.17 shows that the rate of new family planning acceptors in the province was 171.0 per 1000 women of child bearing age in 2005. It was 165.2 in 2006 and 168.7 in 2007. Among the districts, the highest rate of new family planning acceptors was in Lufwanyama in all the three years although the rate reduced yearly from 460.3 in 2005 to 305.2 in 2006 and to 283.4 in 2007. The lowest rate in all the three years was in Mufulira. It was 84.4 in 2005, 71.1 in 2006 and 81.6 in 2007.

District	2005		2006		2007	
	Number	Rate	Number	Rate	Number	Rate
Chililabombwe	2,964	163.6	3,131	167.4	2,216	114.1
Chingola	7,413	165.0	6,842	147.4	8,119	169.6
Kalulushi	3,188	167.0	3,209	169.0	2,392	122.4
Kitwe	18,945	196.8	19,347	195.3	15,458	151.8
Luanshya	4,977	137.2	5,176	138.2	4,038	104.7
Lufwanyama	7,297	460.3	5,106	305.2	4,878	283.4
Masaiti	6,117	251.1	4,695	187.4	4,742	180.5
Mpongwe	2,324	128.7	2,705	159.9	4,327	225.3
Mufulira	3,177	84.4	2,770	71.1	3,283	81.6
Ndola	13,152	136.8	15,965	161.3	23,395	229.9
Total	69,554	171.0	68,946	165.2	72,848	168.7

Source HMIS

The explanation for the highest acceptance rate in Lufwanyama is due to the high number of community based distributors and availability of contraceptives. One other possible reason is that there are also many other sources offering family planning services in the urban districts which make it very difficult to measure this indicator.

6.4 Child health indicators

Child health indicators measure the provision of quality health care to under-fives. A little more than half of all the early childhood deaths take place during the first year of life. Most of these deaths can be prevented through vaccinations and health education. This section looks at three indicators of child health namely: *pregnancy protected against tetanus, fully immunised children and underweight prevalence.*

As shown in Table 6.18, the target of fully immunising 80 per cent of the children less than one year was achieved in the province in 2007 (84 per cent). It was not achieved in 2005 (78 per cent) and in 2006 (77 per cent). The target of less than 10 per cent BCG-Measles dropout rate was not achieved in 2005 (15 per cent), in 2006 (17 per cent) and in 2007 (10 per cent).

Table 6.18: Child health indicators, 2005-2007

Indicator	Period in years			Average
	2005	2006	2007	2005-2007
Fully immunised under 1 year (percentage)	78	77	84	80
BCG-Measles dropout rate (percentage)	15	17	10	14
Pregnancies with tetanus toxoid protection (percentage)	67	68	72	69
Under-weight prevalence (percentage)	10	8	5	8

Source: HMIS

The target of protecting 80 per cent of the pregnancies with tetanus toxoid was not achieved throughout the years from 2005 to 2007. The coverage percentage was 67 per cent in 2005, 68 per cent in 2006 and 72 per cent in 2007.

The target of less than 10 per cent underweight prevalence was attained in 2006 and 2007. The underweight prevalence reduced from 10 per cent in 2005 to 8 per cent in 2006 and to 5 per cent in 2007.

6.4.1 Fully immunisation coverage

Fully immunisation coverage refers to the number of children under the age of one who completed the recommended series of immunisations. Children are considered to be fully immunised when they have received a vaccination against tuberculosis (BCG), three doses each of the diphtheria, pertussis, tetanus/hepatitis B/Haemophilis influenza type (DPT-HepB-Hib), and polio vaccines, and a measles vaccination by the age of 12 months. The BCG vaccination should be given at birth or at the first clinical contact (not long after birth). The DPT-HepB-Hib and polio immunisations require three doses of the vaccines at approximately 6, 10 and 14 weeks of age; and measles should be given at or soon after reaching 9 months of age.

Table 6.19 shows that 78 per cent in 2005, 77 per cent in 2006 and 84 per cent in 2007 were fully immunised in the province. The national target of 80 per cent was achieved in 2007. However, the coverage in 2007 in Luanshya, Mufulira, Lufwanyama and Chililabombwe was below the national target of 80 per cent.

Table 6.19: Fully immunised children under 1 year by district, 2005-2007

District	2005			2006			2007		
	Immunised	Target	Percentage	Immunised	Target	Percentage	Immunised	Target	Percentage
Chililabombwe	2,821	3,295	86	2,852	3,407	84	2,767	3,533	78
Chingola	6,257	8,168	77	6,074	8,439	72	7,036	8,702	81
Kalulushi	3,380	3,472	97	3,373	3,453	98	3,211	3,555	90
Kitwe	12,687	17,502	72	12,910	18,014	72	14,779	18,512	80
Luanshya	4,965	6,597	75	4,663	6,811	68	5,850	7,012	83
Lufwanyama	3,157	2,730	116	2,970	3,042	98	2,285	3,129	73
Masaiti	3,892	4,431	88	4,311	4,555	95	3,829	4,681	82
Mpongwe	3,426	3,329	102	3,756	3,117	121	3,040	3,544	86
Mufulira	4,642	6,849	68	4,982	7,080	70	5,728	7,313	78
Ndola	12,687	17,478	73	12,904	17,998	72	17,306	18,498	94
Province	57,914	73,851	78	58,795	75,916	77	65,831	78,479	84

Source HMIS

6.4.2 BCG -Measles dropout rate

BCG–Measles dropout rate is the difference between the proportion of children less than one year of age who received BCG and measles vaccines.

Table 6.20 shows that from 2005 to 2007, the target dropout rate was not achieved in the province. It was 15 per cent in 2005, 17 per cent in 2006 and 10 per cent in 2007. Among the districts, the target rate was achieved in Lufwanyama (6 per cent in 2005 and 2 per cent in 2006), Masaiti (9 per cent in 2006), Mpongwe (4 per cent in 2006) and in Luanshya (4 per cent in 2007).

Table 6.20: Percentage distribution of BCG-measles dropout rate by district, 2005-2007

District	2005			2006			2007		
	Coverage		Dropout Rate	Coverage		Dropout Rate	Coverage		Dropout Rate
	BCG	Measles		BCG	Measles		BCG	Measles	
Chililabombwe	102	86	16	96	84	12	89	79	11
Chingola	103	79	23	97	75	22	105	83	20
Kalulushi	114	98	14	111	98	12	102	92	10
Kitwe	92	80	13	99	76	23	108	94	13
Luanshya	96	79	17	89	72	20	91	87	4
Lufwanyama	141	133	6	115	113	2	109	88	19
Masaiti	113	97	15	122	111	9	116	101	13
Mpongwe	136	116	15	138	133	4	112	91	19
Mufulira	78	69	11	81	71	12	89	80	11
Ndola	87	74	15	89	73	18	92	95	-3
Province	98	83	15	98	82	17	100	90	10

Source HMIS

6.4.3 Pregnancies protected against tetanus

Protection of a pregnancy against tetanus is important because it reduces the chances of neo-natal tetanus. The national target is to ensure that 80 per cent of all pregnancies are protected against tetanus. Pregnancies protected against tetanus are those which received two or more doses of tetanus toxoid.

Table 6.21: Pregnancies with tetanus toxoid protection, 2005-2007

District	2005			2006			2007		
	Immunised	Target	Percentage	Immunised	Target	Percentage	Immunised	Target	Percentage
Chililabombwe	3,326	4,449	75	3,064	4,598	67	3,231	4,769	68
Chingola	6,970	1,1024	63	7,079	11,393	62	8,113	11,748	69
Kalulushi	3,097	4,686	66	3,542	4,662	76	3,955	4,797	82
Kitwe	16,396	23,627	69	16,492	24,318	68	18,933	24,989	76
Luanshya	5,367	8,904	60	5,190	9,195	56	5,506	9,469	58
Lufwanyama	5,367	8,904	60	5,190	9,195	56	5,506	9,469	58
Masaiti	4,374	5,954	73	5,102	6,152	83	4,683	6,319	74
Mpongwe	3,062	3,999	77	3,088	3,749	82	3,697	4,248	87
Mufulira	5,238	9,245	57	6,349	9,560	66	5,923	9,869	60
Ndola	15,330	23,594	65	16,148	24,294	66	18,689	24,974	75
Province	66,398	98,680	67	69,253	102,026	68	75,543	105,406	72

Source HMIS

Table 6.21 shows that the target of protecting 80 per cent of the pregnancies with tetanus toxoid was not achieved in the province from 2005 to 2007. The coverage in the province was 67 per cent in 2005, 68 per cent in 2006 and 72 per cent in 2007. Among the districts, the target was only achieved in Masaiti (83 per cent in 2006), Mpongwe (82 per cent in 2006 and 87 per cent in 2007).

6.4.4 Under-five underweight prevalence

This is the percentage of under-fives whose weight is low for their age. The weight for these children is below the lower line on the child health card. The indicator can be used to assess food security, economic status and also nutrition value knowledge in homes. It can also signal the children at risk of severe protein energy malnutrition.

As shown in Table 6.22, the percentage of underweight children in the province reduced from 10 per cent in 2005 to 8 per cent in 2006 and to 5 per cent in 2007. There were also yearly reductions in the underweight prevalence in all the districts. The reductions could have been due to improved food security due to the reductions in poverty levels, fair rainfall pattern in the period under review and continued information, education and communication on nutrition in the province.

Table 6.22: Percentage of under five children underweight, 2005-2007

District	2005	2006	2007
Chililabombwe	8	5	3
Chingola	6	4	3
Kalulushi	6	5	3
Kitwe	6	5	4
Luanshya	7	6	4
Lufwanyama	13	10	6
Masaiti	18	12	9
Mpongwe	18	16	9
Mufulira	11	9	6
Ndola	11	8	7
Province	10	8	5

Source HMIS

Chapter 7: Environmental and Public Health

Environmental health is a subset of public health. It involves assessing, correcting, controlling and preventing those factors in the environment that can potentially adversely affect the health of the present and future generation. Environmental health is an outdoor activity.

There were two main sub-areas of environmental health in the province namely:

- Malaria control
- Water and Sanitation

7.1 Malaria control

There is a national programme to control malaria through a focus on prevention programmes to reduce the incidence rate of malaria. The programme involves creating community awareness about malaria and prevention by providing interventions such as insecticide treated bed nets, indoor residual spray and community health education programmes.

7.1.1 Insecticide treated nets

The Government of the Republic of Zambia and its many Roll Back Malaria Partners through the National Malaria Strategic Plan 2006-2011 are committed to increasing coverage of key malaria control interventions and reducing the burden of malaria throughout the country.

Insecticide treated bed nets are one of the most cost effective malaria control interventions which have been shown to significantly reduce the incidence rate of malaria in vulnerable groups such as the under-fives and pregnant women. The distribution of insecticide treated nets has mainly been targeted at the rural districts where other interventions such as indoor residual spraying are not considered to be ideal due to the type of walls on most of the housing units.

All the nets that were received in the province and districts were distributed in the communities. However, the number of nets received was not sufficient to meet the demand. The target number to be distributed in the province was 494,602 but 161,283 (33 per cent of the demand) were received.

The nets that were received were not equitably distributed. Table 7.1 shows that the distribution of insecticide treated bed nets was not properly targeted to the vulnerable groups of under-fives and pregnant women in the rural districts where they should have mainly been distributed. The coverage was much more than the target in the three rural districts of Lufwanyama, Masaiti and Mpongwe suggesting that the nets were being distributed to anybody. The 40,935 nets wasted in this way could have been given to deserving under-fives and pregnant women in the other districts.

District	Target Group** (a)	Number of insecticide treated nets		Coverage percentage (c/a)*100	Source of insecticide treated nets
		Received (b)	Distributed (c)		
Chililabombwe	22,428	3,000	3,000	13	SFH
Chingola	55,268	10,500	10,500	19	MACEPA
Kalulushi	22,565	8,000	8,000	35	MACEPA, SFH
Kitwe	117,546	6,000	6,000	5	MACEPA

Luanshya	44,548	9,500	9,500	21	MACEPA
Lufwanyama	19,869	29,999	29,999	196	MACEPA, SFH, CHAZ
Masaiti	27,548	32,884	32,884	119	SFH, CHAZ
Mpongwe	20,931	46,400	46,400	222	MACEPA, SFH, CHAZ
Mufulira	46,433	9,000	9,000	19	SFH
Ndola	117,465	6,000	6,000	5	MACEPA
Province	494,602	161,283	161,283	33	

Source: Environmental Health Reports 2007

*** Estimated pregnancies and under fives 2007*

7.1.2 Indoor residual house spraying

The national target is to spray 80 per cent of eligible households in order to contribute to the goal of reducing malaria morbidity and mortality by 75 percent within 5 years from 2005.

Table 7.2 shows the number of structures sprayed in each district from 2005 to 2007. In all the districts, the target of 80 per cent was exceeded in 2007. In 2005, the target was not attained in Chingola (76.2 per cent) and in Luanshya (63.2 per cent). In 2006, the target was not attained in Kalulushi (74.7 per cent), Luanshya (75.7 per cent) and Mufulira (78.8 per cent).

Table 7.2: Indoor residual house spraying 2005-2007

District	2005			2006			2007		
	Number of structures		Percentage of target sprayed	Number of structures		Percentage of target sprayed	Number of structures		Percentage of target sprayed
	Target	Sprayed		Target	Sprayed		Target	Sprayed	
Chililabombwe	11,214	11,189	99.8	13,069	11,595	88.7	6,579	6,242	94.9
Chingola	6,000	4,569	76.2	21,093	18,516	87.8	10,162	9,185	90.4
Kalulushi	7,230	6,151	85.1	14,381	10,741	74.7	16,241	15,087	92.9
Kitwe	40,000	35,061	87.7	77,205	71,333	92.4	62,000	63,691	102.7
Luanshya	13,635	8,624	63.2	28,205	21,355	75.7	25,384	23,618	93.0
Lufwanyama	District not eligible for IRHS in 2007								
Masaiti	District not eligible for IRHS in 2007								
Mpongwe	District not eligible for IRHS in 2007								
Mufulira	12,359	11,250	91.0	15,454	12,184	78.8	17,002	15,460	90.9
Ndola	33,874	30,425	89.8	66,616	59,771	89.7	72,548	65,640	90.5
Province	124,312	107,269	86.3	236,023	205,495	87.1	72,548	65,640	90.5

Source: Environmental Health Reports 2005-2007

7.2 Water quality monitoring

Monitoring the quality of water is one way of making sure that water is safe to drink and to prevent the transmission of water borne diseases.. The national target is for 100 per cent of all households to have access to safe drinking water.

Table 7.3 shows the number of water samples that were collected in each district and the samples that were found to be satisfactory. Most of the water samples were contaminated except in Chingola where 98 per cent were not contaminated. This situation made the province to be prone to water borne diseases and poisoning.

Table 7.3: Water quality monitoring, 2007

District	Number of water samples collected	Number of water samples with satisfactory results	Percentage satisfactory
Chililabombwe	81	20	25
Chingola	487	475	98
Kalulushi	95	24	25
Kitwe	30	8	27
Luanshya	66	39	59
Lufwanyama	66	27	41
Masaiti	60	10	17
Mpongwe	19	4	21
Mufulira	117	49	42
Ndola	81	24	30
Province	1102	701	64

Source: Environmental Health Reports

7.3 Management of medical waste

Medical waste from the health facilities can be hazardous to human beings, fauna and other flora. It is mandatory that it should be safely disposed. Incineration is an efficient and effective way of doing that. Each health facility is required to have an incinerator for the safe disposal of medical waste.

Table 7.4 shows the number of incinerators in each district in the province. There was a working incinerator in each district. In all, there were 42 incinerators in the province out of which 32 were working.

The highest number of incinerators was in Kitwe (18), followed by Chingola (5), Kalulushi (4) and 3 in Luanshya, Masaiti, Mpongwe and Ndola. There was only one incinerator in Lufwanyama. If it breakdowns, then it would not be possible to dispose medical waste in the district safely. There should be at least 2 incinerators in each district so that it is feasible to dispose medical waste safely all the time.

Table 7.4: Inventory of incinerators in each district

District	Total incinerators	Number. operational	Number non-operational	Remarks
Chililabombwe	2	2	0	
Chingola	5	3	2	Defective
Kalulushi	4	3	1	Dilapidated
Kitwe	18	18	0	
Luanshya	3	3	0	
Lufwanyama	1	1	0	
Masaiti	3	2	1	Dilapidated
Mpongwe	3	2	1	Defective
Mufulira	1	1	0	
Ndola	3	3	0	
Province	42	32	5	

Source: Environmental Health Reports, Health Facility Census 2004 and 2007

7.4 Public health inspections

There were a lot of public premises in the districts that did not meet the public health standard. As shown in Table 7.5, the proportion of public premises that were compliant in the whole province was 63 per cent in 2005, 65 per cent in 2006 and 67 per cent in 2007. Among the districts there was a yearly increase in the percentage of compliant premises in Chingola, Kalulushi, Kitwe, Mpongwe and Ndola.

Table 7.5: Public health inspections 2005-2007

District	2005			2006			2007		
	Number of premises		Percentage compliant	Number of premises		Percentage compliant	Number of premises		Percentage compliant
	Inspected	Compliant		Inspected	Compliant		Inspected	Compliant	
Chililabombwe	799	689	86	405	330	81	567	497	88
Chingola	381	184	48	167	82	49	788	366	46
Kalulushi	812	562	69	766	535	70	458	341	74
Kitwe	480	173	36	655	268	41	913	537	59
Luanshya	379	252	66	220	136	62	315	187	59
Lufwanyama	1,788	116	62	1,174	760	65	1,036	632	61
Masaiti	1,805	1,267	70	900	572	64	818	619	76
Mpongwe	163	94	58	200	134	67	298	203	68
Mufulira	336	149	44	161	102	63	570	318	56
Ndola	2,022	1,192	59	1,657	1,206	73	1,733	1,310	76
Province	8,965	5,678	63	6,305	4,125	65	7496	5,010	67

Source: HMIS

7.5 Food inspections

In order to protect the public from consuming unwholesome foods, statutory food inspections are vital. The Public Health Act mandates the environmental health staff to seize unwholesome foods. Table 7.5 shows the number of food inspections that were done in each district and the inspections in which foods were seized in 2005, 2006 and 2007.

In the whole province foods were seized in 13 per cent of the inspections carried out in 2005 and 2007 and in 15 per cent in 2006. Among the districts, a yearly reduction in seizures was only in Luanshya. There was a reduction in the percentage of inspections in which foods were seized from 43 in 2005 to 35 2006 and to 9 in 2007.

Table 7.6: Food inspections 2005-2007

District	2005			2006			2007		
	Number of food inspection		Percentage of seizures	Number of food inspection		Percentage of seizures	Number of food inspection		Percentage of seizures
	Inspected	Seizures		Inspected	Seizures		Inspected	Seizures	
Chililabombwe	184	37	20	353	141	40	294	39	13
Chingola	364	47	13	113	22	19	476	82	17
Kalulushi	482	79	16	247	77	31	221	37	17
Kitwe	125	27	22	369	74	20	301	95	32
Luanshya	151	65	43	54	19	35	134	12	9
Lufwanyama	575	25	4	518	9	2	380	14	4
Masaiti	951	38	4	1,009	22	2	756	52	7
Mpongwe	28	3	11	201	71	35	108	31	29
Mufulira	28	3	11	271	5	2	397	44	11
Ndola	909	119	13	1,051	174	79	947	134	14
Province	4,363	549	13	4,186	614	15	4,023	540	13

Source: Environmental Health Reports

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