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Ministry of Health

# **NORTHERN PROVINCE**

## **ANNUAL HEALTH STATISTICAL BULLETIN**

# **2007**

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## Preface

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The 2007 Northern Province Statistical bulletin is a reflection of the disease burden and service delivery statistics arising from the implementation of activities planned for 2007. The statistics in here are as much as possible on the major causes of visitations to health facilities and services. It has not been possible to reflect data on all dimensions prevailing in health services.

This has been compounded mostly as a result of the way data is stored for some programmes. HIV and AIDS data has not been spared from this lack of adequate data. However, a great effort has been put in place to come up with data that would reflect the greater picture of the happenings in the province.

As new programme areas have emerged over the years, the HMIS has not been able to meet all the data requirements. The revision of the HMIS started in 2006. It continued in 2007. This may well be the last bulletin to be compiled using the 1996-2008 HMIS as the revised version rolls into place.

Finally, I hope this report will provide insight into the progress of activities to the satisfaction of our esteemed readers.



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**Northern Province**

## Acknowledgements

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I embrace and cherish the support from you all.



Mr Charles C. Kachaka  
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## List of Abbreviations

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AIDS	Acquired Immunodeficiency Syndrome
BCG	Bacillus Calmette Guerin
CHW	Community Health Worker
DHMT	District Health Management Team
DHO	District Health Office
DHIO	District Health Information Officer
DPT-Hib + HepB	Diphtheria, Pertusis, 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
MMR	Maternal Mortality Ratio
NHSP	National Health Strategic Plan
OPV	Oral Polio Vaccine
PHO	Provincial Health Office
PMTCT	Prevention of Mother to Child Transmission
STI	Sexually Transmitted Infections
TBA	Traditional Birth Attendant
tTBA	trained Traditional Birth Attendant
ZDHS	Zambia Demographic and Health Survey

## Table of Contents

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Preface .....	i
Acknowledgements .....	ii
List of Abbreviations .....	iii
Table of Contents .....	iv
List of Tables .....	vi
List of Figures .....	viii
Glossary of Terms .....	ix
Executive Summary .....	xi
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 .....	2
Chapter 2: Disease burden .....	4
2.1 Major causes of illnesses .....	4
2.1.1 Malaria .....	4
2.1.2 Respiratory infections (non-pneumonia) .....	6
2.1.3 Respiratory infections (pneumonia) .....	8
2.1.4 Diarrhoea non-bloody .....	11
2.1.5 Diarrhoea-bloody (suspected dysentery) .....	13
2.1.6 Trauma (accidents, injuries, wounds, burns) .....	14
2.1.7 Eye infections .....	16
2.2 Patient case load .....	18
2.3 Under-five case fatality rates .....	20
2.4 Selected notifiable diseases .....	21
2.4.1 Acute flaccid paralysis .....	21
2.4.2 Acute flaccid paralysis .....	22
2.4.3 Measles .....	23
Chapter 3: HIV/AIDS, Tuberculosis, and Sexually Transmitted Infections .....	26
3.1 Counselling and testing .....	26
3.2 Prevention of HIV transmission from mothers to their infants .....	27
3.2.1 Antenatal HIV testing .....	27
3.2.2 Antiretroviral prophylaxis .....	28
3.3 Antiretroviral therapy .....	30
3.3.1 Ever-enrolled on antiretroviral therapy .....	30
3.3.2 Currently on antiretroviral therapy by end year .....	31
3.4 Tuberculosis .....	31
3.4.1 Tuberculosis notifications from 2005 to 2007 .....	31
3.4.2 Tuberculosis cure, completion and success rate .....	32
3.5 Sexually transmitted infections .....	34
Chapter 4: Human resources .....	36
4.1 Number of medical personnel by district .....	36
Chapter 5: Health services delivery indicators .....	37
5.1 Health facility utilisation .....	37
5.1.1 Outpatient department utilisation .....	37
5.1.2 Health centre per capita attendance .....	38
5.1.3 Health centres and hospitals bed occupancy rate .....	38

5.1.4	Hospital outpatient department utilisation .....	39
5.1.5	Hospital outpatient department first attendances by-pass percentage.....	41
5.1.6	In-patient turnover rate .....	41
5.1.7	Average length of stay in the district hospitals .....	42
5.2	Maternal health and family planning .....	43
5.2.1	Summary of maternal health indicators.....	43
5.2.2	Antenatal care.....	43
5.2.3	Average antenatal visit .....	45
5.2.4	Supervised deliveries.....	45
5.2.5	Complicated deliveries .....	46
5.2.6	Prevalence of still births.....	47
5.2.7	First postnatal attendance .....	49
5.2.8	Institutional maternal mortality.....	49
5.3	Child health indicators.....	50
5.3.1	Fully immunisation coverage.....	50
5.3.2	BCG-Measles dropout rate .....	52
5.3.3	Pregnancies protected against tetanus .....	53
5.3.4	Underweight prevalence .....	54
Chapter 6:	Environmental and Public Health.....	55
6.1	Malaria control.....	55
6.1.1	Insecticide treated nets.....	55
6.2	Water quality monitoring.....	56
6.3	Management of medical waste.....	56
References	.....	57

## List of Tables

---

Table 1.1: Distribution of the population by districts and selected age groups.....	2
Table 2.1: Ten Major causes of visitations to health facilities, Northern Province,2007....	4
Table 2.2: Malaria incidence and case fatality rates by age group in Northern Province ...	6
Table 2.3: Respiratory Infections (non-pneumonia) incidence per 1,000 population .....	6
Table 2.4: Respiratory Infections: Pneumonia incidence and case fatality rates .....	10
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 .....	13
Table 2.7: Trauma incidence and case fatality rates by age group, 2007 .....	14
Table 2.8: Eye infection incidence rate by age group and district, 2007 .....	18
Table 2.9: Proportion of children under-five years case load by district, 2005-2007 .....	20
Table 2.10: Under-five case fatality rate by district, 2005-2007 .....	20
Table 2.11: Acute flaccid paralysis surveillance performance indicators, 2007 .....	21
Table 2.12: Measles (suspected) cases reported to health facilities by age and district .	23
Table 3.1: Number of clients attending counselling and testing and the percentage tested for HIV by district from 2005 to 2007 .....	26
Table 3.2: Proportion of clients that took an HIV test and were found to have HIV by district and year, 2005-2007 .....	27
Table 3.3: Proportion of women starting ANC who take an HIV test by district, 2007. ....	27
Table 3.4: Proportion of women testing HIV positive by district, 2007.....	28
Table 3.5: Proportion of expected infants exposed to HIV given antiretroviral prophylaxis by district, 2007. ....	28
Table 3.6: Cumulative number of patients ever enrolled on antiretroviral therapy by district, 2006-2007. ....	30
Table 3.7: Tuberculosis notifications by type, district and sex, 2007.....	32
Table 3.8: Tuberculosis cure rate by year from 2005 to 2007 .....	34
Table 3.9: Sexually transmitted infection Incidence, 2007.....	34
Table 4.1: Number of health staff by district, December 2007 .....	36
Table 5.1: Trends of selected service delivery indicators by year in Northern Province....	37
Table 5.2: Hospital outpatient department utilisation rate in Northern Province .....	37
Table 5.3: Health centre per capita attendances Northern Province, 2005-2007.....	38
Table 5.4: Bed occupancy rate per district and Year, 2005-2007 .....	39
Table 5.5: Hospital outpatient department utilisation .....	39
Table 5.6: Hospital outpatient department first attendance percentage by-pass .....	41
Table 5.7: Health centre and hospital inpatient turnover rate per district and year .....	42
Table 5.8: Hospital average length of stay by district, 2005 -2007 .....	42
Table 5.9: Maternal Health Indicators, Northern Province, 2005-2007 .....	43
Table 5.10: First antenatal attendance coverage, 2005-2007 .....	43
Table 5.11: Average antenatal visit, 2005-2007 .....	45
Table 5.12: Percentage of supervised deliveries by place of delivery and district .....	46
Table 5.13: Percentage of complicated deliveries in health centres and district hospitals by district, 2007 .....	47
Table 5.14: Proportion of total births in health facilities that were still borne.....	47
Table 5.15: First postnatal visits and target by district, 2005-2007 .....	49
Table 5.16: Trends of maternal mortality ratios per 100000 deliveries in health facilities, 2005-2007 .....	49
Table 5.17: Child health indicators, 2005-2007 .....	50
Table 5.18: Fully immunised children under 1 year by district, 2005-2007 .....	52
Table 5.19: Percent distribution of BCG -measles dropout rate by district, 2005-2007 ..	53
Table 5.20: Pregnancies with tetanus toxoid protection, 2005-2007 .....	53
Table 5.21: Percentage of under five children who were underweight by district.....	54
Table 6.1: Distribution of ITNs to pregnant women and children Under-five .....	55

Table 6.2: Water quality monitoring, 2007.....	56
Table 6.3: Inventory of incinerators in each district by the end of 2007 .....	56

## List of Figures

---

Figure 2.1: Total incidence rate of respiratory infections: non-pneumonia, 2005-2007 ....	8
Figure 2.2: Total incidence rate of respiratory infections-pneumonia, 2005-2007.....	10
Figure 2.3: Total incidence rate of diarrhoea: non-bloody, 2005-2007.....	13
Figure 2.4: Total incidence rate of suspected dysentery, 2005-2007.....	14
Figure 2.5: Total incidence rate of trauma, 2005-2007.....	16
Figure 2.6: Incidence of eye infections.....	18
Figure 2.7: Trends of non-acute flaccid paralysis rate, 2005-2007.....	22
Figure 2.8: Stool adequacy rate, 2005-2007.....	23
Figure 3.1: Antiretroviral prophylaxis for the prevention of HIV transmission from mothers to infants.....	30
Figure 3.2: Total number on antiretroviral therapy at the end of 2006 and 2007.....	31
Figure 3.3: Incidence of sexually transmitted infections.....	35

## Glossary of Terms

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**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:** 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

**Full 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:** The rate of mortality associated with pregnancy and child bearing expressed per 100000 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 PNC 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 Infection:** 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 TB 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

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## Introduction

This statistical bulletin provides an overview of the major diseases, human resources for health, and the availability of drugs in the health facilities as well as selected health service delivery indicators.

## Disease burden

- **Malaria**

Malaria was the leading cause of morbidity in the province. The incidence rate of malaria in 2007 was almost five times higher among the under-fives (1046.4 per 1000 population) than among the older age group (212.7 per 1000 age group)

Among the districts Chilubi recorded the highest total incidence of malaria (544.1 per 1000 population) seconded by Mungwi (539.0 per 1000 population). Malaria incidence was higher among the under-fives than among the older population in all the districts. Despite recording the lowest incidence, Nakonde recorded the highest case fatality rate in the Province with a total of 26.6 per 1000 admissions followed by Mungwi (25.1). In six out of the twelve districts, the case fatality rate was higher among the under-fives than among the older population. These were Chilubi, Chinsali, Kaputa, Luwingu, Mbala and Mungwi.

- **Respiratory infections (non-pneumonia)**

Conditions of the respiratory system are among the top causes of health facility visitation in Northern Province. The incidence rate in the province was 181.8 per 1000 population. It was about four times higher among the under-fives (458.9 per 1000 population) than among the older population (113.2 per 1000 population). Among the districts, Mpika recorded the highest total incidence rate (287.7) while Kaputa recorded the lowest with 133.9 per 1000 population. The incidence rate in all the districts was higher among the under-fives than among the older population. The incidence rate of respiratory infections non-pneumonia in the province increased from 124.7 in 2005 to 147.8 in 2006 and to 181.8 in 2007.

The incidence rate also increased annually in Chilubi, Kaputa, Kasama, Mpika, Mporokoso, Mpulungu, Mungwi and Nakonde districts. The incidence rate increased in Chilubi from 147.0 in 2005 to 172.5 in 2006 and to 245.5 in 2007. In Kaputa it increased from 69.3 in 2005 to 104.1 in 2006 and to 133.9 in 2007. The increase in Kasama was from 79.9 in 2005 to 152.3 in 2006 and to 157.5 in 2007. In Mpika, it increased from 176.1 in 2005 to 207.3 in 2006 and to 287.7 in 2007. In Mporokoso, it increased from 76.9 in 2005 to 104.5 in 2006 and to 144.4 in 2007. In Mpulungu, it increased from 98.4 in 2005 to 157.4 in 2006 and to 226.4 in 2007. In Mungwi it increased from 133.7 to 163.6 and to 245.6. In Nakonde, it increased from 78.6 to 94.7 and to 106.4.

- **Respiratory infections (pneumonia)**

Pneumonia was the fifth leading causes of illness in the province after malaria, respiratory infections non pneumonia, diarrhoea non-bloody and eye infections.

The incidence rate in the province was more than five times higher among the under-fives (94.7 per 1000 population) than among the older age groups (16.4 per 1000 population). This was also the case in all the districts. Among the districts, the highest total incidence rate was in Kasama (80.0) followed by Mungwi (40.5). The lowest was in Mporokoso (6.4)

The case fatality rate was also higher among the under-fives (30.9 per 1000 hospital admissions) than among the older population (23.3 per 1000 hospital admissions). Among the districts, Chinsali, Isoka, Luwingu, Mpika, Mpulungu, Mungwi and Nakonde recorded high case fatality rates among under-fives than among the older population while in while Chilubi, Kaputa, Kasama, Mbala and Mporokoso case fatality rates were lower among the under-fives than among the older age group.

The total incidence rate of pneumonia decreased yearly from 2005 to 2006 and to 2007 in Chilubi, Isoka, Kaputa, Mporokoso and Mungwi while it increased yearly in Chinsali and in Nakonde. The respective rates in 2005, 2006 and 2007 were 35.9, 34.8 and 30.1 in Chilubi; 37.1, 34.6 and 30.3 in Isoka; 13.5, 9.6 and 8.4 in Kaputa; 11.5, 8.1 and 6.4 in Mporokoso; and 42.1, 41.8 and 40.5 in Mungwi. In Chinsali, the total incidence rate was 20.3 in 2005, 21.1 in 2006 and 26.3 in 2007 while in Nakonde, the rate was 11.1 in 2005, 12.3 in 2006 and 19.3 in 2007.

- **Diarrhoea non-bloody**

Diarrhoea non-blood was the third leading cause of illnesses attended to at health facilities in the province after malaria and respiratory infections non-pneumonia.

The total incidence rate for diarrhoea (non-bloody) was 67.2 per 1000 population. The incidence rate was more than six times higher among the under-fives (206.1 per 1000 population) than among the older population (27.2 per 1000 population). Among the districts, the highest total incidence rate was in Mpulungu, (126.1), Chilubi (125.5) and Mbala (88.8). The lowest was in Chinsali (36.9). The incidence rate was higher among the under-fives than among the older population in all the districts.

The total case fatality rate was the highest in Kasama (57.8 per 1000 admissions) followed by Mungwi (43.6 per 1000 admissions). Given that Kasama is only one of the two municipal councils in the province, the other being Mbala, this should not have been the case because the municipal council should be better capable at providing clean portable water than the district councils which manage the other districts with lower total incidence rates. 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.

The incidence rate of diarrhoea non-bloody in the province increased from 49.7 in 2005 to 57.6 in 2006 and to 62.7 in 2007. The incidence rate also increased annually in Chilubi, Luwingu, Mbala, Mporokoso, Mpulungu, Mungwi and Nakonde districts. The incidence rate reduced annually in Chinsali from 46.2 in 2005 to 41.5 in 2006 and to 36.9 in 2007. In Chilubi it increased from 98.1 in 2005 to 118.1 in 2006 and to 125.5 in 2007. The increase in Luwingu was from 38.4 in 2005 to 48.7 in 2006 and to 63.8 in 2007. In Mbala, it increased from 58.3 in 2005 to 66.1 in 2006 and to 88.8 in 2007. In Mporokoso, it increased from 28.9 in 2005 to 30.1 in 2006 and to 37.0 in 2007. In Mpulungu, it increased from 56.3 in 2005 by more than 100 per cent to 113.5 in 2006 and to 126.1 in 2007. In Mungwi it increased from 34.5 to 43.0 and to 46.7. In Nakonde, it increased from 25.5 to 35.4 and to 45.2.

- **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.

- **Diarrhoea bloody (suspected dysentery)**

Diarrhoea-bloody (suspected dysentery) is characterised by the passing of loose stool for three or more times per day which has visible blood.

The incidence rate of diarrhoea bloody (suspected dysentery) in the province in 2007 was higher among the under-fives at 11.0 per 1000 population than among the older population at 4.5 per 1000 population. The total incidence rate was 5.8 per 1000 population.

Among the districts, the total incidence rate was the highest in Kaputa and Mpulungu at 8.5 per 1000 population followed by Mpika at 8.3 per 1000 population and Isoka at 6.9 per 1000 population. The lowest was in Mporokoso at 2.9 per 1000 population.

The incidence of dysentery per 1000 population in the province increased yearly from 4.3 in 2005 to 5.0 in 2006 and to 5.8 in 2007.

- **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. 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.

In 2007, 17 acute flaccid paralysis cases were detected against a target of 17. A 100 per cent stool adequacy rate above the minimum of 80 per cent was also achieved. Also, an annualised non acute flaccid paralysis rate above the threshold of 1 of 2.1 per 100000 children aged less than 15 years was achieved.

- **Measles surveillance**

Measles is a notifiable disease and a single case should be investigated with follow up at all levels of service delivery system. Measles is any condition presenting with fever, generalised rash plus any of the following: coryza, cough and conjunctivitis. Since there are other causes of generalised rash and fever, a blood sample (serum) of every single case or up to five samples in case of a cluster of cases, should be investigated to rule out measles. The serum samples in Zambia can only be examined at the University Teaching Hospital virology laboratory.

The total under-five incidence rate of measles in the province in 2007 (2.5 per 1000 population) was more than 12 times higher than in 2006 (0.2 per 1000 population) and more than 8 times higher than in 2005 (0.3 per 1000).

In 2007, the highest number of cases among the under-fives in the districts was reported in Chinsali (160) followed by Mbala (121) and Nakonde (119). The lowest numbers of cases were reported in Mpika and Mporokoso (4 in each).

According to WHO standards the positivity rate is the number of positive cases out of those investigated. The provincial positivity rate for the period was 71 per cent. Among the districts the lowest was in Mpika with 0 per cent of the 9 cases investigated. This would imply that what was investigated in the district were not really measles cases.

- **Tuberculosis notifications**

The number of tuberculosis notifications was 2113 in 2007. There were 771 sputum negative cases and 763 sputum positive cases. Typically, there should be more sputum positive than sputum negative cases. However, most of the sputum smear cases were negative because of HIV co-infection. Most of the notifications were for males (1187) than for females (926).

- **Number of patients ever on antiretroviral therapy**

The cumulative number of patients who have ever been on antiretroviral therapy including those who died, still on therapy, transferred out, lost to follow-up, or stopped the therapy was 8474. It does not include those who started the therapy elsewhere and have transferred to the current health facility.

There were more females than males that had ever been enrolled on antiretroviral therapy by the end of 2007. The number of females that were ever enrolled on antiretroviral therapy was 4969 and the number of males was 3,595.

## **Health service delivery indicators**

Health facility utilisation is defined as a sum of first attendances and admissions in a given period of time per population. This indicator is influenced by quality of services offered by the health facilities. Utilisation of health facilities in Northern Province increased in the period 2005 to 2007. The increase in population is the most important factor behind this trend. The removal of user fees could also have improved the access to public health facilities.

- **Health centre utilisation**
  - **Health centre per capita attendance**

Outpatient department utilisation is defined as the average number of outpatient department attendances at health facilities by the catchment population in a period. 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 attendances. If the health facility outpatient departments are under-utilised, measures to improve the quality of service and accessibility by the general public need to be taken.

At provincial level, per capita attendance increased from 0.98 in 2005 to 1.02 in 2006. It was also 1.02 in 2007. In the three years, the hospital per capita attendance was higher among the under-fives than among the older population in all the districts. In the province it was 1.65 among the under-fives and 0.31 in the older population in 2005. The respective rates in 2006 were 1.63 and 0.41 and in 2007, 1.63 and 0.41.

- **Bed occupancy rate**

The bed occupancy rate is defined as the average percentage of available beds occupied during a given period of time. Ideally, the bed occupancy rate should not be less than 80 per cent.

The total provincial bed occupancy rate for health centres and district hospitals dropped from 33 per cent in 2005 to 31 per cent in 2007. The bed occupancy rate was the highest in Luwingu (54 per cent) in 2005. It was the highest in 2006 (56 per cent) and 2007 (57 per cent) in Isoka. Mungwi recorded the lowest in 2005 (20 per cent) and Nakonde in 2006 (21 per cent) and in 2007 (23 per cent).

- **Maternal health**

Maternal health issues are receiving significant recognition as major public health concern. Maternal health provides a corner stone for child survival and wellbeing. Risks in pregnancy both to the mother and the unborn child need to be identified early so that proper interventions are put in place. Efforts to achieve this can be done during pregnancy, delivery and after delivery.

- **Antenatal visits**

This is the average number of visits to the facility by each pregnant mother before she delivers. The national target is 4 per pregnancy and if the indicator is below 3, investigations should be done.

Table 5.11 shows that the average number of antenatal visits was 2.8 in 2005, 2006 and 2007. Among the districts, Nakonde recorded the highest average number of antenatal visits in 2005 (3.3). In 2006 and 2007, the highest number was in Mungwi (3.4 and 3.2 respectively).

- **Supervised deliveries**

Supervised deliveries are those done by trained health personnel in health facilities or are assisted by tTBAs. The percentage of supervised deliveries in the province reduced from 64 per cent in 2005 to 58 per cent in 2006 and 2007.

Among the districts, the highest percentage of supervised deliveries in 2005 was in Mbala (76 per cent). In 2006 and 2007, it was in Isoka (74 per cent in both years). The district that recorded the lowest percentage of supervised deliveries in 2005 and 2007 was Chinsali (52 and 37 per cent respectively). The lowest in 2006 was in (43 per cent). Of all the deliveries conducted in 2005, 46.9 per cent were attended to by tTBAs and 63.1 per cent by health providers at a health facility. The percentage of deliveries attended to by tTBAs reduced to 46.7 per cent and 43.1 per cent in 2006 and 2007 respectively.

- **Caesarean section rate**

According to WHO standards, 15 per cent of all deliveries must be delivered by caesarean section. The aim is to minimise complications during delivery.

The percentage of caesarean births in all the district hospitals in the province was 10 per cent. Among the districts, the highest percentage of caesarean births in district hospitals was in Mbala (21 per cent) and the lowest in Mpika (6 per cent).

- **Stillbirths**

A still birth is a delivery of a dead foetus after 28 weeks of gestation. The foetus may be fresh or macerated. At the end of the pregnancy, the patient may be in labour with progress of cervical dilation less than 1 cm per hour.

There was an increase in the number of still births in the province from 924 in 2005 to 1195 in 2006 and to 1386 in 2007. The percentage of still births in the province in 2005, 2006 and 2007 was 34, 31 and 33 respectively. Among the districts in these years, the highest percentage of still births was in Kasama. The percentage of still births in Kasama was 45 in 2005, 38 in 2006 and 45 in 2007. The proportion of still births was

also 38 in 2006 in Mbala. The lowest percentage of still births was in Chilubi. The respective percentages were 20, 20 and 19.

- **Institutional maternal mortality ratio**

This is the death of a woman during pregnancy or within 42 days after delivery from bleeding and other delivery complications.

The number of recorded maternal deaths in health facilities in the province reduced from 88 in 2005 to 62 in 2007. The highest maternal mortality ratios in the health facilities in 2005 per 100000 deliveries among the districts were in Luwingu (267.8), Chinsali (177.0) and Kasama (172.7). In 2006, it was in Chinsali (255.8), Luwingu (219.8), and Chilubi (207.9). The highest ratios in 2007 were in Nakonde (119.5), Chilubi (111.5) and Mbala (107.7).

- **Postnatal attendances**

This refers to the woman attending postnatal care for the first time within 6 days and 6 weeks of delivery. This indicator looks at improving the health and well being of both the mother and the baby. Due to the circumstances, the target for this indicator was higher in urban than in rural areas, 80 per cent and 40 per cent respectively.

There was an increase in the first postnatal attendances in the province. By 2007, the coverage was 50 per cent of the target in the province. In 2005 and 2006, it was 46 per cent of the target. Among the districts, the lowest attained was in Chilubi (28 per cent) and the highest in Kaputa (68 per cent).

- **Pregnancies protected against tetanus**

This indicator deteriorated in the period under review. The coverage of the target in the province reduced from 87 per cent in 2005 to 83 per cent in 2006 and to 63 per cent in 2007. Among the districts in 2005, the highest coverage of 114 per cent was in Kaputa while the lowest of 64 per cent was in Mporokoso. Coverage in 2007 was below 80 per cent in all the districts. In Mporokoso and Mpulungu, it was 35 per cent and 38 per cent respectively.

- **Child health**

- **Full immunisations**

Full 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. The national target for the indicator is 80 per cent and the threshold is 70 per cent.

Fully immunised under-ones in the province were 73 per cent in 2005, 85 per cent in 2006 and 80 per cent in 2007. That was above the national threshold target of 70 per cent. Among the districts, the coverage was above the threshold in 2007 in all the districts except in Chilubi where the coverage was 66 per cent. This was also the case in 2006 when the coverage in Chilubi was 58 per cent. In 2005, coverage was below the threshold in Chilubi (62 per cent, Chinsali 69 per cent, Mpika 64 per cent, Luwingu 66 per cent, Kasama 68 per cent, Mporokoso 66 per cent and Nakonde 68 per cent).

#### o **Growth monitoring**

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.

The average percentage of underweight children seen in child health clinics in the province reduced from 22 per cent in 2005 to 18 per cent in 2006 and to 12 per cent in 2007. Among the districts, the percentage of underweight children seen in child health clinics also reduced annually in all the districts except in Mpika where the percentage was 21 in 2005, 16 in 2006 and 24 in 2007. The highest percentage of underweight children seen in the period 2005-2007 was in 2005 in Luwingu (31 per cent).

# Chapter 1: Background

This is the first health sector statistical bulletin to be published for Northern Province. In 1998, a new Health Management Information System (HMIS) was installed in line with the health sector reforms. Most of the data used in this bulletin is from the HMIS. This statistical bulletin will provide information on the disease burden in Northern Province, showing trends in the incidence of the top 10 causes of morbidity and some selected diseases of public health importance. Progress on service delivery will be shown in selected maternal and child health indicators and preventive services such as VCT, PMTCT and antiretroviral therapy. Selected indicators on health inputs such as human resources and drugs are also presented.

## 1.1 Geography and Administration

Northern Province, with a total area of 147,286 square kilometres, is the largest of Zambia's 9 provinces. It covers approximately one fifth of Zambia in land area. It shares borders with three provinces namely; Central, Eastern and Luapula and three countries as well - the Democratic Republic of Congo in the north, Tanzania in the north-east, and Malawi in the east. Notable land marks in the province include Lake Tanganyika, Lake Bangweulu and its wetlands, Lake Mweru Wantipa, and a number of waterfalls including Lumangwe, Kabweleume, Chishimba and Kalambo.

There are twelve districts in the province. Kasama is the provincial capital. Other districts are Chilubi, Isoka, Chinsali, Kaputa, Luwingu, Mbala, Mporokoso, Mpika, Mpulungu, Mungwi and Nakonde. All the districts have one or two communication systems in place. Mbala, Mpulungu, Nakonde, Isoka, Chinsali, Mungwi and Mpika are linked by an all weather road. Mporokoso, Kaputa, and Luwingu are connected by a gravel road while Chilubi is connected by both gravel road and water transport.

## 1.2 Demographic Information

According to the 2000 Census projected population, Northern Province the population of Northern Province was 1,654,508 in 2007. This represented an increase of 728,643 from 925,865 in 1990. The annual population growth rate was 4.3 per cent, which was the highest among all the 9 provinces. Of the total population, 50.5 per cent were female and 49.5 per cent were male. Children below the age of 15 made up 49.5 per cent of the population in the province.

Kasama, the provincial capital, was home to 12.8 per cent of the population, which was the highest of the 12 districts. Next is Mbala with 11.5 per cent, followed by Nakonde with 10.9 per cent. The annual population growth rate was the highest in Nakonde at 11.9 per cent, seconded by Mungwi with 6.6 per cent and then Mporokoso with 6.0 per cent, while Luwingu has the lowest with 1.5 per cent. The rest are as follows: Kaputa 5.0 per cent, Mpulungu 4.1 per cent, Mbala 3.8 per cent, Chinsali and Kasama 3.7 per cent each, Chilubi 3.0 per cent, Isoka 2.0 per cent and Mpika 1.7 per cent. The population is predominantly rural, with more people living in the rural areas than in the urban centres.

The rapid annual population growth is attributed to various factors. For instance, the high growth rate in Nakonde is due to the free cross-border trade between Zambia and Tanzania, which has triggered rapid settlement in the district. The high economic potential of the

Chambeshi River valley, especially in agriculture, explains the rapid growth rate in Mungwi, while the 6.0 per cent for Mporokoso is attributed to the influx of refugees from the Democratic Republic of Congo.

**Table 1.1: Distribution of the population by districts and selected age groups**

District	Populations									
	Children			Women 15-49 years	Adults 15Years+	Total Males	Total Females	Expected		
	0-11 months	> 5 years	5-14 years					Pregnancies	Deliveries	Births
Chilubi	3,451	17,254		20,446		42,705	43,567	4,659	4,486	4,270
Chinsali	6,556	32,780		38,845		81,131	82,771	8,851	8,523	8,113
Isoka	4,920	24,599		29,150		60,883	62,112	6,642	6,396	6,088
Kaputa	4,278	21,390		25,347		52,941	54,010	5,775	5,561	5,294
Kasama	8,466	42,332		50,164		104,772	106,889	11,430	11,006	10,477
Luwingu	3,978	19,889		23,568		49,224	50,219	5,370	5,171	4,922
Mbala	7,806	39,028		46,248		96,593	98,545	10,537	10,147	9,659
Mpika	6,782	33,909		40,182		83,924	85,620	9,155	8,816	8,392
Mporokoso	4,813	24,064		28,516		59,559	60,763	6,497	6,257	5,956
Mpulungu	3,546	17,730		21,010		43,881	44,767	4,787	4,610	4,388
Mungwi	5,792	28,959		34,316		71,674	73,121	7,819	7,529	7,167
Nakonde	5,793	28,967		34,326		71,694	73,143	7,821	7,532	7,169
<b>Province</b>	<b>66,181</b>	<b>330,901</b>		<b>392,118</b>		<b>818,981</b>	<b>835,527</b>	<b>89,343</b>	<b>86,034</b>	<b>81,895</b>

**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

The facility based data in this report was collected in the HMIS from all the public health institutions. Other data sources from these institutions were the Antiretroviral Information System (ARTIS), voluntary counselling and testing, PMTCT, IDSR and the human resources database. Other sources of data were the non-governmental organisations partners such as the Zambia Prevention Care and Treatment (ZPCT) with presence in 10 districts and 2 General Hospitals. There was no data from the private sector. However the significance of the lack of data from the private sector cannot change the extent of service and disease burden in the province estimated with data from the HMIS.

### 1.4 Scope of analysis

Information included in this report is for the period 2005 to 2007. The district is the unit of analysis to which all public health facilities in the district have contributed. District health offices are encouraged to start compiling district health statistical reports so that detailed health facility data is analysed. Attempts are made as far as possible to provide reasons for the patterns shown by the indicators.

### 1.5 Limitations of this report

The current scenario is that the DHIO maintains the main HMIS while the ARTIS, voluntary counselling and testing, PMTCT and tuberculosis databases are maintained by units not directly under the control of the DHIO. This is a major cause of inconsistencies in data

because the timeliness and reference points of data compilation across the units are different. Limitations in facility staff in some cases contribute to poor quality reports. Private health facilities which are on the increase do not compile data for the HMIS.

## Chapter 2: Disease burden

Disease burden is measured by incidence and case fatality rate. Disease incidence is the number of new cases that occur during a specified period in a specified population, while case fatality rate is the number of deaths from a disease or condition out of the reported admissions to a health facility. Case fatality rate measures the quality of case management while incidence indicate rate measures the efficacy of prevention measures and changes in disease pattern including emergence of drug resistance. Table 2.1 shows the top 10 major causes of illnesses in health facilities in Northern Province among the under-fives and the older population.

### 2.1 Major causes of illnesses

Table 2.1 shows that malaria was the leading cause of morbidity in the province. Respiratory infections non-pneumonia was the second leading cause of attendances at health facilities. The incidence rate per 1000 population in 2007 was 378.1 for malaria and 181.8 for respiratory infections non-pneumonia. Apart from digestive system non-infectious and muscular skeletal diseases, the incidence rate of the ten major causes of morbidity in patients attending health facilities were higher among the under-fives than among the older age groups.

**Table 2.1: Ten Major causes of visitations to health facilities, Northern Province,2007**

Disease	Incidence per 1,000 population		
	Under-five	5 years and above	Total
Malaria	1046.4	212.7	378.1
Respiratory infections non-pneumonia	458.9	113.2	181.8
Diarrhoea non bloody	206.1	27.2	62.7
Eye infection	110.2	14.7	33.6
Pneumonia	94.7	16.4	31.9
Trauma	32.3	27.7	28.6
Skin Infections	67.7	17.7	27.5
Digestive system non infectious	14.2	17.0	16.5
Ear, Nose and Throat	32.9	11.2	15.5
Muscular skeletal	0.9	16.4	13.3

Source: HMIS

#### 2.1.1 Malaria

Table 2.2 shows the malaria incidence and case fatality rates by broad age groups and by district in 2007. The incidence rate of malaria in 2007 was almost five time higher among the under-fives (1046.4 per 1000 population) than among the older age group (212.7 per 1000 age group)

Among the districts Chilubi recorded the highest total incidence of malaria (544.1 per 1000 population) seconded by Mungwi (539.0 per 1000 population). Malaria incidence was higher among the under-fives than among the older population in all the districts. Despite recording the lowest incidence, Nakonde recorded the highest case fatality rate in the Province with a total of 26.6 per 1000 admissions followed by Mungwi (25.1). In six out of the twelve

districts, the case fatality rate was higher among the under-fives than among the older population. These were Chilubi, Chinsali, Kaputa, Luwingu, Mbala and Mungwi.

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

District	Incidence rate per 1,000 population (All health facilities)			Case fatality rate per 1,000 admissions (Hospitals only)		
	Under-five	5 years and above	Total	Under-five	5 years and above	Total
Chilubi	1,592.7	275.3	544.1	24.7	19.3	22.6
Chinsali	977.0	165.7	328.0	25.5	20.1	23.6
Isoka	873.0	168.8	309.7	21.4	25.5	22.6
Kaputa	882.4	180.3	320.8	26.3	16.6	23.0
Kasama	1,203.8	239.6	428.3	2.2	2.3	2.2
Luwingu	1,011.5	206.7	367.6	22.5	14.4	19.3
Mbala	1,134.1	208.1	378.9	13.6	12.8	13.3
Mpika	938.9	245.3	384.0	20.4	25.1	22.1
Mporokoso	789.4	178.7	300.1	12.8	18.6	14.4
Mpulungu	1,300.3	223.4	421.2	12.4	27.9	19.2
Mungwi	1,324.3	337.7	539.0	28.7	20.0	25.1
Nakonde	655.2	135.2	239.2	22.1	33.2	26.6
<b>Province</b>	<b>1,046.4</b>	<b>212.7</b>	<b>378.1</b>	<b>19.3</b>	<b>20.3</b>	<b>19.6</b>

Source: HMIS

### 2.1.2 Respiratory infections (non-pneumonia)

Conditions of the respiratory system are among the top causes of health facility visitation in Northern Province. Table 2.3 shows the incidence and case fatality rates of respiratory infection non-pneumonia by district and by age groups of under-five and the older population. The incidence rate was higher among the under-fives than the older population.

The incidence rate in the province was 181.8 per 1000 population. It was about four times higher among the under-fives (458.9 per 1000 population) than among the older population (113.2 per 1000 population). Among the districts, Mpika recorded the highest total incidence rate (287.7) while Kaputa recorded the lowest with 133.9 per 1000 population. The incidence rate in all the districts was higher among the under-fives than among the older population.

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

District	Incidence rate per 1,000 population (All health facilities)		
	Under five	5 years and above	Total
Chilubi	673.2	135.9	245.5
Chinsali	434.2	108.0	173.2
Isoka	396.6	83.4	146.1
Kaputa	334.0	83.9	133.9
Kasama	373.8	102.0	157.5
Luwingu	283.8	76.9	118.2
Mbala	525.2	111.4	187.7
Mpika	689.2	187.3	287.7
Mporokoso	323.4	99.6	144.4
Mpulungu	706.9	118.3	226.4
Mungwi	541.8	169.7	245.6
Nakonde	285.3	61.7	106.4
<b>Province</b>	<b>458.9</b>	<b>113.2</b>	<b>181.8</b>

Source: HMIS



Figure 2.1 shows that the incidence rate of respiratory infections non-pneumonia in the province increased from 124.7 in 2005 to 147.8 in 2006 and to 181.8 in 2007. The incidence rate also increased annually in Chilubi, Kaputa, Kasama, Mpika, Mporokoso, Mpulungu, Mungwi and Nakonde districts. The incidence rate increased in Chilubi from 147.0 in 2005 to 172.5 in 2006 and to 245.5 in 2007. In Kaputa it increased from 69.3 in 2005 to 104.1 in 2006 and to 133.9 in 2007. The increase in Kasama was from 79.9 in 2005 to 152.3 in 2006 and to 157.5 in 2007. In Mpika, it increased from 176.1 in 2005 to 207.3 in 2006 and to 287.7 in 2007. In Mporokoso, it increased from 76.9 in 2005 to 104.5 in 2006 and to 144.4 in 2007. In Mpulungu, it increased from 98.4 in 2005 to 157.4 in 2006 and to 226.4 in 2007. In Mungwi it increased from 133.7 to 163.6 and to 245.6. In Nakonde, it increased from 78.6 to 94.7 and to 106.4.

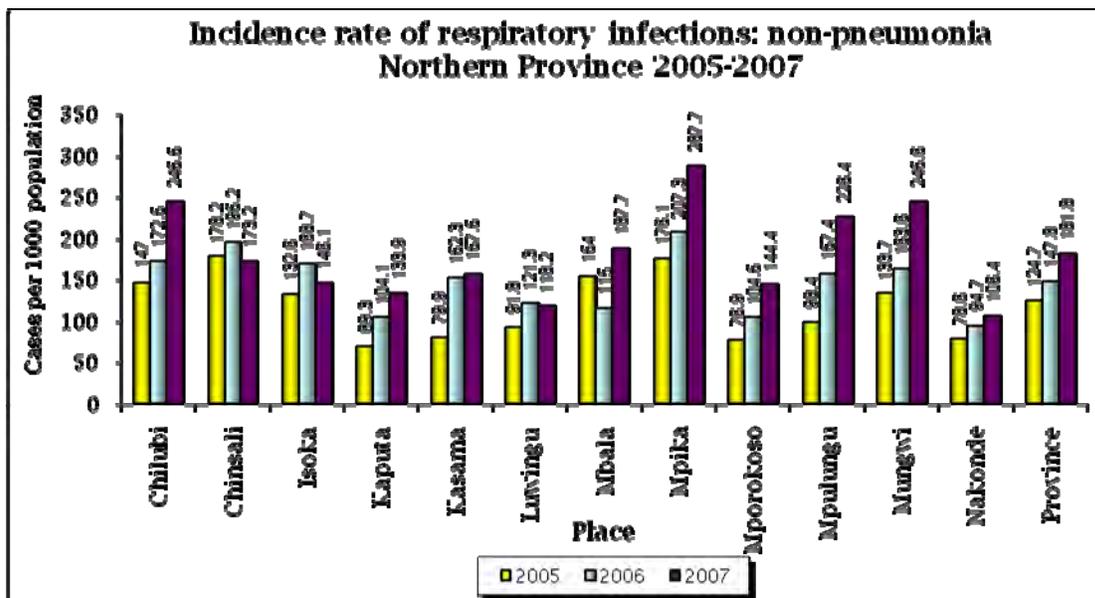


Figure 2.1: Total incidence rate of respiratory infections: non-pneumonia, 2005-2007

### 2.1.3 Respiratory infections (pneumonia)

Pneumonia is one of the commonest conditions of the respiratory system. It was the fifth leading causes of illness in the province after malaria, respiratory infections non pneumonia, diarrhoea non-bloody and eye infections.

Table 2.4 shows the incidence rate of pneumonia and case fatality rate of admissions in hospitals in 2007 by district and broad age groups. The incidence rate in the province was more than five times higher among the under-fives (94.7 per 1000 population) than among the older age groups (16.4 per 1000 population). This was also the case in all the districts. Among the districts, the highest total incidence rate was in Kasama (80.0) followed by Mungwi (40.5). The lowest was in Mporokoso (6.4)

The case fatality rate was also higher among the under-fives (30.9 per 1000 hospital admissions) than among the older population (23.3 per 1000 hospital admissions). Among the districts, Chinsali, Isoka, Luwingu, Mpika, Mpulungu, Mungwi and Nakonde recorded high

case fatality rates among under-fives than among the older population while in while Chilubi, Kaputa, Kasama, Mbala and Mporokoso case fatality rates were lower among the under-fives than among the older age group.

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-five	5 years and above	Total	Under-five	5 years and above	Total
Chilubi	100.8	12.0	30.1	59.2	67.7	61.7
Chinsali	74.6	14.2	26.3	26.7	19.9	23.5
Isoka	86.2	16.3	30.3	36.7	26.2	32.5
Kaputa	20.5	5.3	8.4	33.0	53.6	40.8
Kasama	276.4	29.7	80.0	2.7	10.6	4.4
Luwingu	101.8	19.9	36.3	37.9	6.5	26.3
Mbala	85.2	14.9	27.9	10.1	22.3	13.7
Mpika	53.0	16.2	23.6	59.6	12.0	38.1
Mporokoso	19.8	3.1	6.4	36.0	87.0	52.1
Mpulungu	61.7	11.3	20.5	17.1	0	8.9
Mungwi	82.9	29.6	40.5	36.9	0	20.2
Nakonde	53.1	10.9	19.3	54.5	45.6	50.2
<b>Province</b>	<b>94.7</b>	<b>16.4</b>	<b>31.9</b>	<b>30.9</b>	<b>23.3</b>	<b>28.0</b>

Source: HMIS

Figure 2.3 shows that the total incidence rate of pneumonia decreased yearly from 2005 to 2006 and to 2007 in Chilubi, Isoka, Kaputa, Mporokoso and Mungwi while it increased yearly in Chinsali and in Nakonde. The respective rates in 2005, 2006 and 2007 were 35.9, 34.8 and 30.1 in Chilubi; 20.3, 21.1 and 26.3 in Chinsali; 37.1, 34.6 and 30.3 in Isoka; 13.5, 9.6 and 8.4 in Kaputa; 79.9, 80.3 and 80 in Kasama; 26.1, 22.1 and 36.3 in Luwingu; 18.2, 65.6 and 27.9 in Mbala; 23.2, 15.2 and 23.6 in Mpika; 11.5, 8.1 and 6.4 in Mporokoso; 14.5, 21.7 and 20.5 in Mpulungu; 42.1, 41.8 and 40.5 in Mungwi; 11.1, 12.3 and 19.3 in Nakonde; and 30.2, 34.5 and 31.9 in Province.

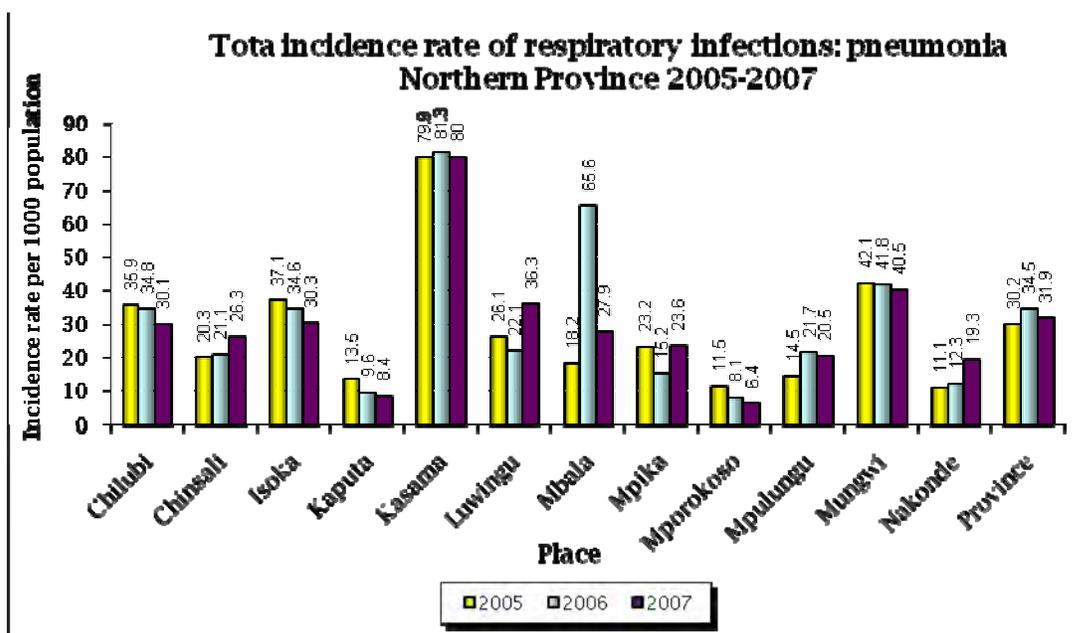


Figure 2.2: Total incidence rate of respiratory infections-pneumonia, 2005-2007

## 2.1.4 Diarrhoea non-bloody

Diarrhoea non-blood was the third leading cause of illnesses attended to at health facilities in the province after malaria and respiratory infections non-pneumonia. Table 2.5 shows the incidence and case fatality rate of admissions in hospitals in 2007 by district and broad age groups for diarrhoea non-bloody.

Table 2.5 shows that the total incidence rate for diarrhoea (non-bloody) was 67.2 per 1000 population. The incidence rate was more than six times higher among the under-fives (206.1 per 1000 population) than among the older population (27.2 per 1000 population).

Among the districts, the highest total incidence rate was in Mpulungu, (126.1), Chilubi (125.5) and Mbala (88.8). The lowest was in Chinsali (36.9). The incidence rate was higher among the under-fives than among the older population in all the districts.

The total case fatality rate was the highest in Kasama (57.8 per 1000 admissions) followed by Mungwi (43.6 per 1000 admissions). Given that Kasama is only one of the two municipal councils in the province, the other being Mbala, this should not have been the case because the municipal council should be better capable at providing clean portable water than the district councils which manage the other districts with lower total incidence rates. 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 (Hospitals only)		
	Under-five	5 years and above	Total	Under-five	5 years and above	Total
Chilubi	445.1	43.6	125.5	22.6	5.8	16.6
Chinsali	128.5	14.0	36.9	13.6	19.2	15.4
Isoka	194.3	25.8	59.5	11.6	26.2	17.8
Kaputa	128.8	22.8	44.0	-	-	-
Kasama	187.8	18.9	53.4	68.7	23.8	57.8
Luwingu	187.6	32.8	63.8	5.6	29.4	15.8
Mbala	312.7	38.1	88.8	10.8	13.0	11.5
Mpika	190.5	32.7	64.2	28.1	8.6	20.4
Mporokoso	125.5	14.9	37.0	9.8	36.6	17.5
Mpulungu	450.8	53.0	126.1	13.5	17.9	15.7
Mungwi	136.4	23.7	46.7	43.5	43.8	43.6
Nakonde	142.5	20.9	45.2	41.1	20.1	30.5
<b>Province</b>	<b>206.1</b>	<b>27.2</b>	<b>62.7</b>	<b>19.2</b>	<b>18.5</b>	<b>18.9</b>

Source: HMIS

Note: There was no hospital in Kaputa

Figure 2.4 shows that the incidence rate of diarrhoea non-bloody in the province increased from 49.7 in 2005 to 57.6 in 2006 and to 62.7 in 2007. The incidence rate also increased annually in Chilubi, Luwingu, Mbala, Mporokoso, Mpulungu, Mungwi and Nakonde districts. The incidence rate reduced annually in Chinsali from 46.2 in 2005 to 41.5 in 2006 and to 36.9 in 2007. In Chilubi it increased from 98.1 in 2005 to 118.1 in 2006 and to 125.5 in 2007. The increase in Luwingu was from 38.4 in 2005 to 48.7 in 2006 and to 63.8 in 2007. In Mbala, it increased from 58.3 in 2005 to 66.1 in 2006 and to 88.8 in 2007. In

Mporokoso, it increased from 28.9 in 2005 to 30.1 in 2006 and to 37.0 in 2007. In Mpulungu, it increased from 56.3 in 2005 by more than 100 per cent to 113.5 in 2006 and to 126.1 in 2007. In Mungwi it increased from 34.5 to 43.0 and to 46.7. In Nakonde, it increased from 25.5 to 35.4 and to 45.2.

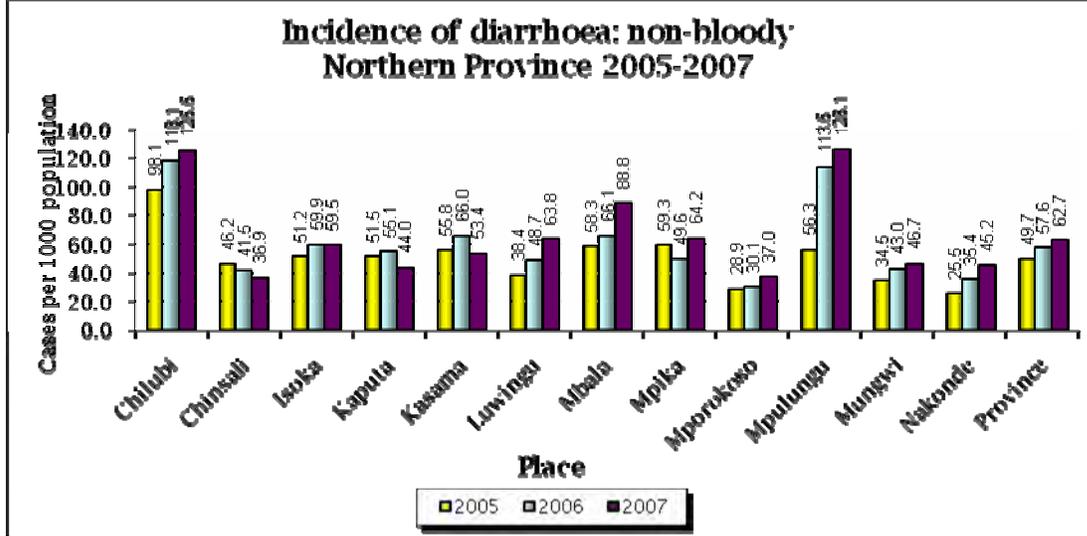


Figure 2.3: Total incidence rate of diarrhoea: non-bloody, 2005-2007

### 2.1.5 Diarrhoea-bloody (suspected dysentery)

Diarrhoea-bloody (suspected dysentery) is characterised by the passing of loose stool for three or more times per day which has visible blood. Dysentery is one of the notifiable diseases like cholera, measles, typhoid fever, yellow fever, acute flaccid paralysis, rabies, plaque, neonatal tetanus and tuberculosis. Notifiable diseases should be reported to other level should they be diagnosed.

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 11.0 per 1000 population than among the older population at 4.5 per 1000 population. The total incidence rate was 5.8 per 1000 population.

Among the districts, the total incidence rate was the highest in Kaputa and Mpulungu at 8.5 per 1000 population followed by Mpika at 8.3 per 1000 population and Isoka at 6.9 per 1000 population. The lowest was in Mporokoso at 2.9 per 1000 population.

Table 2.6: Dysentery Incidence rate by age group, 2007

District	Incidence rate per 1,000 population (All health facilities)		
	Under-five	5 years and above	Total
Chilubi	12.6	4.7	6.3
Chinsali	13.7	2.3	4.5
Isoka	8.8	6.4	6.9
Kaputa	12.4	7.5	8.5
Kasama	10.8	3.9	5.3
Luwingu	9.6	2.5	3.9
Mbala	8.9	4.6	5.4
Mpika	18.2	5.8	8.3
Mporokoso	5.7	2.3	2.9
Mpulungu	17.2	6.5	8.5

Mungwi	5.9	3.7	4.2
Nakonde	9.1	4.7	5.6
<b>Province</b>	<b>11.0</b>	<b>4.5</b>	<b>5.8</b>

Source: HMIS

Figure 2.5 shows that the incidence of dysentery per 1000 population in the province increased yearly from 4.3 in 2005 to 5.0 in 2006 and to 5.8 in 2007.

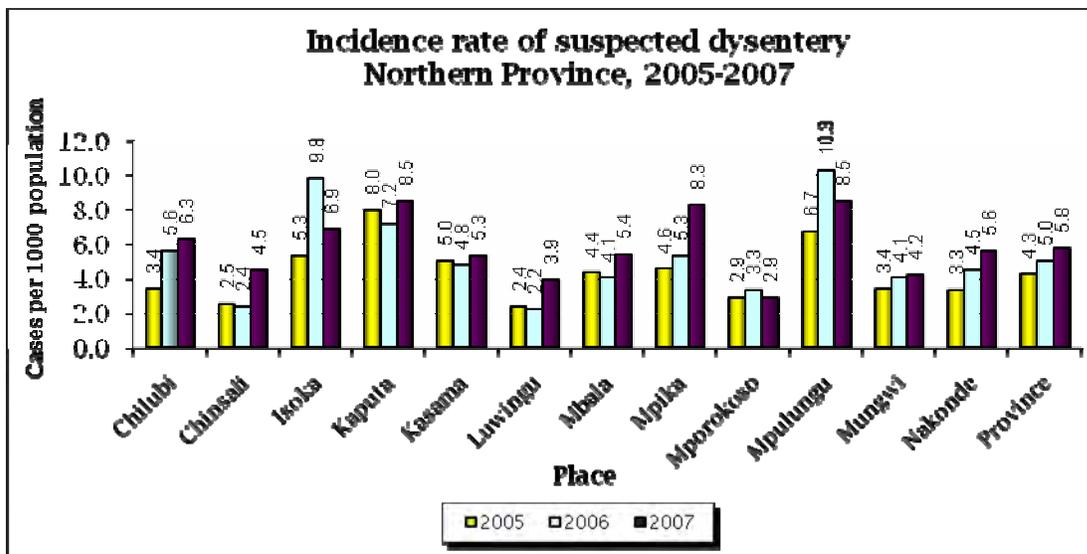


Figure 2.4: Total incidence rate of suspected dysentery, 2005-2007

## 2.1.6 Trauma (accidents, injuries, wounds, burns)

Trauma comprises accidents, injuries, wounds, broken bones or burns which are inflicted or due to an accident.

Trauma was the sixth leading cause of visitations to health facilities in 2007 in Northern Province. Table 2.7 shows that the incidence rate of trauma in the province was only slightly higher among the under-fives (32.3 per 1000 population) than among the older age groups (27.7 per 1000 population) in 2007.

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 (Hospitals only)		
	Under-five	5 years and above	Total	Under-five	5 years and above	Total
Chilubi	60.6	38.5	43.0	No data	No data	No data
Chinsali	31.8	30.2	30.5	36.4	0	8.5
Isoka	41.4	40.9	41.0	9.9	6.0	6.9
Kaputa	22.7	17.1	18.2	-	-	-
Kasama	36.4	29.1	30.6	10	1.0	8.6
Luwingu	28.2	30.4	29.9	0.0	4.5	3.9

Mbala	51.6	43.8	45.2	0.0	5.6	4.7
Mpika	38.5	40.7	40.2	50.0	7.5	13.1
Mporokoso	32.2	22.2	24.2	0.0	13.3	6.8
Mpulungu	54.9	31.6	35.9	No data	No data	No data
Mungwi	90.5	61.6	67.5	No data	No data	No data
Nakonde	27.6	22.2	23.2	No data	No data	No data
<b>Province</b>	<b>32.3</b>	<b>27.7</b>	<b>28.6</b>	-	-	-

Source: HMIS

Note: There was no district hospital in Kaputa

The incidence rate of trauma was higher among the under-fives in the all districts except in Luwingu and Mpika. The rate among the under-fives in Luwingu was 28.2 and among the older population 30.4 per 1000 population. The respective rates in Mpika were 38.5 and 40.7.

As shown in Figure 2.6, Mungwi district recorded the highest incidence in all the three years while Kaputa recorded the Lowest during the period. The total incidence rate of trauma in the province increased from 30.8 in 2005 to 33.1 in 2006 and to 35.8 in 2007. Among the districts, the incidence rate also increased yearly in Chilubi, Isoka, Kaputa, Mbala, Mporokoso, Mpulungu, Mungwi and Nakonde.

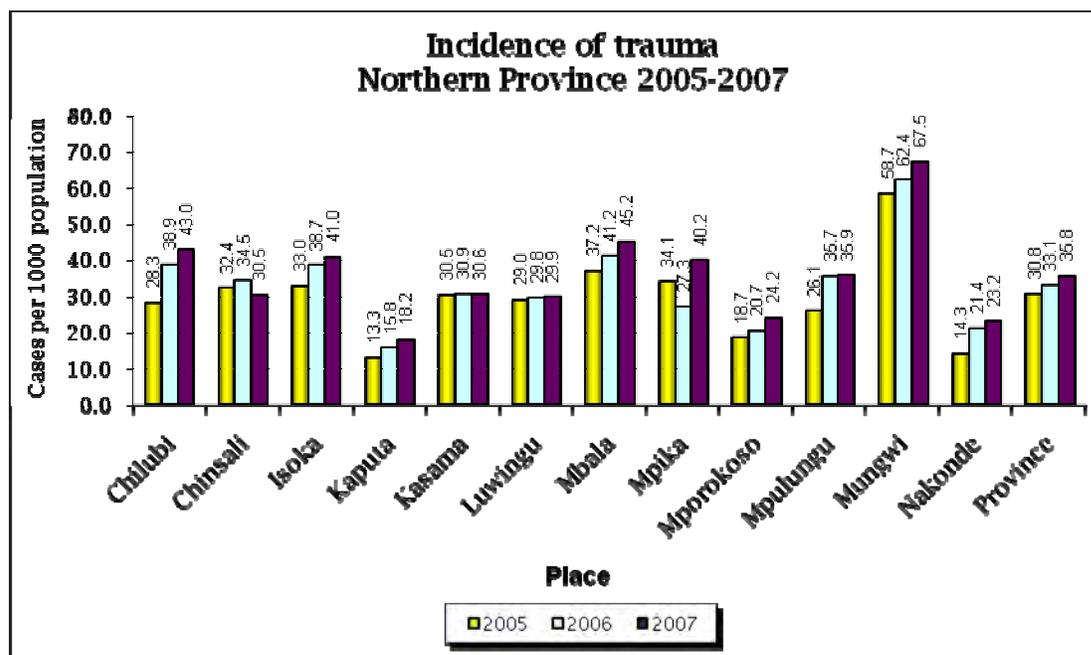


Figure 2.5: Total incidence rate of trauma, 2005-2007

### 2.1.7 Eye infections

Eye infections include conjunctivitis and trachoma. Conjunctivitis may present with watery or purulent discharge, and the lashes may be stuck together upon waking up. There is no pain or blurred vision. Trachoma is characterised by bilateral conjunctivitis, blurring cornea and scarring of one or both eyes; in advanced cases, in-turned upper lid with eye lashes scratching the cornea.

Table 2.8 shows that the total incidence rate in the province was 33.6 per 1000 population. The total incidence rate among the under-fives at 110.2 per 1000 population was almost ten times higher than 14.7 per 1000 population among the older population. In the districts, the incidence rate was also higher among the under-fives than among the older population. Among the districts, the highest incidence rate was recorded in Chilubi (54.9 per 1000 population) followed by Mungwi (49.0 per 1000 population). The lowest was in Kaputa at 17.2 per 1000 population.



Table 2.8: Eye infection incidence rate by age group and district, 2007

District	Incidence rate per 1,000 population (All health facilities)		
	Under-five	5 years and above	Total
Chilubi	176.9	23.7	54.9
Chinsali	156.4	14.3	42.7
Isoka	100.3	19.6	35.7
Kaputa	51.5	8.7	17.2
Kasama	114.8	12.0	32.9
Luwingu	102.2	14.6	32.1
Mbala	82.1	10.5	23.7
Mpika	129.7	21.6	43.2
Mporokoso	69.1	11.6	23.1
Mpulungu	126.7	14.5	35.1
Mungwi	152.2	22.6	49.0
Nakonde	61.5	6.2	17.3
<b>Province</b>	<b>110.2</b>	<b>14.7</b>	<b>33.6</b>

Source: HMIS

As shown in Figure 2.7, the incidence rate in eye infections in 2005, 2006 and 2007 was the highest in Chilubi followed by Mungwi district. The lowest in all the three years was in Nakonde.

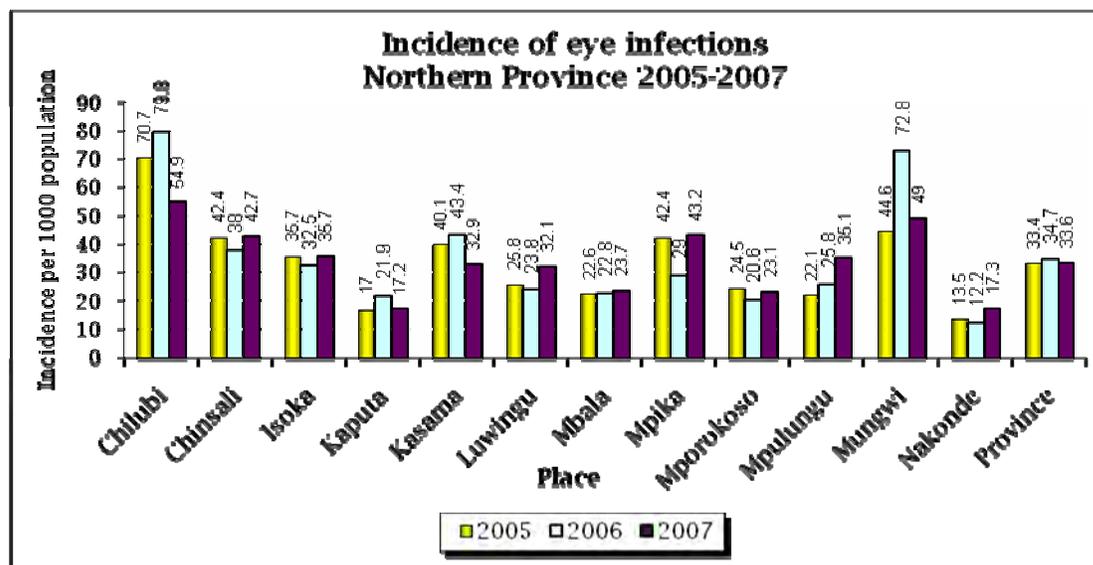


Figure 2.6: Incidence of eye infections

## 2.2 Patient case load

Patient case load is a proportion of first curative attendances in a given period per catchment area population. The purpose of the indicator is to assist Managers of respective districts to direct their intervention on specific diseases or conditions

Table 2.9 presents the data for patient case load in under-fives by districts from 2005 to 2007. It shows that at the provincial level, patient case load declined from 1.65 in 2005 to

1.63 in 2006 and to 1.55 in 2007. Among the districts, the highest patient case load was in Chilubi district in 2005, 2006 and 2007. The respective rates were 2.26, 3.32 and 2.45.

**Table 2.9: Proportion of children under-five years case load by district, 2005-2007**

District	Proportion of children under-five years case load		
	2005	2006	2007
Chilubi	2.26	3.32	2.45
Chinsali	1.55	1.24	1.40
Isoka	1.75	1.39	1.36
Kaputa	1.31	1.64	1.45
Kasama	1.75	1.73	1.72
Luwingu	1.59	1.55	1.21
Mbala	1.59	1.69	1.52
Mpika	2.16	1.87	1.66
Mporokoso	1.00	0.96	1.04
Mpulungu	1.67	1.94	2.00
Mungwi	2.12	1.86	1.98
Nakonde	0.93	0.98	1.09
<b>Province</b>	<b>1.65</b>	<b>1.63</b>	<b>1.55</b>

Source: HMIS

### 2.3 Under-five case fatality rates

The under-five case fatality rate refers to the total number of children aged less than 5 years who die per 1000 admissions in all health facilities per year. The values of indicator should be compared regularly with the baseline values to detect emerging problems, identify priority locations for intervention and to show the effects of interventions.

Table 2.10 presents the data for under-five case fatality rate in the province by district from 2005 to 2007. The under-five case fatality rate per 1000 admissions was 25.8 in 2005, 26.1 per cent in 2006 and 24.9 per cent in 2007. Among the districts, the case fatality rate was the highest in Kaputa in 2005 (55.8 per 1000 admissions) and in 2006 (47.6 per 1000 admissions). In 2007, the case fatality rate was the highest in Nakonde (33.8 per 1000 admissions). The lowest case fatality rate in these three years was in Kasama. It was 6.1 in 2005, 7.1 in 2006 and 6.9 in 2007.

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

District	Under-five years mortality rate per 1000 admissions		
	2005	2006	2007
Chilubi	25.8	26.1	24.9
Chinsali	21.3	20.7	31.5
Isoka	34.7	23.4	28.1
Kaputa	55.8	47.6	31.0
Kasama	6.1	7.1	6.9
Luwingu	17.2	45.3	34.9
Mbala	29.0	25.0	14.8
Mpika	28.3	24.0	28.6
Mporokoso	19.6	29.6	17.2
Mpulungu	24.0	16.0	14.1
Mungwi	13.5	21.9	26.1
Nakonde	36.2	34.0	33.8
<b>Province</b>	<b>25.8</b>	<b>26.1</b>	<b>24.9</b>

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 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.

### 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 within 14 days of onset. 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.

Stool adequacy rate is the percentage of two stools collected within 14 days of onset of paralysis. The target is 80 per cent All detected cases should be adequately investigated by having two stool samples collected within 14 days after onset of paralysis The specimen should be transported under reverse cold chain within 72 hours of collection for testing at certified laboratory.

Table 2.11 shows that 17 acute flaccid paralysis cases were detected against a target of 17 in 2007. A 100 per cent stool adequacy rate above the minimum of 80 per cent was also achieved. Also, an annualised non acute flaccid paralysis rate above the threshold of 1 of 2.1 per 100000 children aged less than 15 years was 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
Chilubi	1	2	4.8	2	100
Chinsali	2	5	6.3	5	100
Isoka	1	1	1.7	1	100
Kaputa	1	1	1.9	1	100
Kasama	2	1	1.0	1	100
Luwingu	1	0	0.0	0	0
Mbala	2	1	1.0	1	100
Mpika	2	2	2.1	2	100
Mporokoso	1	0	0.0	0	0
Mpulungu	2	0	0.0	0	0
Mungwi	1	4	5.7	4	100
Nakonde	1	0	0.0	0	100
<b>Province</b>	<b>17</b>	<b>17</b>	<b>2.1</b>	<b>17</b>	<b>100</b>

*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 Chinsali (5) followed by Mungwi (4). The expected number in Chinsali was 2. In Mungwi it was 1. No cases were detected in Luwingu where 1 case was expected, in Mporokoso where 1 case was expected, in Mpulungu where 2 cases were expected and in Nakonde where 1 case was expected. The set target of the annualised non polio acute flaccid paralysis rate of 1 per 100000 population less than 15 years old was attained in all the districts except in those in which no cases were detected.

## 2.4.2 Acute flaccid paralysis

As shown in Figure 2.7, there was a reduction in the non-acute flaccid paralysis detection rate in the province from 3.4 in 2005 to 3.0 in 2006 and to 2.1 in 2007.

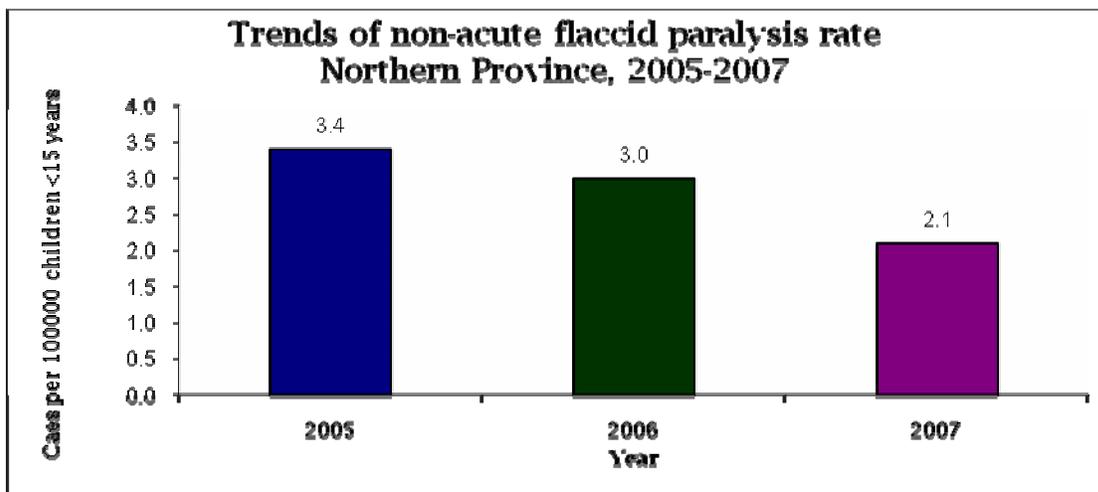


Figure 2.7: Trends of non-acute flaccid paralysis rate, 2005-2007

## Stool adequacy rate

Figure 2.9 shows that the stool adequacy rate was above the 80 per cent threshold in 2005, 2006 and 2007. The rate was 91.8 per cent in 2005, 90.5 per cent in 2006 and 94 per cent in 2007.

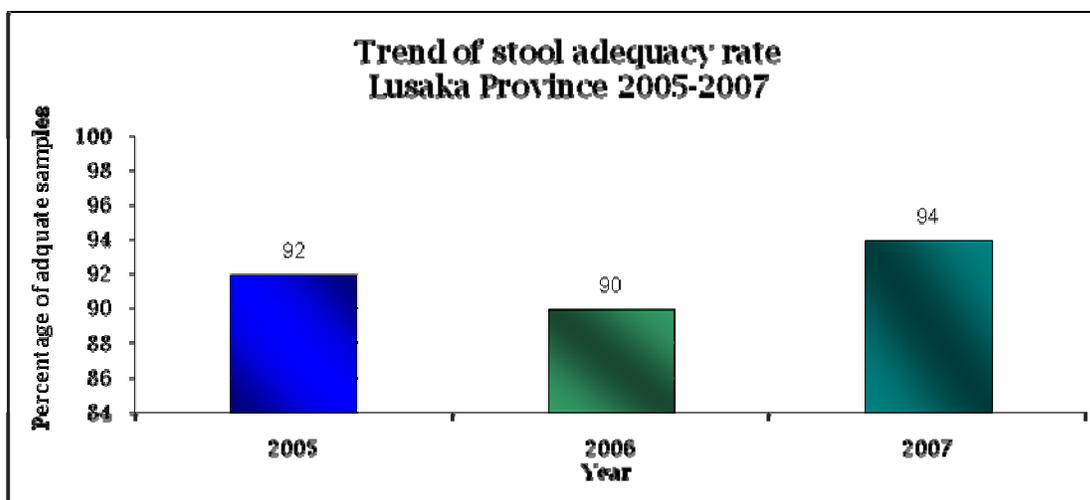


Figure 2.8: Stool adequacy rate, 2005-2007

### 2.4.3 Measles

Measles is a notifiable disease and a single case should be investigated with follow up at all levels of service delivery system. Measles is any condition presenting with fever, generalised rash plus any of the following: coryza, cough and conjunctivitis. Since there are other causes of generalised rash and fever, a blood sample (serum) of every single case or up to five samples in case of a cluster of cases, should be investigated to rule out measles. The serum samples in Zambia can only be examined at the University Teaching Hospital virology laboratory.

Table 2.12 shows that the total under-five incidence rate of measles in the province in 2007 (2.5 per 1000 population) was more than 12 times higher than in 2006 (0.2 per 1000 population) and more than 8 times higher than in 2005 (0.3 per 1000).

In 2007, the highest number of cases among the under-fives in the districts was reported in Chinsali (160) followed by Mbala (121) and Nakonde (119). The lowest numbers of cases were reported in Mpika and Mporokoso (4 in each).

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		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chilubi	8	0	6	12	0	1	0.5	0.0	0.3
Chinsali	0	0	160	6	0	80	0.0	0.0	4.9
Isoka	11	6	15	10	3	7	0.5	0.3	0.6
Kaputa	2	0	111	0	0	122	0.1	0.0	5.2
Kasama	2	26	92	5	9	37	0.0	0.6	2.1
Luwingu	7	0	31	3	1	62	0.4	0.0	1.6
Mbala	27	0	121	30	3	66	0.8	0.0	3.4
Mpika	11	19	4	14	21	6	0.3	0.6	0.1
Mporokoso	0	3	4	4	0	0	0.0	0.1	0.2
Mpulungu	20	0	112	19	3	35	1.3	0.0	6.9
Mungwi	0	0	34	2	0	19	0.0	0.0	1.2
Nakonde	7	4	119	10	4	44	0.3	0.1	4.1

<b>Province</b>	<b>95</b>	<b>58</b>	<b>809</b>	<b>115</b>	<b>44</b>	<b>479</b>	<b>0.3</b>	<b>0.2</b>	<b>2.5</b>
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Source: HMIS

Table 2.13 shows the number of cases investigated in 2007 either as a single case or in a cluster of five by district. According to WHO standards the positivity rate is the number of positive cases out of those investigated. The provincial positivity rate for the period was 71 per cent. Among the districts the lowest was in Mpika with 0 per cent of the 9 cases investigated. This would imply that what was investigated in the district were not really measles cases.

**Table 2.13: Measles cases investigated district, 2007**

District	Number of cases		Positivity rate
	Investigated	Positive	
Chilubi	1	1	100
Chinsali	8	8	100
Isoka	4	2	50
Kaputa	8	4	50
Kasama	17	14	82
Luwingu	6	6	100
Mbala	10	8	80
Mpika	9	0	0
Mporokoso	0	0	0
Mpulungu	9	5	56
Mungwi	9	9	100
Nakonde	13	10	77
<b>Province</b>	<b>94</b>	<b>67</b>	<b>71</b>

**Source:** Surveillance

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

HIV is the virus that causes AIDS. In 2007 the HIV prevalence in Northern Province at 6.8 per cent was the lowest in the country. Strong associations between HIV and tuberculosis and STIs have been shown. Tuberculosis is a serious disease that attacks the lungs, but also affects other parts of the body including the brain. There has been an upsurge in tuberculosis cases because of its association with HIV infection. STIs can affect the general health, wellbeing and the reproductive capacities of those infected.

### 3.1 Counselling and testing

Counselling is the process of helping a client to make an informed decision about their health. Of all the 12 districts in Northern Province, only half of them were by 2005 compiling data on counselling and testing for HIV. These were Chinsali, Kasama, Mbala, Mpika, Mpulungu and Nakonde. This increased to 7 districts in 2006 with the addition of Mungwi and to 8 districts in 2007 with the addition of Mporokoso. The percentage tested out of those who were counselled was above 95 per cent in these districts in 2007. See Table 3.1. This was also the case in 2006 except in Kasama where 93.3 per cent were tested. In 2005 90.6 per cent of those counselled accepted to be tested and were tested. The percentage was 94.2 in Mpika and 89.6 in Mpulungu. It was 100 per cent in Chinsali and Nakonde.

Table 3.1: Number of clients attending counselling and testing and the percentage tested for HIV by district from 2005 to 2007

District	Number of counselling and testing clients								
	2005			2006			2007		
	Attended	Tested	Percentage tested	Attended	Tested	Percentage tested	Attended	Tested	Percentage tested
Chilubi									
Chinsali	33	33	100.0	724	695	95.9	866	859	99.2
Isoka									
Kaputa									
Kasama	2386	2373	99.5	5450	5359	93.3	10770	10701	99.5
Luwingu									
Mbala	213	193	90.6	1755	1690	96.2	3012	2889	95.9
Mpika	192	181	94.2	1116	1115	99.9	2364	2361	99.8
Mporokoso							443	443	100.0
Mpulungu	116	104	89.6	821	789	96.1	1378	1378	100.0
Mungwi				781	767	98.0	921	893	97.0
Nakonde	853	853	100.0	3211	3209	99.9	4031	4031	100.0
<b>Province</b>									

Source: Zambia Voluntary Counselling and Testing database

At the start of the counselling and testing 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. Hence as shown in Table 3.2, the percentage of clients that was found with HIV reduced in all the districts from 2005 to 2006 and to 2007. For example, in Chinsali, the percentage that took the test that was found with HIV reduced from 48.4 per cent in 2005 to 28.3 per cent in

2006 and to 12.1 per cent in 2007. In Kasama the reduction was from 41.5 per cent in 2005 to 35.9 per cent in 2006 and to 21.2 per cent in 2007. In Nakonde, the reduction was from 18.7 per cent in 2005 to 13.8 per cent in 2006 and to 11.8 per cent in 2007.

**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 tested for HIV and the percentage found with HIV								
	2005			2006			2007		
	Tested	Positive	Percentage positive	Tested	Positive	Percentage positive	Tested	Positive	Percentage positive
Chilubi							264	32	12.1
Chinsali	33	16	48.4	695	197	28.3	859	195	22.7
Isoka									
Kaputa									
Kasama	2,373	987	41.5	5,359	1,926	35.9	10,701	2,272	21.2
Luwingu									
Mbala	193	100	51.8	1,690	616	36.4	2,889	917	31.7
Mpika	181	91	50.2	1,115	485	43.4	2,361	633	26.8
Mporokoso	0	0	0	0	0	0	443	153	34.5
Mpulungu	104	69	66.3	789	392	49.6	1,378	596	43.2
Mungwi	0	0	0	767	55	7	893	141	16.0
Nakonde	853	160	18.7	3,209	444	13.8	4,031	476	11.8
Province	-	-	-	-	-	-	-	-	-

Source: Zambia Voluntary Counselling and Testing database

## 3.2 Prevention of HIV transmission from mothers to their 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. Table 3.3 shows that most of the pregnant women except in Kasama where 99 per cent and Nakonde where 55 per cent agreed to take the test decided not take the test. In Chilubi, only 4.9 per cent decided to take the test. In Luwingu, it was 24.1 per cent; in Mbala, 24.1 per cent; in Mpika 17.2 per cent; in Mporokoso 9.5 per cent; in Mpulungu 33.3 percent; and in Mungwi 20.0 per cent.

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

District	Antenatal first visits	Tested for HIV	Percentage tested
Chilubi	4,410	220	4.9
Chinsali	7,888	1,374	17.4
Isoka	5,837	85	
Kaputa	4,839		
Kasama	9,893	3,782	99.1
Luwingu	5,809		

Mbala	9,809	2,370	24.1
Mpika	8,521	1,471	17.2
Mporokoso	4,840	464	9.5
Mpulungu	4,798	1,594	33.2
Mungwi	7,683	1,540	20.0
Nakonde	6,389	3,514	55.0
<b>Province</b>	<b>80,716</b>	-	-

Source: Zambia Voluntary Counselling and Testing database

Table 3.4 shows that the percentage of pregnant women that accepted to take the HIV test on their first antenatal care visit of their pregnancy found with HIV in 2007 in Chilubi were 7.7, in Chinsali, 8.6, in Kasama 18.6, in Mbala 18.9, in Mpika 17.8, in Mporokoso 6.4, in Mpulungu 23.8, in Mungwi 4.0 and in Nakonde 9.4.

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

District	Tested for HIV	Tested positive	Percentage positive
Chilubi	220	17	7.7
Chinsali	1,886	163	8.6
Isoka			
Kaputa			
Kasama	9,316	1,734	18.6
Luwingu			
Mbala	3,865	731	18.9
Mpika	2,661	474	17.8
Mporokoso	464	30	6.4
Mpulungu	2,420	578	23.8
Mungwi	1,540	68	4.0
Nakonde	5,592	529	9.4
<b>Province</b>	-	-	-

Source: Zambia Voluntary Counselling and Testing database

### 3.2.2 Antiretroviral prophylaxis

Antiretroviral therapy refers to the administration of some drugs to babies that were born to mothers with HIV immediately after birth or within 72 hours of birth to prevent HIV transmission from the mother.

Table 3.4 shows that 80,486 infants were exposed to HIV in 2007. In Chinsali only 1.7 per cent of the exposed to HIV were given the antiretroviral prophylaxis. In Kasama, out of 807, 31.9 per cent were given the prophylaxis. In Mbala 10.0 per cent out of 682 were given. In Mpika, 7.1 per cent out of 646 were given. In Mporokoso, only 5.3 per cent out of 559 were given. In Mpulungu, it was 29.2 per cent of the 294. In Mungwi, it was 3.0 per cent of the 552 and in Nakonde; it was 14.1 per cent of the 552.

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

District	Births exposed to HIV	Number given antiretroviral prophylaxis	Percentage of babies exposed to HIV given antiretroviral prophylaxis
Chilubi	329		
Chinsali	622	11	1.7
Isoka	469		
Kaputa	408		
Kasama	807	258	31.9

Luwingu	379		
Mbala	682	68	10.0
Mpika	646	46	7.1
Mporokoso	559	30	5.3
Mpulungu	294	86	29.2
Mungwi	552	17	3.0
Nakonde	552	78	14.1
<b>Province</b>	<b>80,486</b>	-	-

Source: Zambia Voluntary Counselling and Testing database

Figure 3.1 shows that in all districts with the exception of Mporokoso, the number of HIV positive pregnant mothers who received antiretroviral prophylaxis was more than the number of infants exposed to HIV who received antiretroviral prophylaxis.

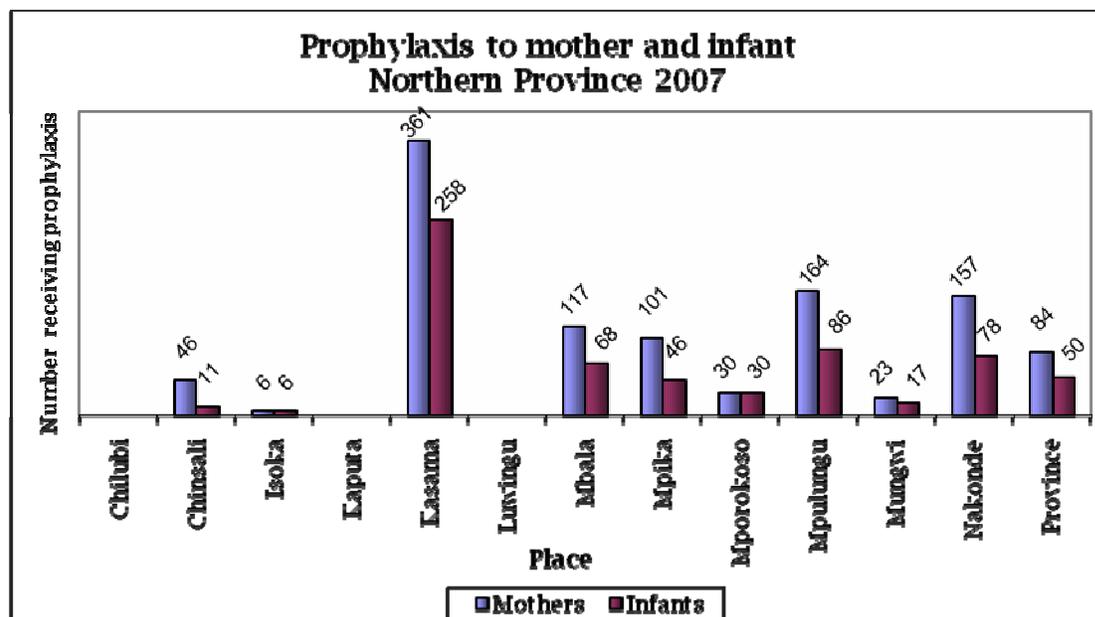


Figure 3.1: Antiretroviral prophylaxis for the prevention of HIV transmission from mothers to infants

### 3.3 Antiretroviral therapy

#### 3.3.1 Ever-enrolled on antiretroviral therapy

This is the cumulative number of patients who have ever been on antiretroviral therapy including those who died, still on therapy, transferred out, lost to follow-up, or stopped the therapy. It does not include those who started the therapy elsewhere and have transferred to the current health facility.

Table 3.6 shows that in all the districts in 2006 and in 2007, more females than males had been enrolled on antiretroviral therapy. By 2007, the number of females that were ever enrolled on antiretroviral therapy was 4969 and the number of males was 3,595. The total was 8474.

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
Chilubi				25	18	43
Chinsali	156	231	387	273	374	647
Isoka				329	362	601
Kaputa	56	79	135	83	103	186
Kasama	945	1,258	2,203	1,391	1,904	3,295
Luwingu	28	48	76	63	85	148
Mbala	313	483	796	531	767	1,298
Mpika	204	246	450	343	492	835

Mporokoso	0	0	0	113	152	265
Mpulungu	69	114	183	196	336	532
Mungwi	8	9	17	44	79	123
Nakonde	116	161	277	204	297	501
<b>Province</b>	-	-	-	<b>3,595</b>	<b>4,969</b>	<b>8,474</b>

Source: HMIS

### 3.3.2 Currently on antiretroviral therapy by end year

Figure 3.2 shows the total number of males and females that were currently on treatment at the end of 2006 and 2007 in the districts where data was available.

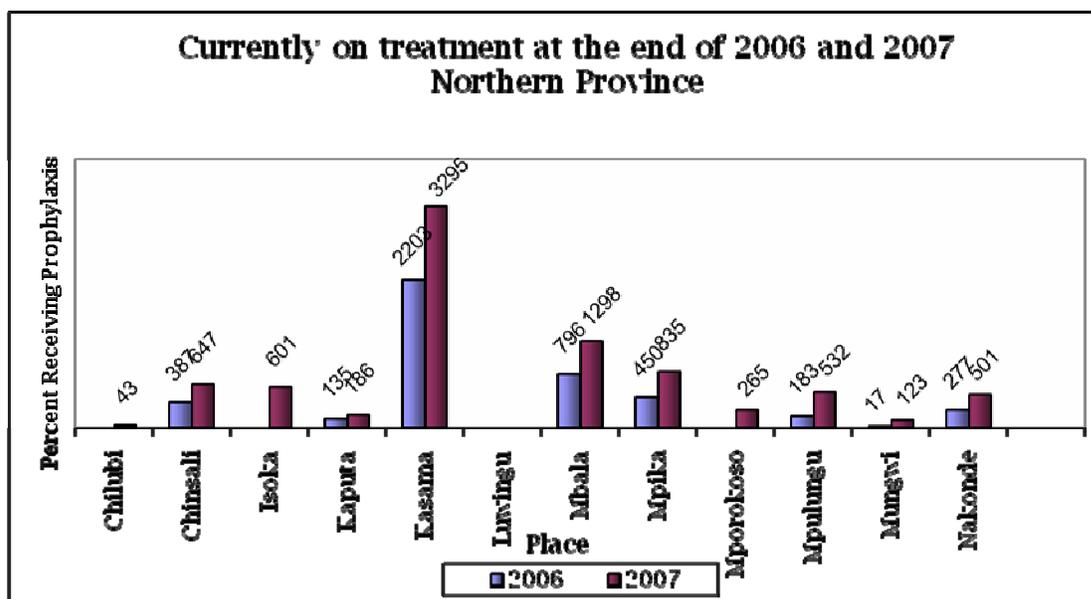


Figure 3.2: Total number that were on antiretroviral therapy at the end of 2006 and 2007

### 3.4 Tuberculosis

Tuberculosis is one of the notifiable diseases. It is caused by the Mycobacterium Tuberculosis germ. It normally affects the lungs although sometimes other parts of the body are also affected. Anyone who has been coughing for more than two weeks has night sweats, lost weight and appetite could be having tuberculosis. The most important test to make a diagnosis is sputum smear examination. Sputum tests confirm the diagnosis and assist in helping the prescriber to put the patient on the correct treatment regimen.

#### 3.4.1 Tuberculosis notifications from 2005 to 2007

As shown in Table 3.9, the number of tuberculosis notifications was 2113 in 2007. There were 771 sputum negative cases and 763 sputum positive cases. Typically, there should be more sputum positive than sputum negative cases. However, most of the sputum smear cases were negative because of HIV co-infection. Most of the notifications were for males (1187) than for females (926).

**Table 3.7: Tuberculosis notifications by type, district and sex, 2007**

District	Sex	Notifications by type of tuberculosis							Total
		Sputum smear		Extra pulmonary tuberculosis	Relapse positive	Others previously treated	Treatment after default	Treatment after failure	
		Positive	Negative						
Chinsali	Male	14	15	31	2	0	2	0	64
	Female	13	25	37	0	0	0	0	75
	Total	27	40	68	2	0	2	0	139
Chilubi	Male	10	18	6	0	0	0	0	34
	Female	12	19	10	0	0	0	0	41
	Total	22	37	16	0	0	0	0	75
Isoka	Male	29	48	12	3	12	7	0	111
	Female	27	40	12	2	7	1	0	89
	Total	56	88	24	5	19	8	0	200
Kasama	Male	107	83	50	16	0	3	0	259
	Female	59	54	34	4	0	3	1	155
	Total	166	137	84	20	0	6	1	414
Kaputa	Male	38	31	6	4	0	3	1	83
	Female	34	34	9	4	0	0	0	77
	Total	72	65	15	8	0	3	1	164
Luwingu	Male	20	12	10	3	0	0	0	45
	Female	10	22	10	1	0	2	0	45
	Total	30	34	20	4	0	2	0	90
Mbala	Male	46	23	21	1	0	4	0	95
	Female	44	30	8	2	0	3	0	87
	Total	96	53	29	3	0	7	0	182
Mporokoso	Male	30	13	14	2	0	0	0	59
	Female	22	12	7	7	5	0	0	53
	Total	52	25	21	9	5	0	0	112
Mpulungu	Male	27	21	21	5	4	9	0	87
	Female	9	21	23	2	2	4	0	61
	Total	36	42	44	7	6	13	0	148
Mpika	Male	57	86	30	5	0	1	0	179
	Female	35	77	29	1	0	1	0	143
	Total	92	163	59	6	0	2	0	322
Mungwi	Male	40	16	5	0	0	0	0	61
	Female	30	8	2	0	0	0	0	40
	Total	70	24	7	0	0	0	0	101
Nakonde	Male	33	36	25	4	6	5	1	110
	Female	17	27	8	0	1	3	0	56
	Total	57	63	33	4	7	8	1	166
Province	Male	451	402	231	45	22	34	2	1,187
	Female	312	369	189	23	15	17	1	926
	Total	763	771	412	68	37	51	3	2,113

Source: Tuberculosis database

### 3.4.2 Tuberculosis cure, completion and success rate

The 3 proportions (cure, completion and success rates) relate to phases in the tuberculosis treatment process. Cure rate keeps track of tuberculosis patients who complete treatment with sputum examination at 8 months, completion rate tracks patients who complete treatment for 8 months without having sputum examined and success rate is the total coverage of cured patients and those completing treatment out of the total tuberculosis cases enrolled in the same period.



Table 3.8 shows the cure, completion and treatment success rates among the districts in the province. The cure rate was below the national target of 85 per cent in most of the districts. It was above 85 per cent in Chilubi in 2005 (86 per cent) and in Kasama in 2006 (93 per cent) and 2007 (93 per cent).

**Table 3.8: Tuberculosis cure rate by year from 2005 to 2007**

District	Cure rate (percentage)			Completion rate (percentage)			Treatment success rate (percentage)		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chilubi	86	78	72	0	19	10	86	97	90
Chinsali	71	75	68	16	21	0	87	96	0
Isoka	79	61	41	10	23	0	89	84	87
Kaputa	58	29	72	23	57	13	67	86	87
Kasama	73	93	93	0	0	0	0	0	0
Luwingu	68	79	71	3	0	0	81	79	54
Mbala	81	71	83	0	11	8	81	82	91
Mpika	76	0	81	0	0	0	0	0	0
Mporokoso	60	0	54	21	16	0	0	21	16
Mpulungu	41	0	63	25	45	8	25	92	78
Mungwi	79	0	85	0	0	0	0	0	0
Nakonde	77	59	47	3	24	7	80	83	54
<b>Province</b>	-	-	-	-	-	-	-	-	-

*Source: Tuberculosis database*

### 3.5 Sexually transmitted infections

Sexually transmitted infections are diseases that are acquired largely through sexual intercourse. Table 3.11 shows incidence of sexually transmitted infections in 2007. The rate was the highest in the population five years and older in Chinsali (10.1 per 1000 population) and lowest in Chilubi (2.9 per 1000 population). The incidence rate among the under-fives was lower than among the older population. The rate was less than 1 in all the districts except in Chinsali where it was 1.1 per 1000 population.

**Table 3.9: Sexually transmitted infection Incidence, 2007**

District	Incidence rate per 1,000 population (All health facilities)		
	Under-five	5 years and above	Total
Chilubi	0.1	2.9	3.9
Chinsali	1.1	10.1	11.2
Isoka	0.0	6.7	6.7
Kaputa	0.9	6.4	7.3
Kasama	0.2	6.3	8.3
Luwingu	-	4.2	4.2
Mbala	0.0	6.8	6.8
Mpika	-	3.6	3.6
Mporokoso	0.1	9.9	10.0
Mpulungu	0.1	4.2	4.3
Mungwi	-	6.0	6.0
Nakonde	0.0	5.9	5.9
<b>Province</b>			

*Source: HMIS*

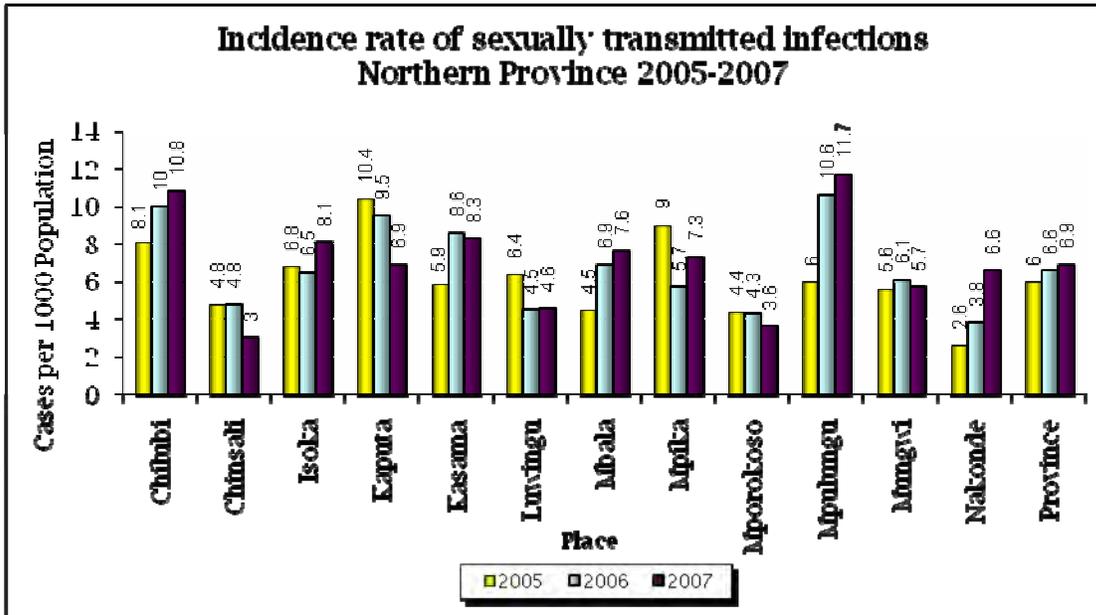


Figure 3.3: Incidence of sexually transmitted infections

## Chapter 4: Human resources

Sufficient suitably qualified manpower is a necessary for the delivery of the basic health care package. This chapter looks at data on the numbers of medical doctors, clinical officers, nurses, midwives, pharmacist, laboratory technicians, environmental health technologists, community health workers, trained traditional birth attendants and other health care providers. Indicators in this chapter shed some light about the human resources challenges for health care delivery in Southern province.

### 4.1 Number of medical personnel by district

Table 4.1 presents data on the number of health personnel by district in 2007. In some districts, there were no medical doctors (Kaputa and Mungwi). Other staff cadres who were not present in some districts were pharmacists and laboratory technicians. There was no pharmacist in Kaputa, Mporokoso and Mungwi. Laboratory technicians were the ones not present the most. They were not there in Chinsali, Isoka, Kaputa, Mporokoso and Nakonde.

Table 4.1: Number of health staff by district, December 2007

District	Staff Cadre								Total
	Medical Doctors	Clinical Officers	Nurses	Midwives	Environmental Health Officers/Technicians	Pharmacists	Laboratory Technicians	Others	
Chilubi	-	-	-	-	-	-	-	-	-
Chinsali	2	6	31	1	14	1	0	2	70
Isoka	2	3	14	2	11	1	0	0	59
Kaputa	0	4	15	5	4	0	0	0	28
Kasama	7	23	95	5	17	7	7		-
Luwingu	1	10	14	6	2	1	1	0	35
Mbala	7	17	47	6	15	3	2	2	13
Mpika	5	9	63	2	13	3	4	6	129
Mporokos	1	9	23	6	4	0	0	0	43
Mpulungu	1	4	11	7	4	1	1	0	29
Mungwi	0	4	24	1	11	0	1	1	54
Nakonde	1	2	11	8	4	1	0	0	27
<b>Province</b>	-	-	-	-	-	-	-	-	-

Source: District Human Resource Register

## Chapter 5: Health services delivery indicators

Utilisation of health facilities in Northern Province increased in the period 2005 to 2007. The increase in population is the most important factor behind this trend. The removal of user fees could also have improved the access to public health facilities.

### 5.1 Health facility utilisation

Health facility utilisation is defined as a sum of first attendances and admissions in a given period of time per population. This indicator is influenced by quality of services offered by the health facilities.

Table 5.1 shows trends of selected service delivery indicators for the whole province from 2005 to 2007. The health centre under-five per capita attendance reduced from 1.65 in 2005 to 1.63 in 2006 and to 1.55 in 2007. There was a slight reduction in the hospital bed occupancy rate from 60 per cent in 2005 to 57 per cent in 2006 and to 53 per cent in 2007 and to 5.4 days in 2007. The trend of other indicators fluctuated.

**Table 5.1: Trends of selected service delivery indicators by year in Northern Province**

Indicator	Period in years		
	2005	2006	2007
Health centre outpatient department utilisation	0.8	0.9	0.9
Health centre) under-five per capita attendance	1.65	1.63	1.55
Health centre over 5 per capita attendance	0.31	0.41	0.46
Health centre bed occupancy rate	24	25	22
Hospital bed occupancy rate	60	57	53
Hospital average length of stay	4.7	4.1	4.6

*Source: Northern Province Health Office HMIS, 2007*

#### 5.1.1 Outpatient department utilisation

Table 5.2 shows that outpatient department utilisation in the province increased slightly from 0.8 in 2005 to 0.9 in 2006 and 2007.

**Table 5.2: Hospital outpatient department utilisation rate in Northern Province, 2005 – 2007**

District	Out-patient department utilisation rates		
	2005	2006	2007
Chilubi	0.9	1.4	1.3
Chinsali	0.9	0.8	0.8
Isoka	0.9	0.9	0.9
Kaputa	0.6	0.7	0.8
Kasama	0.8	1.0	1.0
Luwingu	0.7	0.8	0.7
Mbala	0.8	0.8	0.9
Mpika	1.1	1.0	1.0
Mporokoso	0.5	0.5	0.6
Mpulungu	0.8	0.8	1.0
Mungwi	1.1	1.2	1.2

Nakonde	0.5	0.6	0.7
<b>Province</b>	<b>0.8</b>	<b>0.9</b>	<b>0.9</b>

Source Northern Province Health Office HMIS, 2007

### 5.1.2 Health centre per capita attendance

Outpatient department utilisation is defined as the average number of outpatient department attendances at health facilities by the catchment population in a period. 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 attendances. If the health facility outpatient departments are under-utilised, measures to improve the quality of service and accessibility by the general public need to be taken.

Table 5.3 shows that, at provincial level, per capita attendance increased from 0.98 in 2005 to 1.02 in 2006. It was also 1.02 in 2007. In the three years, the hospital per capita attendance was higher among the under-fives than among the older population in all the districts. In the province it was 1.65 among the under-fives and 0.31 in the older population in 2005. The respective rates in 2006 were 1.63 and 0.41 and in 2007, 1.63 and 0.41.

Table 5.3: Health centre per capita attendances Northern Province, 2005-2007

District	2005			2006			2007		
	Under-five	5 years and above	Total	Under-five	5 years and above	Total	Under-five	5 years and above	Total
Chilubi	2.26	0.24	1.23	3.32	0.43	1.88	3.32	0.43	1.88
Chinsali	1.55	0.31	0.93	1.24	0.34	0.79	1.24	0.34	0.79
Isoka	1.75	0.24	0.99	1.39	0.40	0.89	1.39	0.40	0.89
Kaputa	1.31	0.28	0.79	1.64	0.37	1.01	1.64	0.37	1.01
Kasama	1.75	0.34	1.04	1.73	0.44	1.09	1.73	0.44	1.09
Luwingu	1.59	0.24	0.92	1.55	0.33	0.94	1.55	0.33	0.94
Mbala	1.59	0.32	0.96	1.69	0.37	1.03	1.69	0.37	1.03
Mpika	2.16	0.43	1.29	1.87	0.52	1.19	1.87	0.52	1.19
Mporokoso	1.00	0.18	0.59	0.96	0.29	0.63	0.96	0.29	0.63
Mpulungu	1.67	0.33	1.00	1.94	0.44	1.19	1.94	0.44	1.19
Mungwi	2.12	0.45	1.28	1.86	0.65	1.26	1.86	0.65	1.26
Nakonde	0.93	0.19	0.56	0.98	0.28	0.63	0.98	0.28	0.63
<b>Province</b>	<b>1.65</b>	<b>0.31</b>	<b>0.98</b>	<b>1.63</b>	<b>0.41</b>	<b>1.02</b>	<b>1.63</b>	<b>0.41</b>	<b>1.02</b>

Source: Northern Province Health Office HMIS, 2007

### 5.1.3 Health centres and hospitals bed occupancy rate

The bed occupancy rate is defined as the average percentage of available beds occupied during a given period of time. Ideally, the bed occupancy rate should not be less than 80 per cent. An investigation is called for if the indicator falls below 80 per cent in hospitals.

As shown in Table 5.4, the total provincial bed occupancy rate for health centres and district hospitals dropped from 33 per cent in 2005 to 31 per cent in 2007. The bed occupancy rate was the highest in Luwingu (54 per cent) in 2005. It was the highest in 2006 (56 per cent) and 2007 (57 per cent) in Isoka. Mungwi recorded the lowest in 2005 (20 per cent) and Nakonde in 2006 (21 per cent) and in 2007 (23 per cent).

**Table 5.4: Bed occupancy rate per district and Year, 2005-2007**

District	Health centre bed occupancy rate			Hospital bed occupancy rate			Summary bed occupancy rate		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chilubi	34	32	35	-	-	-	34	32	35
Chinsali	25	20	15	70	67	45	38	34	24
Isoka	33	46	36	60	65	74	53	56	57
Kaputa	35	42	29	-	-	-	35	42	29
Kasama	16	13	9	40.5	48.5	41.3	28	31	25
Luwingu	34	23	22	71	65	49	54	45	36
Mbala	26	30	26	50	53	52	35	41	38
Mpika	21	28	25	60	65	63	36	39	40
Mporokoso	14	24	18	49	36	37	30	31	29
Mpulungu	28	25	22	-	-	-	28	25	22
Mungwi	20	22	24	-	-	-	20	22	24
Nakonde	22	21	23	-	-	-	22	21	23
<b>Province</b>	<b>24</b>	<b>25</b>	<b>22</b>	<b>59</b>	<b>56</b>	<b>52</b>	<b>33</b>	<b>33</b>	<b>31</b>

*Source: Northern Province Health Office HMIS, 2007*

### 5.1.4 Hospital outpatient department utilisation

This indicator is measured by the percentage of referred first attendances and by-pass first attendances from health centres. The hospital outpatient department first attendances should be less than one tenth of the health centre attendances because health centres refer less than 10 per cent to. If higher, then health centres are being by-passed or are referring cases which they shouldn't.

Table 5.5 shows that at provincial level, the hospital outpatient department utilisation rate dropped from 0.03 in 2005 to 0.02 in 2006 but it increased to 0.03 in 2007. Isoka, Chinsali and Mbala districts recorded the highest outpatient department utilisation rate in 2005, 2006 and 2007 respectively while Luwingu, Chinsali and Mpika had the lowest outpatient department utilisation rate in the period. There was no district hospital in Chilubi, Kaputa, Kasama, Mpulungu, Mungwi and Nakonde.

**Table 5.5: Hospital outpatient department utilisation**

District	Outpatient department utilisation rate		
	2005	2006	2007
Chilubi	-	-	-
Chinsali	0.03	0.08	0.05
Isoka	0.09	0.06	0.08
Kaputa	-	-	-
Kasama	-	-	-
Luwingu	0.03	0.02	0.01
Mbala	0.04	0.06	0.09
Mpika	0.06	0.02	0.05
Mporokoso	0.04	0.04	0.04
Mpulungu	-	-	-
Mungwi	-	-	-
Nakonde	-	-	-
<b>Province</b>	<b>-</b>	<b>-</b>	<b>-</b>

*Source: Northern Province Health Office HMIS, 2007*

**Note:** There was no district hospital in Chilubi, Kaputa, Kasama, Mpulungu, Mungwi and Nakonde.



### 5.1.5 Hospital outpatient department first attendances by-pass percentage

This is the proportion of outpatient department first attendants who go directly to hospitals outpatient departments without first passing through health centres. If the number of by-pass first attendances is higher than referred first attendances from a health centre, it signals a possible problem at that health centre or the hospital is offering health centre services. This indicator would show the districts in which managers should improve accessibility and services offered at health centres.

Table 5.6 indicates hospital outpatient department first attendance by-pass percentage from 2005-to 2007 by district and age groups in Northern Province. There was a downward trend in this percentage from 2005 to 2007 at provincial level in all age groups. It was 14 per cent in 2005, 11 per cent in 2006 and 6 per cent in 2007. Mbala recorded the highest percentage in 2005 (30 per cent), Mpika and Mporokoso in 2006 (27 per cent in both) and Isoka in 2007 (18 per cent). However, Isoka recorded the lowest percentage in 2005 (2 per cent) and Mbala in 2006 (2 per cent) and in 2007 (1 per cent).

**Table 5.6: Hospital outpatient department first attendance percentage by-pass, 2005-2007**

District	Under-five years			5 years and above			Total by-pass attendance		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chilubi	-	-	-	-	-	-	-	-	-
Chinsali	6	19	7	2	11	2	3	11	3
Isoka	5	12	20	2	4	19	2	5	18
Kaputa	-	-	-	-	-	-	-	-	-
Kasama	-	-	-	-	-	-	-	-	-
Luwingu	19	16	12	10	15	9	11	15	10
Mbala	51	1	1	3	2	1	30	2	1
Mpika	19	28	1	22	30	5	20	27	2
Mporokoso	18	33	17	22	26	17	20	27	16
Mpulungu	-	-	-	-	-	-	-	-	-
Mungwi	-	-	-	-	-	-	-	-	-
Nakonde	-	-	-	-	-	-	-	-	-
<b>Province</b>	<b>26</b>	<b>16</b>	<b>7</b>	<b>10</b>	<b>10</b>	<b>7</b>	<b>14</b>	<b>11</b>	<b>6</b>

*Source: Northern Province Health Office HMIS, 2007*

*Note: There was no district hospital in Chilubi, Kaputa, Kasama, Mpulungu, Mungwi and Nakonde.*

### 5.1.6 In-patient turnover rate

This is the number of admissions per bed in a period such as a year. It indicates the efficiency in usage of facilities for inpatients treatment. The annual turnover rate is supposed to be 50 in district hospitals.

Table 5.7 presents information on health centre and hospital in patient turnover by districts from 2005 to 2007 in Northern Province. The rate was less than 50 in all the districts.

**Table 5.7: 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
Chilubi	10.3	8.0	9.0	-	-	-
Chinsali	9.0	7.4	5.6	15.2	16.6	10.7
Isoka	12.1	17.0	14.7	14.2	14.2	15.4
Kaputa	8.8	9.4	9.1	-	-	-
Kasama	9.1	5.2	8.7	-	-	-
Luwingu	9.2	6.8	5.8	11.0	10.2	11.1
Mbala	9.3	9.8	10.2	10.2	12.5	8.3
Mpika	7.3	8.3	13.2	11.5	14.4	12.2
Mporokoso	4.3	6.5	5.6	8.7	8.2	7.1
Mpulungu	10.6	9.5	11.2	-	-	-
Mungwi	7.1	7.3	7.8	-	-	-
Nakonde	9.5	9.6	7.5	-	-	-
<b>Province</b>	<b>8.6</b>	<b>8.2</b>	<b>8.7</b>	<b>11.6</b>	<b>12.4</b>	<b>10.3</b>

*Source:* Northern Province Health Office HMIS, 2007

*Note:* There was no district hospital in Chilubi, Kaputa, Kasama, Mpulungu, Mungwi and Nakonde.

### 5.1.7 Average length of stay in the district hospitals

Assessment of the indicator helps to optimise the appropriate use of facilities for each patient. The recommended average length of stay in the hospitals or district hospital is not more than 6 days. When the bed occupancy rate drops and the average length of stay remains stable, the in-patient staff workload reduces.

Table 5.8 shows that the average length of stay in the province was 4.7 days in 2005, 4.1 in 2006 and 4.6 in 2007. This was below the average maximum of six days. In fact, even among the districts, the average length of stay even in the district hospitals was less than 6 days.

In Luwingu, it was above 5 days in 2005 and 2006 but it dropped to 4.0 in 2007. In Chinsali and in Isoka, the average length of stay was less than 5 days in all the three years. In Mbala, the average number of days spent in the district hospital was 4.4 in 2005, 4.0 in 2006 and 5.7 in 2007. In Mpika, it was 4.7 in 2005, 4.0 in 2006 and 4.6 in 2007. In Mporokoso, it was 5.0 in 2005, 3.9 in 2006 and 4.6 in 2007.

**Table 5.8: Hospital average length of stay by district, 2005 -2007**

District	Average length of stay in hospitals		
	2005	2006	2007
Chilubi	-	-	-
Chinsali	4.2	3.6	3.8
Isoka	4.4	4.2	4.3
Kaputa	-	-	-
Kasama	-	-	-
Luwingu	5.8	5.7	4.0
Mbala	4.4	4.0	5.7
Mpika	4.7	4.0	4.6
Mporokoso	5.0	3.9	4.6
Mpulungu	-	-	-
Mungwi	-	-	-
Nakonde	-	-	-

Province	4.7	4.1	4.6
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Source:: Northern Province Health Office HMIS, 2007

Note: There was no district hospital in Chilubi, Kaputa, Kasama, Mpulungu, Mungwi and Nakonde.

## 5.2 Maternal health and family planning

Maternal health issues are receiving significant recognition as major public health concern. Maternal health provides a corner stone for child survival and wellbeing. Risks in pregnancy both to the mother and the unborn child need to be identified early so that proper interventions are put in place. Efforts to achieve this can be done during pregnancy, delivery and after delivery. This section looks at the following aspects of maternal health; antenatal care, supervised deliveries, postnatal care and family planning.

### 5.2.1 Summary of maternal health indicators

Table 5.9 presents a summary of maternal health performance indicators for the period 2005 to 2007.

Table 5.9: Maternal Health Indicators, Northern Province, 2005-2007

Indicator	Year		Average	
	2005	2006	2007	2005-2007
First antenatal coverage (percentage)	101	93	92	95
Average number of antenatal visits	2.8	2.8	2.8	2.8
Institutional deliveries (percentage)	34	31	33	32
Trained Traditional Birth Attendants (percentage)	30	27	25	27
Percentage of supervised deliveries	64	58	58	60
First postnatal attendance (percentage)	46	46	50	47

Source:: Northern Province Health Office HMIS, 2007

### 5.2.2 Antenatal care

First antenatal coverage is the percentage of expected pregnancies in a catchment population, in a given period who come for antenatal services to the health facility for the first time during that pregnancy. Table 5.10 shows that the first antenatal attendance coverage in the province reduced from 101 per cent in 2005 to 93 per cent in 2006 and to 92 per cent in 2007.

Table 5.10: First antenatal attendance coverage, 2005-2007

District	2005			2006			2007		
	Visits	Target	Percentage of visits to the target	Visits	Target	Percentage of visits to the target	Visits	Target	Percentage of visits to the target
Chilubi	4,371	4,311	101	4,360	4,496	97	4,410	4,659	95
Chinsali	8,754	8,213	107	7,909	8,525	93	7,888	8,853	89
Isoka	6,042	6,236	97	6,463	6,436	100	5,837	6,643	88
Kaputa	5,682	5,490	103	5,219	5,796	90	4,839	5,775	84
Kasama	9,625	10,82	89	10,30	11,08	93	9,893	11,43	87
Luwingu	6,034	5,023	120	5,183	5,198	100	5,809	5,372	108
Mbala	11,07	8,942	124	8,236	9,292	83	9,809	9,648	102
Mpika	8,718	8,851	98	8,538	9,004	95	8,521	9,156	93
Mporoko	4,478	6,061	74	4,215	6,273	67	4,840	6,497	74

Mpulung	4,272	3,844	111	4,746	4,001	119	4,798	4,167	115
Mungwi	7,917	7,271	109	7,584	7,538	101	7,683	7,819	98
Nakonde	5,884	7,126	83	6,265	7,551	83	6,389	7,821	82
<b>Province</b>	<b>82,855</b>	<b>82,193</b>	<b>101</b>	<b>79,024</b>	<b>85,196</b>	<b>93</b>	<b>80,716</b>	<b>87,840</b>	<b>92</b>

**Source:** Northern Province Health Office HMIS, 2007

Over these years, the highest percentage of first attendance coverage among the districts was in Mpulungu. In 2005, the lowest was in Mporokoso District. Mbala and Nakonde Districts had the lowest in 2006 with Nakonde District having the lowest coverage in 2007.

### 5.2.3 Average antenatal visit

This is the average number of visits to the facility by each pregnant mother before she delivers. The national target is 4 per pregnancy and if the indicator is below 3, investigations should be done.

Table 5.11 shows that the average number of antenatal visits was 2.8 in 2005, 2006 and 2007. Among the districts, Nakonde recorded the highest average number of antenatal visits in 2005 (3.3). In 2006 and 2007, the highest number was in Mungwi (3.4 and 3.2 respectively).

**Table 5.11: Average antenatal visit, 2005-2007**

District	Antenatal attendance types by year								
	2005			2006			2007		
	Total	First	Average	Total	First	Average	Total	First	Average
Chilubi	13,060	4,371	3.0	12,950	4,360	3.0	12,693	4,410	2.9
Chinsali	23,281	8,754	2.7	21,464	7,909	2.7	21,522	7,888	2.7
Isoka	16,186	6,042	2.7	16,836	6,463	2.6	15,222	5,837	2.6
Kaputa	15,895	5,682	2.8	14,237	5,219	2.7	14,023	4,839	2.9
Kasama	28,366	9,625	2.9	28,802	10,306	2.8	27,502	9,893	2.8
Luwingu	14,608	6,034	2.4	12,550	5,183	2.4	12,697	5,809	2.2
Mbala	29,084	11,077	2.6	24,937	8,236	3.0	29,240	9,809	3.0
Mpika	26,818	8,718	3.1	25,046	8,538	2.9	23,517	8,521	2.8
Mporokoso	11,817	4,478	2.6	11,361	4,215	2.7	12,482	4,840	2.6
Mpulungu	11,967	4,273	2.8	12,569	4,746	2.6	11,338	4,798	2.4
Mungwi	24,167	7,917	3.1	25,757	7,584	3.4	24,932	7,683	3.2
Nakonde	19,143	5,884	3.3	18,466	6,265	2.9	17,266	6,389	2.7
<b>Province</b>	<b>234,392</b>	<b>82,855</b>	<b>2.8</b>	<b>224,975</b>	<b>79,024</b>	<b>2.8</b>	<b>222,434</b>	<b>80,716</b>	<b>2.8</b>

*Source: Northern Province Health Office HMIS, 2007*

### 5.2.4 Supervised deliveries

Supervised deliveries are those done by trained health personnel in health facilities or are assisted by tTBAs. Table 5.12 shows that the percentage of supervised deliveries in the province reduced from 64 per cent in 2005 to 58 per cent in 2006 and 2007.

Among the districts, the highest percentage of supervised deliveries in 2005 was in Mbala (76 per cent). In 2006 and 2007, it was in Isoka (74 per cent in both years). The district that recorded the lowest percentage of supervised deliveries in 2005 and 2007 was Chinsali (52 and 37 per cent respectively). The lowest in 2006 was in (43 per cent). Of all the deliveries conducted in 2005, 46.9 per cent were attended to by tTBAs and 63.1 per cent by health providers at a health facility. The percentage of deliveries attended to by tTBAs reduced to 46.7 per cent and 43.1 per cent in 2006 and 2007 respectively.

**Table 5.12: Percentage of supervised deliveries by place of delivery and district, 2005-2007**

District	Institutional deliveries			trained Traditional Birth Attendants (tBA)			Supervised deliveries (institutional plus tBAs)		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Chilubi	20	20	19	36	36	31	56	56	50
Chinsali	37	34	29	16	12	8	52	46	37
Isoka	36	28	35	37	46	39	73	74	74
Kaputa	24	29	30	31	25	28	55	54	57
Kasama	45	38	45	10	5	5	55	43	50
Luwingu	30	27	29	36	32	32	66	59	61
Mbala	38	38	43	38	29	35	76	67	78
Mpika	35	32	33	29	30	30	64	61	63
Mporokoso	24	25	23	32	25	25	56	50	48
Mpulungu	32	32	35	36	33	22	69	66	56
Mungwi	41	36	35	33	27	25	74	64	61
Nakonde	23	24	25	37	43	31	70	66	57
<b>Province</b>	<b>34</b>	<b>31</b>	<b>33</b>	<b>30</b>	<b>27</b>	<b>25</b>	<b>64</b>	<b>58</b>	<b>58</b>

*Source: Northern Province Health Office HMIS, 2007*

### 5.2.5 Complicated deliveries

Complicated deliveries are usually delivered by other means rather than spontaneous vertex delivery. Complicated deliveries require a high degree of skills and equipment that can only be used with specialised training in order to conduct them successfully. The percentage of complicated deliveries is an indicator that measures the proportion of supervised deliveries with complications at the health centre and the hospital, and the proportion of supervised deliveries done by caesarean section at the hospital. According to WHO standards, 15 per cent of all deliveries must be delivered by caesarean section. The aim is to minimise complications during delivery.

Table 5.13 shows information on complicated deliveries and caesarean section by health centre and hospitals for 2005 in Northern Province. The percentage of complicated deliveries in the province in 2007 in health centres was 5.6 per cent. In the district hospitals, it was 13.9 per cent. The percentage of caesarean births in the district hospitals was 10 per cent.

Among the districts, the highest percentage of complicated deliveries in health centres was in Mpika (9.6 per cent) and the lowest was in Isoka (2.1 per cent). In the district hospitals, the highest percentage of complicated deliveries was in Mbala (30.6 per cent) and the lowest was in Mporokoso (8.0 per cent). The highest percentage of caesarean births in district hospitals was also in Mbala (21 per cent) and the lowest in Mpika (6 per cent).

Table 5.13: Percentage of complicated deliveries in health centres and district hospitals by district, 2007

District	Health Centre		Hospital		
	All deliveries	Percentage complicated	All deliveries	Percentage complicated	Percentage caesarean
Chilubi	857	7.9	-	-	-
Chinsali	1,868	4.9	608	9.3	13
Isoka	936	2.1	1,319	15.5	8
Kaputa	1,649	5.0	-	-	-
Kasama	4,970	6.0	-	-	-
Luwingu	636	3.1	843	9.2	8
Mbala	3,133	1.5	891	30.6	21
Mpika	2,937	9.6	1,453	9.9	6
Mporokoso	1,452	6.4	758	8.0	9
Mpulungu	1,386	8.8	-	-	-
Mungwi	2,672	6.7	-	-	-
Nakonde	1,905	6.6	-	-	-
<b>Total</b>	<b>22,190</b>	<b>5.6</b>	<b>5,872</b>	<b>13.9</b>	<b>10</b>

Source: Northern Province Health Office HMIS, 2007

## 5.2.6 Prevalence of still births

A still birth is a delivery of a dead foetus after 28 weeks of gestation. The foetus may be fresh or macerated. At the end of the pregnancy, the patient may be in labour with progress of cervical dilation less than 1 cm per hour.

Table 5.14 shows the proportion of total births that were still borne by district in the period 2005-2007. There was an increase in the number of still births from 924 in 2005 to 1195 in 2006 and to 1386 in 2007. The percentage of still births in 2005, 2006 and 2007 was 34, 31 and 33 respectively. Among the districts in these years, the highest percentage of still births was in Kasama. The percentage of still births in Kasama was 45 in 2005, 38 in 2006 and 45 in 2007. The proportion of still births was also 38 in 2006 in Mbala. The lowest percentage of still births was in Chilubi. The respective percentages were 20, 20 and 19.

Table 5.14: Proportion of total births in health facilities that were still borne by district, 2005-2007

District	2005			2006			2007		
	Still births	Total births	Percentage of still births	Still births	Total births	Percentage of still births	Still births	Total births	Percentage of still births
Chilubi	43	830	20	43	880	20	41	858	19
Chinsali	98	2,932	37	93	2,866	34	57	2,516	29
Isoka	80	2,195	36	82	2,017	28	330	2,257	35
Kaputa	96	1,579	24	54	1,616	29	73	1,653	30
Kasama	120	4,786	45	115	4,051	38	123	5,084	45
Luwingu	69	1,548	30	229	1,368	27	110	1,527	29
Mbala	101	3,242	38	208	3,542	38	301	4,144	43
Mpika	93	3,020	35	76	2,772	32	82	2,971	33
Mporokoso	58	1,427	24	37	1,544	25	64	1,523	23
Mpulungu	38	1,203	32	34	933	24	53	1,388	35
Mungwi	67	2,881	41	67	2,657	36	53	2,705	35
Nakonde	61	1,569	23	116	1,734	24	99	1,922	25
<b>Total</b>	<b>924</b>	<b>27,212</b>	<b>34</b>	<b>1,195</b>	<b>26,318</b>	<b>31</b>	<b>1,386</b>	<b>28,548</b>	<b>33</b>

Source: HMIS



## 5.2.7 First postnatal attendance

This refers to the woman attending postnatal care for the first time within 6 days and 6 weeks of delivery. Due to the circumstances, the target for this indicator was higher in urban than in rural areas, 80 per cent and 40 per cent respectively.

Table 5.15 shows a steady increase in the first postnatal attendances in the province. By 2007, the coverage was 50 per cent of the target in the province. In 2005 and 2006, it was 46 per cent of the target. Among the districts, the lowest attained was in Chilubi (28 per cent) and the highest in Kaputa (68 per cent).

Table 5.15: First postnatal visits and target by district, 2005-2007

District	2005			2006			2007		
	Visits	Target	Percentage of visits to target	Visits	Target	Percentage of visits to target	Visits	Target	Percentage of visits to target
Chilubi	1,250	4,152	30	1,529	4,330	35	1,251	4,486	28
Chinsali	4,399	7,910	56	2,546	8,210	31	3,762	8,524	44
Isoka	3,606	6,005	60	4,150	6,199	67	3,604	6,396	56
Kaputa	3,829	5,286	72	4,833	5,581	87	3,797	5,563	68
Kasama	4,302	10,424	41	4,688	10,674	44	5,169	11,006	47
Luwingu	3,292	4,837	68	2,648	5,004	53	3,336	5,171	65
Mbala	4,010	8,613	47	3,648	8,948	41	5,343	9,288	58
Mpika	2,879	8,524	34	2,557	8,669	29	3,176	8,817	36
Mporokoso	1,344	5,834	23	1,422	6,040	24	1,662	6,255	27
Mpulungu	1,295	3,702	35	1,160	3,854	30	2,377	4,011	59
Mungwi	3,041	7,000	43	4,172	7,260	57	3,753	7,530	50
Nakonde	3,077	6,863	45	3,990	7,270	55	4,902	7,532	65
<b>Province</b>	<b>36,324</b>	<b>79,150</b>	<b>46</b>	<b>37,667</b>	<b>82,039</b>	<b>46</b>	<b>42,132</b>	<b>84,579</b>	<b>50</b>

Source: HMIS

## 5.2.8 Institutional maternal mortality

This is the death of a woman during pregnancy or within 42 days after delivery from bleeding and other delivery complications. Table 5.16 shows that recorded maternal deaths in health facilities in the province reduced from 88 in 2005 to 62 in 2007. The highest maternal mortality ratios in the health facilities in 2005 per 100000 deliveries among the districts were in Luwingu (267.8), Chinsali (177.0) and Kasama (172.7). In 2006, it was in Chinsali (255.8), Luwingu (219.8), and Chilubi (207.9). The highest ratios in 2007 were in Nakonde (119.5), Chilubi (111.5) and Mbala (107.7).

Table 5.16: Trends of maternal mortality ratios per 100000 deliveries in health facilities, 2005-2007

District	2005			2006			2007		
	Deaths	Deliveries	Ratio	Deaths	Deliveries	Ratio	Deaths	Deliveries	Ratio
Chilubi	0	830	0.0	9	876	207.9	5	857	111.5
Chinsali	14	2,912	177.0	21	2,789	255.8	3	2,476	35.2
Isoka	2	2,176	33.3	5	7,137	80.7	4	2,255	62.5
Kaputa	8	1,247	151.3	3	1,615	53.8	4	1,649	71.9
Kasama	18	4,732	172.7	9	4,015	84.3	7	4,970	63.6
Luwingu	13	1,442	267.8	11	1,353	219.8	5	1,479	96.7
Mbala	9	3,238	104.5	9	3,391	100.6	10	926	107.7

Mpika	1	2,993	11.7	4	2,744	46.1	4	2,937	45.4
Mporokoso	2	1,419	102.9	4	1,517	66.2	6	1,452	95.9
Mpulungu	3	1,193	81.0	1	1,240	80.6	2	4,484	44.6
Mungwi	4	2,858	57.1	0	2,629	0.0	3	2,672	39.8
Nakonde	5	1,567	72.9	1	1,723	13.8	9	1,905	119.5
<b>Province</b>	<b>83</b>	<b>26,607</b>	<b>104.9</b>	<b>77</b>	<b>25,629</b>	<b>93.9</b>	<b>62</b>	<b>28,062</b>	<b>73.3</b>

Source: Northern Province Health Office HMIS, 2007

### 5.3 Child health indicators

Zambia is committed to attaining the Millennium Development Goal number 4: to reduce by two-thirds, between 1990 and 2015, the under-five mortality rate. Strategies for that include universal immunisation, growth monitoring and nutrition promotion. 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*.

Table 5.17 indicates four of the eighteen child health indicators-fully immunised under-one year, BCG-measles dropout rate, pregnancies with tetanus toxoid protection and underweight prevalence. As shown in Table 6.16, the target of fully immunising 80 per cent of the children less than one year old was achieved in the province in 2006 (86 per cent) and in 2007 (80 per cent). The coverage was 73 per cent in 2005. The target of less than 10 per cent BCG-Measles dropout rate was not achieved in 2006 and 2007. The rate was 18 per cent in 2005, 12 per cent in 2006. It was achieved in 2007 when it was -1.

The target of protecting 80 per cent of the pregnancies with tetanus toxoid was achieved in 2005 (87 per cent) and in 2006 (83 per cent). The percentage reduced to 63 per cent in 2007.

The expected below 10 per cent underweight prevalence was not attained in any of the years although the prevalence reduced yearly over the three years. The percentage of under-weight children was almost twice the minimum level of 10 per cent at 22 per cent in 2005. It was 18 per cent in 2006 and 12 per cent in 2007.

Table 5.17: Child health indicators, 2005-2007

Indicator	Period in years			Average
	2005	2006	2007	2005-2007
Fully immunised under 1 year (percentage)	73	85	80	79.3
BCG-Measles dropout rate (percentage)	18	12	-1	9.7
Pregnancies with tetanus toxoid protection (percentage)	87	83	63	77.6
Under weight prevalence (percentage)	22	18	12	17.3

Source: HMIS

#### 5.3.1 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. The national target for the indicator is 80 per cent and the threshold is 70 per cent.

Table 5.18 shows fully immunised under-ones in the province were 73 per cent in 2005, 85 per cent in 2006 and 80 per cent in 2007. That was above the national threshold target of 70 per cent. Among the districts, the coverage was above the threshold in 2007 in all the districts except in Chilubi where the coverage was 66 per cent. This was also the case in 2006 when the coverage in Chilubi was 58 per cent. In 2005, coverage was below the threshold in Chilubi (62 per cent, Chinsali 69 per cent, Mpika 64 per cent, Luwingu 66 per cent, Kasama 68 per cent, Mporokoso 66 per cent and Nakonde 68 per cent).

**Table 5.18: Fully immunised children under 1 year by district, 2005-2007**

District	2005			2006			2007		
	Immunised	Target	Coverage percentage	Immunised	Target	Coverage percentage	Immunised	Target	Coverage percentage
Chilubi	1,968	3,193	62	1,930	3,330	58	2,263	3,451	66
Chinsali	4,184	6,086	69	5,338	6,314	85	5,643	6,556	86
Isoka	3,485	4,620	75	4,047	4,768	85	3,671	4,920	75
Kaputa	3,486	4,067	86	3,664	4,294	85	3,399	4,278	79
Kasama	5,475	8,018	68	9,344	8,212	114	8,522	8,465	101
Luwingu	2,461	3,719	66	2,713	3,850	70	2,282	3,978	57
Mbala	5,417	7,271	75	4,926	7,555	65	5,776	7,846	74
Mpika	4,193	6,556	64	5,307	6,669	80	4,537	6,781	67
Mporokoso	2,968	4,489	66	3,318	4,647	71	3,357	4,813	70
Mpulungu	2,407	3,125	77	2,500	3,254	77	2,655	3,387	78
Mungwi	5,537	5,387	103	6,166	5,589	110	5,803	5,794	100
Nakonde	3,600	5,279	68	5,447	5,593	97	5,122	5,792	88
<b>Province</b>	<b>45,181</b>	<b>61,810</b>	<b>73</b>	<b>54,700</b>	<b>64,075</b>	<b>85</b>	<b>53,030</b>	<b>66,061</b>	<b>80</b>

Source: HMIS

### 5.3.2 BCG-Measles dropout rate

BCG-Measles dropout rate refers to the number of children who are enrolled on the expanded programme on immunisation who fail to complete all the recommended vaccinations from BCG to Measles before they reach their first birthday. It is the difference in the proportion between children less than one year of age who received BCG and measles vaccines. The BCG vaccine is supposed to be given to the infant immediately after birth. Measles should be given at nine months of age.

Table 5.19 shows that this indicator for the province improved from 18 per cent in 2005 to 12 per cent in 2006 and to -1 per cent in 2007. Among the districts in 2005, Chinsali recorded the highest dropout rate (97 per cent) while Mpulungu recorded the lowest (-1 per cent). In 2006, the highest dropout rate of 28 per cent was in Mpulungu and the lowest of 2 per cent in Nakonde.

Table 5.19: Percent distribution of BCG -measles dropout rate by district, 2005-2007

District	2005			2006			2007		
	Coverage		Drop Out Rate	Coverage		Drop Out Rate	Coverage		Drop Out Rate
	BCG	Measles		BCG	Measles		BCG	Measles	
Chilubi	149	90	40	110	88	20	146	117	20
Chinsali	127	92	97	130	105	19	134	106	14
Isoka	114	93	19	133	103	22	117	99	16
Kaputa	131	99	24	118	95	19	103	106	-2
Kasama	114	90	21	144	131	9	121	173	-43
Luwingu	136	118	13	125	122	2	135	129	5
Mbala	104	101	2	88	85	4	111	103	7
Mpika	123	103	16	132	124	6	123	151	-22
Mporokoso	91	74	20	89	83	7	80	82	-3
Mpulungu	92	92	-1	143	102	28	129	108	17
Mungwi	149	126	15	157	132	16	124	119	4
Nakonde	91	73	20	104	102	2	106	98	8
<b>Province</b>	<b>118.0</b>	<b>96.0</b>	<b>18</b>	<b>123.0</b>	<b>108.0</b>	<b>12.0</b>	<b>118.0</b>	<b>119.0</b>	<b>-1</b>

Source: HMIS

### 5.3.3 Pregnancies protected against tetanus

Table 5.20 shows that this indicator deteriorated in the period under review. The coverage of the target in the province reduced from 87 per cent in 2005 to 83 per cent in 2006 and to 63 per cent in 2007. Among the districts in 2005, the highest coverage of 114 per cent was in Kaputa while the lowest of 64 per cent was in Mporokoso. Coverage in 2007 was below 80 per cent in all the districts. In Mporokoso and Mpulungu, it was 35 per cent and 38 per cent respectively.

Table 5.20: Pregnancies with tetanus toxoid protection, 2005-2007

District	2005			2006			2007		
	Immunised	Target	Percentage covered	Immunised	Target	Percentage covered	Immunised	Target	Percentage covered
Chilubi	4,454	4,311	103	4,155	4,496	92	2,759	4,659	59
Chinsali	7,417	8,213	90	5,657	8,525	66	5,901	8,853	67
Isoka	4,956	6,236	79	5,486	6,436	85	4,942	6,643	74
Kaputa	6,259	5,490	114	5,018	5,796	87	3,741	5,775	65
Kasama	9,838	10,825	91	10,815	11,086	98	7,135	11,430	62
Luwingu	3,700	5,023	74	3,479	5,198	67	3,868	5,372	72
Mbala	7,182	8,942	80	6,513	9,292	70	6,902	9,648	72
Mpika	6,863	8,851	78	8,107	9,004	90	5,792	9,156	63
Mporokoso	3,859	6,061	64	3,386	6,277	54	2,287	6,497	35
Mpulungu	3,302	3,844	86	3,230	4,001	81	1,586	4,167	38
Mungwi	7,372	7,271	101	8,306	7,538	110	6,009	7,819	77
Nakonde	6,280	7,126	88	6,609	7,551	98	4,679	7,821	60
<b>Province</b>	<b>71,842</b>	<b>82,193</b>	<b>87</b>	<b>70,761</b>	<b>85,196</b>	<b>83</b>	<b>55,601</b>	<b>87,840</b>	<b>63</b>

Source: HMIS

### 5.3.4 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.

Table 6.21 brings out the underweight prevalence in under-five children between 2005 and 2007. The average percentage of underweight children seen in child health clinics in the province reduced from 22 per cent in 2005 to 18 per cent in 2006 and to 12 per cent in 2007. Among the districts, the percentage of underweight children seen in child health clinics also reduced annually in all the districts except in Mpika where the percentage was 21 in 2005, 16 in 2006 and 24 in 2007. The highest percentage of underweight children seen in the period 2005-2007 was in 2005 in Luwingu (31 per cent).

**Table 5.21: Percentage of under five children who were underweight by district, 2005-2007**

District	2005	2006	2007
Chilubi	29	28	17
Chinsali	19	16	9
Isoka	19	15	8
Kaputa	21	14	6
Kasama	19	16	13
Luwingu	31	28	17
Mbala	23	18	13
Mpika	21	16	24
Mporokoso	23	20	14
Mpulungu	21	20	4
Mungwi	23	20	10
Nakonde	23	20	11
<b>Province</b>	<b>22</b>	<b>18</b>	<b>12</b>

*Source: HMIS*

## Chapter 6: 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

### 6.1 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.

#### 6.1.1 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. Table 6.1 shows that all the nets that were received in the province and districts were distributed in the communities in the districts.

**Table 6.1: Distribution of insecticide treated mosquito nets (ITNs) to pregnant women and children Under-five**

District	Number of insecticide treated nets		Source of insecticide treated nets
	Received	Distributed	
	(a)	(b)	
Chilubi	40,000	40,000	National Malaria Control Centre
Chinsali	80,000	80,000	National Malaria Control Centre
Isoka	50,000	50,000	National Malaria Control Centre
Kaputa	40,000	40,000	National Malaria Control Centre
Kasama	89,000	89,000	National Malaria Control Centre
Luwingu	-	-	
Mbala	90,000	90,000	National Malaria Control Centre
Mpika	50,000	50,000	National Malaria Control Centre
Mporokoso	51,700	51,700	National Malaria Control Centre
Mpulungu	21,000	21,000	National Malaria Control Centre
Mungwi	-	-	

Nakonde	50,000	50,000	National Malaria Control Centre
<b>Province</b>	-	-	

*Source: Environmental Health Reports*

*\*\* Estimated pregnancies and Under-fives*

## 6.2 Water quality monitoring

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

Table 6.2 shows the number of water samples that were collected in each district and the samples that were found to be satisfactory. All the water samples collected for laboratory examination were found to be satisfactory.

**Table 6.2: Water quality monitoring, 2007**

District	Number of water samples collected	Number of water samples with satisfactory results	Percentage satisfactory
Chilubi	2	2	100
Chinsali	0	0	0
Isoka	0	0	0
Kaputa	-	-	-
Kasama	60	60	100
Luwingu	4	4	100
Mbala	2	2	100
Mpika			0
Mporokoso	8	8	100
Mpulungu	0	0	0
Mungwi	0	0	0
Nakonde	2	2	100
<b>Province</b>	-	-	-

*Source: Environmental Health Reports*

## 6.3 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 6.3 shows the number of incinerators in each district in the province. There was a working incinerator in each district. The highest number of incinerators was in Kasama (7), followed by Mbala (5), Mpulungu (4) and 3 in Chilubi, Kaputa, Luwingu and Mporokoso. There were 2 in Mungwi and in Nakonde

**Table 6.3: Inventory of incinerators in each district by the end of 2007**

District	Total number of incinerators	Number operational	Number. not operational	Remarks
Chilubi	3	3	0	Needs replacement
Chinsali	-	-	-	
Isoka	1	1		
Kaputa	3	3		

Kasama	7	6	1	
Luwingu	3	3	0	
Mbala	5	5	0	20 Health centre need incinerators
Mpika	-	-	-	
Mporokoso	3	0	3	
Mpulungu	4	2	2	
Mungwi	2	1	1	
Nakonde	2	2	0	Standard only
<b>Province</b>	-	-	-	

*Source: Environmental Health Reports*

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