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Preface

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.

Dr. Fabian S. Kabulubulu
Provincial Health Director
Northern Province
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I also wish to recognise the contributions made by various other organisations and individuals either directly or indirectly towards the successful production of this bulletin but could not be mentioned by name.

I embrace and cherish the support from you all.

Mr Charles C. Kachaka
Provincial Data Management Specialist
Northern Province
### List of Abbreviations

<table>
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<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
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<tr>
<td>BCG</td>
<td>Bacillus Calmette Guerin</td>
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<tr>
<td>CHW</td>
<td>Community Health Worker</td>
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<tr>
<td>DHMT</td>
<td>District Health Management Team</td>
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<tr>
<td>DHO</td>
<td>District Health Office</td>
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<tr>
<td>DHIO</td>
<td>District Health Information Officer</td>
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<tr>
<td>DPT-Hib + HepB</td>
<td>Diphtheria, Pertusis, Tetanus, Haemophilus Influenza and Hepatitis B</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>HMIS</td>
<td>Health Management Information System</td>
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<tr>
<td>HSSP</td>
<td>Health Services and Systems Programme</td>
</tr>
<tr>
<td>IDSR</td>
<td>Integrated Disease Surveillance and Response</td>
</tr>
<tr>
<td>MMR</td>
<td>Maternal Mortality Ratio</td>
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<tr>
<td>NHSP</td>
<td>National Health Strategic Plan</td>
</tr>
<tr>
<td>OPV</td>
<td>Oral Polio Vaccine</td>
</tr>
<tr>
<td>PHO</td>
<td>Provincial Health Office</td>
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<tr>
<td>PMTCT</td>
<td>Prevention of Mother to Child Transmission</td>
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<tr>
<td>STI</td>
<td>Sexually Transmitted Infections</td>
</tr>
<tr>
<td>TBA</td>
<td>Traditional Birth Attendant</td>
</tr>
<tr>
<td>tTBA</td>
<td>trained Traditional Birth Attendant</td>
</tr>
<tr>
<td>ZDHS</td>
<td>Zambia Demographic and Health Survey</td>
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Glossary of Terms

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

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

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

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

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

Bed Turnover: 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

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, Mplusungu, 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 Mplusungu, (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).

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 landmarks in the province include Lake Tanganyika, Lake Bangweulu and its wetlands, Lake Mweru Wantipa, and a number of waterfalls including Lumangwe, Kabwelaume, 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, Mpolungu, Mungwi and Nakonde. All the districts have one or two communication systems in place. Mbala, Mpolungu, 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, Mpolungu 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

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

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>
<thead>
<tr>
<th>Disease</th>
<th>Incidence per 1,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Under-five</td>
</tr>
<tr>
<td>Malaria</td>
<td>1046.4</td>
</tr>
<tr>
<td>Respiratory infections non-pneumonia</td>
<td>458.9</td>
</tr>
<tr>
<td>Diarrhoea non bloody</td>
<td>206.1</td>
</tr>
<tr>
<td>Eye infection</td>
<td>110.2</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>94.7</td>
</tr>
<tr>
<td>Trauma</td>
<td>32.3</td>
</tr>
<tr>
<td>Skin Infections</td>
<td>67.7</td>
</tr>
<tr>
<td>Digestive system non infectious</td>
<td>14.2</td>
</tr>
<tr>
<td>Ear, Nose and Throat</td>
<td>32.9</td>
</tr>
<tr>
<td>Muscular skeletal</td>
<td>0.9</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>Incidence rate per 1,000 population (All health facilities)</th>
<th>Case fatality rate per 1,000 admissions (Hospitals only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Under-five</td>
<td>5 years and above</td>
</tr>
<tr>
<td>Chilubi</td>
<td>1,592.7</td>
<td>275.3</td>
</tr>
<tr>
<td>Chinsali</td>
<td>977.0</td>
<td>165.7</td>
</tr>
<tr>
<td>Isoka</td>
<td>873.0</td>
<td>168.8</td>
</tr>
<tr>
<td>Kaputa</td>
<td>882.4</td>
<td>180.3</td>
</tr>
<tr>
<td>Kasama</td>
<td>1,203.8</td>
<td>239.6</td>
</tr>
<tr>
<td>Luwingu</td>
<td>1,011.5</td>
<td>206.7</td>
</tr>
<tr>
<td>Mbala</td>
<td>1,134.1</td>
<td>208.1</td>
</tr>
<tr>
<td>Mpika</td>
<td>938.9</td>
<td>245.3</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>789.4</td>
<td>178.7</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>1,300.3</td>
<td>223.4</td>
</tr>
<tr>
<td>Mungwi</td>
<td>1,324.3</td>
<td>337.7</td>
</tr>
<tr>
<td>Nakonde</td>
<td>655.2</td>
<td>135.2</td>
</tr>
<tr>
<td>Province</td>
<td>1,046.4</td>
<td>212.7</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>Incidence rate per 1,000 population (All health facilities)</th>
<th>Case fatality rate per 1,000 admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Under-five</td>
<td>5 years and above</td>
</tr>
<tr>
<td>Chilubi</td>
<td>673.2</td>
<td>135.9</td>
</tr>
<tr>
<td>Chinsali</td>
<td>434.2</td>
<td>108.0</td>
</tr>
<tr>
<td>Isoka</td>
<td>396.6</td>
<td>83.4</td>
</tr>
<tr>
<td>Kaputa</td>
<td>334.0</td>
<td>83.9</td>
</tr>
<tr>
<td>Kasama</td>
<td>373.8</td>
<td>102.0</td>
</tr>
<tr>
<td>Luwingu</td>
<td>283.8</td>
<td>76.9</td>
</tr>
<tr>
<td>Mbala</td>
<td>525.2</td>
<td>111.4</td>
</tr>
<tr>
<td>Mpika</td>
<td>689.2</td>
<td>187.3</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>323.4</td>
<td>99.6</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>706.9</td>
<td>118.3</td>
</tr>
<tr>
<td>Mungwi</td>
<td>541.8</td>
<td>169.7</td>
</tr>
<tr>
<td>Nakonde</td>
<td>285.3</td>
<td>61.7</td>
</tr>
<tr>
<td>Province</td>
<td>458.9</td>
<td>113.2</td>
</tr>
</tbody>
</table>

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 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

<table>
<thead>
<tr>
<th>District</th>
<th>Incidence rate per 1,000 population (All health facilities)</th>
<th>Case fatality rate per 1,000 admissions (Health centres and hospitals)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Under-five</td>
<td>5 years and above</td>
</tr>
<tr>
<td>Chilubi</td>
<td>100.8</td>
<td>12.0</td>
</tr>
<tr>
<td>Chinsali</td>
<td>74.6</td>
<td>14.2</td>
</tr>
<tr>
<td>Isoka</td>
<td>86.2</td>
<td>16.3</td>
</tr>
<tr>
<td>Kaputa</td>
<td>20.5</td>
<td>5.3</td>
</tr>
<tr>
<td>Kasama</td>
<td>276.4</td>
<td>29.7</td>
</tr>
<tr>
<td>Luwingu</td>
<td>101.8</td>
<td>19.9</td>
</tr>
<tr>
<td>M'bala</td>
<td>85.2</td>
<td>14.9</td>
</tr>
<tr>
<td>M'pika</td>
<td>53.0</td>
<td>16.2</td>
</tr>
<tr>
<td>M'porokoso</td>
<td>19.8</td>
<td>3.1</td>
</tr>
<tr>
<td>M'pulungu</td>
<td>61.7</td>
<td>11.3</td>
</tr>
<tr>
<td>M'ungwi</td>
<td>82.9</td>
<td>29.6</td>
</tr>
<tr>
<td>Nakonde</td>
<td>53.1</td>
<td>10.9</td>
</tr>
<tr>
<td>Province</td>
<td>94.7</td>
<td>16.4</td>
</tr>
</tbody>
</table>

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; 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.
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 Mbulungu, (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 in and others among the older population.

<table>
<thead>
<tr>
<th>District</th>
<th>Incidence rate per 1,000 population (All health facilities)</th>
<th>Case fatality rate per 1,000 admissions (Hospitals only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Under-five</td>
<td>5 years and above</td>
</tr>
<tr>
<td>Chilubi</td>
<td>445.1</td>
<td>43.6</td>
</tr>
<tr>
<td>Chinsali</td>
<td>128.5</td>
<td>14.0</td>
</tr>
<tr>
<td>Isoka</td>
<td>194.3</td>
<td>25.8</td>
</tr>
<tr>
<td>Kaputa</td>
<td>128.8</td>
<td>22.8</td>
</tr>
<tr>
<td>Kasama</td>
<td>187.8</td>
<td>18.9</td>
</tr>
<tr>
<td>Luwingu</td>
<td>187.6</td>
<td>32.8</td>
</tr>
<tr>
<td>Mbala</td>
<td>312.7</td>
<td>38.1</td>
</tr>
<tr>
<td>Mpiika</td>
<td>190.5</td>
<td>32.7</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>125.5</td>
<td>14.9</td>
</tr>
<tr>
<td>Mbulungu</td>
<td>450.8</td>
<td>53.0</td>
</tr>
<tr>
<td>Mungwi</td>
<td>136.4</td>
<td>23.7</td>
</tr>
<tr>
<td>Nakonde</td>
<td>142.5</td>
<td>20.9</td>
</tr>
<tr>
<td><strong>Province</strong></td>
<td><strong>206.1</strong></td>
<td><strong>27.2</strong></td>
</tr>
</tbody>
</table>

*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, Mbulungu, 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.
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, plague, 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.
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.

![Incidence rate of suspected dysentery, Northern Province, 2005-2007](image)

**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**

<table>
<thead>
<tr>
<th>District</th>
<th>Incidence rate per 1,000 population (All health facilities)</th>
<th>Case Fatality rate per 1,000 admissions (Hospitals only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Under-five</td>
<td>5 years and above</td>
</tr>
<tr>
<td>Chilubi</td>
<td>60.6</td>
<td>38.5</td>
</tr>
<tr>
<td>Chinsali</td>
<td>31.8</td>
<td>30.2</td>
</tr>
<tr>
<td>Isoka</td>
<td>41.4</td>
<td>40.9</td>
</tr>
<tr>
<td>Kaputa</td>
<td>22.7</td>
<td>17.1</td>
</tr>
<tr>
<td>Kasama</td>
<td>36.4</td>
<td>29.1</td>
</tr>
<tr>
<td>Luwingu</td>
<td>28.2</td>
<td>30.4</td>
</tr>
</tbody>
</table>

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

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, Mpolungu, Mungwi and Nakonde.

![Incidence of trauma](image)

*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

<table>
<thead>
<tr>
<th>District</th>
<th>Under-five</th>
<th>5 years and above</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>176.9</td>
<td>23.7</td>
<td>54.9</td>
</tr>
<tr>
<td>Chinsali</td>
<td>156.4</td>
<td>14.3</td>
<td>42.7</td>
</tr>
<tr>
<td>Isoka</td>
<td>100.3</td>
<td>19.6</td>
<td>35.7</td>
</tr>
<tr>
<td>Kaputa</td>
<td>51.5</td>
<td>8.7</td>
<td>17.2</td>
</tr>
<tr>
<td>Kasama</td>
<td>114.8</td>
<td>12.0</td>
<td>32.9</td>
</tr>
<tr>
<td>Luwingu</td>
<td>102.2</td>
<td>14.6</td>
<td>32.1</td>
</tr>
<tr>
<td>Mbaula</td>
<td>82.1</td>
<td>10.5</td>
<td>23.7</td>
</tr>
<tr>
<td>Mpika</td>
<td>129.7</td>
<td>21.6</td>
<td>43.2</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>69.1</td>
<td>11.6</td>
<td>23.1</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>126.7</td>
<td>14.5</td>
<td>35.1</td>
</tr>
<tr>
<td>Mungwi</td>
<td>152.2</td>
<td>22.6</td>
<td>49.0</td>
</tr>
<tr>
<td>Nakonde</td>
<td>61.5</td>
<td>6.2</td>
<td>17.3</td>
</tr>
<tr>
<td><strong>Province</strong></td>
<td><strong>110.2</strong></td>
<td><strong>14.7</strong></td>
<td><strong>33.6</strong></td>
</tr>
</tbody>
</table>

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.

![Incidence of eye infections](image)

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

<table>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>2.26</td>
<td>3.32</td>
<td>2.45</td>
</tr>
<tr>
<td>Chinsali</td>
<td>1.55</td>
<td>1.24</td>
<td>1.40</td>
</tr>
<tr>
<td>Isoka</td>
<td>1.75</td>
<td>1.39</td>
<td>1.36</td>
</tr>
<tr>
<td>Kaputa</td>
<td>1.31</td>
<td>1.64</td>
<td>1.45</td>
</tr>
<tr>
<td>Kasama</td>
<td>1.75</td>
<td>1.73</td>
<td>1.72</td>
</tr>
<tr>
<td>Luwingu</td>
<td>1.59</td>
<td>1.55</td>
<td>1.21</td>
</tr>
<tr>
<td>Mbala</td>
<td>1.59</td>
<td>1.69</td>
<td>1.52</td>
</tr>
<tr>
<td>Mpika</td>
<td>2.16</td>
<td>1.87</td>
<td>1.66</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>1.00</td>
<td>0.96</td>
<td>1.04</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>1.67</td>
<td>1.94</td>
<td>2.00</td>
</tr>
<tr>
<td>Mungwi</td>
<td>2.12</td>
<td>1.86</td>
<td>1.98</td>
</tr>
<tr>
<td>Nakonde</td>
<td>0.93</td>
<td>0.98</td>
<td>1.09</td>
</tr>
<tr>
<td><strong>Province</strong></td>
<td><strong>1.65</strong></td>
<td><strong>1.63</strong></td>
<td><strong>1.55</strong></td>
</tr>
</tbody>
</table>

*Source: HMIS*

### 2.3 Under-five case fatality rates

The under-five case fatality rate in 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

<table>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>25.8</td>
<td>26.1</td>
<td>24.9</td>
</tr>
<tr>
<td>Chinsali</td>
<td>21.3</td>
<td>20.7</td>
<td>31.5</td>
</tr>
<tr>
<td>Isoka</td>
<td>34.7</td>
<td>23.4</td>
<td>28.1</td>
</tr>
<tr>
<td>Kaputa</td>
<td>55.8</td>
<td>47.6</td>
<td>31.0</td>
</tr>
<tr>
<td>Kasama</td>
<td>6.1</td>
<td>7.1</td>
<td>6.9</td>
</tr>
<tr>
<td>Luwingu</td>
<td>17.2</td>
<td>45.3</td>
<td>34.9</td>
</tr>
<tr>
<td>Mbala</td>
<td>29.0</td>
<td>25.0</td>
<td>14.8</td>
</tr>
<tr>
<td>Mpika</td>
<td>28.3</td>
<td>24.0</td>
<td>28.6</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>19.6</td>
<td>29.6</td>
<td>17.2</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>24.0</td>
<td>16.0</td>
<td>14.1</td>
</tr>
<tr>
<td>Mungwi</td>
<td>13.5</td>
<td>21.9</td>
<td>26.1</td>
</tr>
<tr>
<td>Nakonde</td>
<td>36.2</td>
<td>34.0</td>
<td>33.8</td>
</tr>
<tr>
<td><strong>Province</strong></td>
<td><strong>25.8</strong></td>
<td><strong>26.1</strong></td>
<td><strong>24.9</strong></td>
</tr>
</tbody>
</table>

*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>
<thead>
<tr>
<th>District</th>
<th>Number of acute flaccid paralysis cases</th>
<th>Annualised non-polio acute flaccid paralysis rate</th>
<th>Stool adequacy*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expected</td>
<td>Detected</td>
<td>Number</td>
</tr>
<tr>
<td>Chilubi</td>
<td>1</td>
<td>2</td>
<td>4.8</td>
</tr>
<tr>
<td>Chinsali</td>
<td>2</td>
<td>5</td>
<td>6.3</td>
</tr>
<tr>
<td>Isoka</td>
<td>1</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Kaputa</td>
<td>1</td>
<td>1</td>
<td>1.9</td>
</tr>
<tr>
<td>Kasama</td>
<td>2</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Luwingu</td>
<td>1</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Mbala</td>
<td>2</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Mpika</td>
<td>2</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>1</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>2</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Mungwi</td>
<td>1</td>
<td>4</td>
<td>5.7</td>
</tr>
<tr>
<td>Nakonde</td>
<td>1</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Province</strong></td>
<td><strong>17</strong></td>
<td><strong>17</strong></td>
<td><strong>2.1</strong></td>
</tr>
</tbody>
</table>

*Source: Acute flaccid paralysis surveillance database*
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 100,000 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.

![Trends of non-acute flaccid paralysis rate](image)

*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.
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

<table>
<thead>
<tr>
<th>District</th>
<th>Under-five years</th>
<th>5 years and above</th>
<th>Under-five Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>8</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Chinsali</td>
<td>0</td>
<td>0</td>
<td>160</td>
</tr>
<tr>
<td>Isoka</td>
<td>11</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Kaputa</td>
<td>2</td>
<td>0</td>
<td>111</td>
</tr>
<tr>
<td>Kasama</td>
<td>2</td>
<td>26</td>
<td>92</td>
</tr>
<tr>
<td>Luwingu</td>
<td>7</td>
<td>0</td>
<td>31</td>
</tr>
<tr>
<td>Mbala</td>
<td>27</td>
<td>0</td>
<td>121</td>
</tr>
<tr>
<td>Mpika</td>
<td>11</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>0</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Mbulungu</td>
<td>20</td>
<td>0</td>
<td>112</td>
</tr>
<tr>
<td>Mungwi</td>
<td>0</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>Nakonde</td>
<td>7</td>
<td>4</td>
<td>119</td>
</tr>
</tbody>
</table>
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 inMpika 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

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

*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>
<thead>
<tr>
<th>District</th>
<th>Number of counselling and testing clients</th>
<th>Number of counselling and testing clients</th>
<th>Number of counselling and testing clients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attended</td>
<td>Tested</td>
<td>Percentage tested</td>
</tr>
<tr>
<td>Chilubi</td>
<td>33</td>
<td>33</td>
<td>100.0</td>
</tr>
<tr>
<td>Chinsali</td>
<td>2386</td>
<td>2373</td>
<td>99.5</td>
</tr>
<tr>
<td>Isoka</td>
<td>213</td>
<td>193</td>
<td>90.6</td>
</tr>
<tr>
<td>Kaputa</td>
<td>192</td>
<td>181</td>
<td>94.2</td>
</tr>
<tr>
<td>Kasama</td>
<td>116</td>
<td>104</td>
<td>89.6</td>
</tr>
<tr>
<td>Luwingu</td>
<td>853</td>
<td>853</td>
<td>100.0</td>
</tr>
</tbody>
</table>
| 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

<table>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tested</td>
<td>Positive</td>
<td>Percentage positive</td>
</tr>
<tr>
<td>Chilubi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinsali</td>
<td>33</td>
<td>16</td>
<td>48.4</td>
</tr>
<tr>
<td>Isoka</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaputa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kasama</td>
<td>2,373</td>
<td>987</td>
<td>41.5</td>
</tr>
<tr>
<td>Luwingu</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mbala</td>
<td>193</td>
<td>100</td>
<td>51.8</td>
</tr>
<tr>
<td>Mpoloko</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>104</td>
<td>69</td>
<td>66.3</td>
</tr>
<tr>
<td>Mungwi</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nakonde</td>
<td>853</td>
<td>160</td>
<td>18.7</td>
</tr>
<tr>
<td>Province</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

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 to 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.

<table>
<thead>
<tr>
<th>District</th>
<th>Antenatal first visits</th>
<th>Tested for HIV</th>
<th>Percentage tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>4,410</td>
<td>220</td>
<td>4.9</td>
</tr>
<tr>
<td>Chinsali</td>
<td>7,888</td>
<td>1,374</td>
<td>17.4</td>
</tr>
<tr>
<td>Isoka</td>
<td>5,837</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Kaputa</td>
<td>4,839</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kasama</td>
<td>9,893</td>
<td>3,782</td>
<td>99.1</td>
</tr>
<tr>
<td>Luwingu</td>
<td>5,809</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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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.

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

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.

<table>
<thead>
<tr>
<th>District</th>
<th>Births exposed to HIV</th>
<th>Number given antiretroviral prophylaxis</th>
<th>Percentage of babies exposed to HIV given antiretroviral prophylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>329</td>
<td>11</td>
<td>1.7</td>
</tr>
<tr>
<td>Chinsali</td>
<td>622</td>
<td>11</td>
<td>1.7</td>
</tr>
<tr>
<td>Isoka</td>
<td>469</td>
<td>11</td>
<td>1.7</td>
</tr>
<tr>
<td>Kaputa</td>
<td>408</td>
<td>11</td>
<td>1.7</td>
</tr>
<tr>
<td>Kasama</td>
<td>807</td>
<td>258</td>
<td>31.9</td>
</tr>
</tbody>
</table>

Source: Zambia Voluntary Counselling and Testing database.
<table>
<thead>
<tr>
<th>Location</th>
<th>Total</th>
<th>New</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luwingu</td>
<td>379</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mbala</td>
<td>682</td>
<td>68</td>
<td>10.0</td>
</tr>
<tr>
<td>Mpika</td>
<td>646</td>
<td>46</td>
<td>7.1</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>559</td>
<td>30</td>
<td>5.3</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>294</td>
<td>86</td>
<td>29.2</td>
</tr>
<tr>
<td>Mungwi</td>
<td>552</td>
<td>17</td>
<td>3.0</td>
</tr>
<tr>
<td>Nakonde</td>
<td>552</td>
<td>78</td>
<td>14.1</td>
</tr>
<tr>
<td><strong>Province</strong></td>
<td><strong>80,486</strong></td>
<td><strong>-</strong></td>
<td><strong>-</strong></td>
</tr>
</tbody>
</table>

*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.

![Prophylaxis to mother and infant](image)

**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.**

<table>
<thead>
<tr>
<th>District</th>
<th>2006</th>
<th></th>
<th></th>
<th>2007</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
</tr>
<tr>
<td>Chilubi</td>
<td>25</td>
<td>18</td>
<td>43</td>
<td>273</td>
<td>374</td>
<td>647</td>
</tr>
<tr>
<td>Chinsali</td>
<td>156</td>
<td>231</td>
<td>387</td>
<td>329</td>
<td>362</td>
<td>691</td>
</tr>
<tr>
<td>Isoka</td>
<td>56</td>
<td>79</td>
<td>135</td>
<td>83</td>
<td>103</td>
<td>186</td>
</tr>
<tr>
<td>Kaputa</td>
<td>945</td>
<td>1,258</td>
<td>2,203</td>
<td>1,391</td>
<td>1,904</td>
<td>3,295</td>
</tr>
<tr>
<td>Kasama</td>
<td>28</td>
<td>48</td>
<td>76</td>
<td>63</td>
<td>85</td>
<td>148</td>
</tr>
<tr>
<td>Luwingu</td>
<td>313</td>
<td>483</td>
<td>796</td>
<td>531</td>
<td>767</td>
<td>1,298</td>
</tr>
<tr>
<td>Mbala</td>
<td>204</td>
<td>246</td>
<td>450</td>
<td>343</td>
<td>492</td>
<td>835</td>
</tr>
</tbody>
</table>

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### 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.

![Currently on treatment at the end of 2006 and 2007](image)

*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

<table>
<thead>
<tr>
<th>District</th>
<th>Sex</th>
<th>Sputum smear</th>
<th>Extra pulmonary tuberculosis</th>
<th>Relapse positive</th>
<th>Others previously treated</th>
<th>Treatment after default</th>
<th>Treatment after failure</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Positive</td>
<td>Negative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>14</td>
<td>15</td>
<td>31</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>13</td>
<td>25</td>
<td>37</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>75</td>
</tr>
<tr>
<td>Chinsali</td>
<td>Total</td>
<td>27</td>
<td>40</td>
<td>68</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>139</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>10</td>
<td>18</td>
<td>6</td>
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<td>0</td>
<td>0</td>
<td>34</td>
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<tr>
<td></td>
<td>Female</td>
<td>12</td>
<td>19</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>41</td>
</tr>
<tr>
<td>Chilubi</td>
<td>Total</td>
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<td>37</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>75</td>
</tr>
<tr>
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<td>Male</td>
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<td>48</td>
<td>12</td>
<td>3</td>
<td>12</td>
<td>7</td>
<td>111</td>
</tr>
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<td></td>
<td>Female</td>
<td>27</td>
<td>40</td>
<td>12</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>89</td>
</tr>
<tr>
<td>Isoka</td>
<td>Total</td>
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<td>88</td>
<td>24</td>
<td>5</td>
<td>19</td>
<td>8</td>
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</tr>
<tr>
<td></td>
<td>Male</td>
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<tr>
<td></td>
<td>Female</td>
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<td>54</td>
<td>34</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>155</td>
</tr>
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<td>Kasama</td>
<td>Total</td>
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<td>137</td>
<td>84</td>
<td>20</td>
<td>0</td>
<td>6</td>
<td>414</td>
</tr>
<tr>
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<td>6</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>83</td>
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<tr>
<td></td>
<td>Female</td>
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<td>34</td>
<td>9</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>77</td>
</tr>
<tr>
<td>Kaputa</td>
<td>Total</td>
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<td>8</td>
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<td>22</td>
<td>10</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>45</td>
</tr>
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<td>Total</td>
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<td>34</td>
<td>20</td>
<td>4</td>
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<td>2</td>
<td>90</td>
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<td>21</td>
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<td>0</td>
<td>4</td>
<td>95</td>
</tr>
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<td></td>
<td>Female</td>
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<td>30</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>87</td>
</tr>
<tr>
<td>Mbala</td>
<td>Total</td>
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<td>53</td>
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<td>2</td>
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<td>0</td>
<td>59</td>
</tr>
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<td>7</td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>53</td>
</tr>
<tr>
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<td>Total</td>
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<td>21</td>
<td>9</td>
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<td>21</td>
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<td>9</td>
<td>87</td>
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<td>23</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>61</td>
</tr>
<tr>
<td>Mpuulungu</td>
<td>Total</td>
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<td>42</td>
<td>44</td>
<td>7</td>
<td>6</td>
<td>13</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>57</td>
<td>86</td>
<td>30</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>179</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>35</td>
<td>77</td>
<td>29</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>143</td>
</tr>
<tr>
<td>Mpika</td>
<td>Total</td>
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<td>163</td>
<td>59</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td>322</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>40</td>
<td>16</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>30</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Mungwi</td>
<td>Total</td>
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<td>24</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>101</td>
</tr>
<tr>
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<td>Male</td>
<td>33</td>
<td>36</td>
<td>25</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>110</td>
</tr>
<tr>
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<td>Female</td>
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<td>27</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>56</td>
</tr>
<tr>
<td>Nakonde</td>
<td>Total</td>
<td>57</td>
<td>63</td>
<td>33</td>
<td>4</td>
<td>7</td>
<td>8</td>
<td>166</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>451</td>
<td>402</td>
<td>231</td>
<td>45</td>
<td>22</td>
<td>34</td>
<td>1,187</td>
</tr>
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<td></td>
<td>Female</td>
<td>312</td>
<td>369</td>
<td>189</td>
<td>23</td>
<td>15</td>
<td>17</td>
<td>926</td>
</tr>
<tr>
<td>Province</td>
<td>Total</td>
<td>763</td>
<td>771</td>
<td>412</td>
<td>68</td>
<td>37</td>
<td>51</td>
<td>2,113</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>Cure rate (percentage)</th>
<th>Completion rate (percentage)</th>
<th>Treatment success rate (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>86</td>
<td>78</td>
<td>72</td>
</tr>
<tr>
<td>Chinsali</td>
<td>71</td>
<td>75</td>
<td>68</td>
</tr>
<tr>
<td>Isoka</td>
<td>79</td>
<td>61</td>
<td>41</td>
</tr>
<tr>
<td>Kaputa</td>
<td>58</td>
<td>29</td>
<td>72</td>
</tr>
<tr>
<td>Kasama</td>
<td>73</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>Luwingu</td>
<td>68</td>
<td>79</td>
<td>71</td>
</tr>
<tr>
<td>Mbala</td>
<td>81</td>
<td>71</td>
<td>83</td>
</tr>
<tr>
<td>Mpika</td>
<td>76</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>60</td>
<td>0</td>
<td>54</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>41</td>
<td>0</td>
<td>63</td>
</tr>
<tr>
<td>Mungwi</td>
<td>79</td>
<td>0</td>
<td>85</td>
</tr>
<tr>
<td>Nakonde</td>
<td>77</td>
<td>59</td>
<td>47</td>
</tr>
</tbody>
</table>

Province: -

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

<table>
<thead>
<tr>
<th>District</th>
<th>Incidence rate per 1,000 population (All health facilities)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Under-five</td>
</tr>
<tr>
<td>Chilubi</td>
<td>0.1</td>
</tr>
<tr>
<td>Chinsali</td>
<td>1.1</td>
</tr>
<tr>
<td>Isoka</td>
<td>0.0</td>
</tr>
<tr>
<td>Kaputa</td>
<td>0.9</td>
</tr>
<tr>
<td>Kasama</td>
<td>0.2</td>
</tr>
<tr>
<td>Luwingu</td>
<td>-</td>
</tr>
<tr>
<td>Mbala</td>
<td>0.0</td>
</tr>
<tr>
<td>Mpika</td>
<td>-</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>0.1</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>0.1</td>
</tr>
<tr>
<td>Mungwi</td>
<td>-</td>
</tr>
<tr>
<td>Nakonde</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Province: -

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

<table>
<thead>
<tr>
<th>District</th>
<th>Medical Doctors</th>
<th>Clinical Officers</th>
<th>Nurses</th>
<th>Midwives</th>
<th>Staff Cadre</th>
<th>Pharmacists</th>
<th>Laboratory Technicians</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chinsali</td>
<td>2</td>
<td>6</td>
<td>31</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>70</td>
</tr>
<tr>
<td>Isoka</td>
<td>2</td>
<td>3</td>
<td>14</td>
<td>2</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>59</td>
</tr>
<tr>
<td>Kaputa</td>
<td>0</td>
<td>4</td>
<td>15</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>0</td>
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<td>28</td>
</tr>
<tr>
<td>Kasama</td>
<td>7</td>
<td>23</td>
<td>95</td>
<td>5</td>
<td>17</td>
<td>7</td>
<td>7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luwingu</td>
<td>1</td>
<td>10</td>
<td>14</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>35</td>
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<td>7</td>
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<td>13</td>
</tr>
<tr>
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<td>6</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>43</td>
</tr>
<tr>
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<td>11</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>1</td>
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<tr>
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<td>11</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>54</td>
</tr>
<tr>
<td>Nakonde</td>
<td>1</td>
<td>2</td>
<td>11</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>27</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health centre outpatient department utilisation</td>
<td>0.8</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Health centre under-five per capita attendance</td>
<td>1.65</td>
<td>1.63</td>
<td>1.55</td>
</tr>
<tr>
<td>Health centre over 5 per capita attendance</td>
<td>0.31</td>
<td>0.41</td>
<td>0.46</td>
</tr>
<tr>
<td>Health centre bed occupancy rate</td>
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<td>25</td>
<td>22</td>
</tr>
<tr>
<td>Hospital bed occupancy rate</td>
<td>60</td>
<td>57</td>
<td>53</td>
</tr>
<tr>
<td>Hospital average length of stay</td>
<td>4.7</td>
<td>4.1</td>
<td>4.6</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>0.9</td>
<td>1.4</td>
<td>1.3</td>
</tr>
<tr>
<td>Chinsali</td>
<td>0.9</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Isoka</td>
<td>0.9</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Kaputa</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
</tr>
<tr>
<td>Kasama</td>
<td>0.8</td>
<td>1.0</td>
<td>1.0</td>
</tr>
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<td>0.7</td>
</tr>
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</tr>
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<td>Mpika</td>
<td>1.1</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>0.8</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Mungwi</td>
<td>1.1</td>
<td>1.2</td>
<td>1.2</td>
</tr>
</tbody>
</table>
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

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

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

<table>
<thead>
<tr>
<th>District</th>
<th>Health centre bed occupancy rate</th>
<th>Hospital bed occupancy rate</th>
<th>Summary bed occupancy rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>34</td>
<td>32</td>
<td>35</td>
</tr>
<tr>
<td>Chinsali</td>
<td>25</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Isoka</td>
<td>33</td>
<td>46</td>
<td>36</td>
</tr>
<tr>
<td>Kaputa</td>
<td>35</td>
<td>42</td>
<td>29</td>
</tr>
<tr>
<td>Kasama</td>
<td>16</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Luwingu</td>
<td>34</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td>Mbala</td>
<td>26</td>
<td>30</td>
<td>26</td>
</tr>
<tr>
<td>Mpika</td>
<td>21</td>
<td>28</td>
<td>25</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>14</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>28</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>Mungwi</td>
<td>20</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>Nakonde</td>
<td>22</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td>Province</td>
<td>24</td>
<td>25</td>
<td>22</td>
</tr>
</tbody>
</table>

**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 endo. 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

<table>
<thead>
<tr>
<th>District</th>
<th>Outpatient department utilisation rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>Chilubi</td>
<td>-</td>
</tr>
<tr>
<td>Chinsali</td>
<td>0.03</td>
</tr>
<tr>
<td>Isoka</td>
<td>0.09</td>
</tr>
<tr>
<td>Kaputa</td>
<td>-</td>
</tr>
<tr>
<td>Kasama</td>
<td>-</td>
</tr>
<tr>
<td>Luwingu</td>
<td>0.03</td>
</tr>
<tr>
<td>Mbala</td>
<td>0.04</td>
</tr>
<tr>
<td>Mpika</td>
<td>0.06</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>0.04</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>-</td>
</tr>
<tr>
<td>Mungwi</td>
<td>-</td>
</tr>
<tr>
<td>Nakonde</td>
<td>-</td>
</tr>
<tr>
<td>Province</td>
<td>-</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>District</th>
<th>Under-five years</th>
<th>5 years and above</th>
<th>Total by-pass attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinsali</td>
<td>6</td>
<td>19</td>
<td>7</td>
</tr>
<tr>
<td>Isoka</td>
<td>5</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Kaputa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kasama</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luwingu</td>
<td>19</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Mbala</td>
<td>51</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mpika</td>
<td>19</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>18</td>
<td>33</td>
<td>17</td>
</tr>
<tr>
<td>Mpfungu</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mungwi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nakonde</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Province</td>
<td>26</td>
<td>16</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: Northern Province Health Office HMIS, 2007

Note: There was no district hospital in Chilubi, Kaputa, Kasama, Mpfungu, 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

<table>
<thead>
<tr>
<th>District</th>
<th>Health centre inpatient turnover rate</th>
<th>Hospitals inpatient turnover rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>10.3</td>
<td>8.0</td>
</tr>
<tr>
<td>Chinsali</td>
<td>9.0</td>
<td>7.4</td>
</tr>
<tr>
<td>Isoka</td>
<td>12.1</td>
<td>17.0</td>
</tr>
<tr>
<td>Kaputa</td>
<td>8.8</td>
<td>9.4</td>
</tr>
<tr>
<td>Kasama</td>
<td>9.1</td>
<td>5.2</td>
</tr>
<tr>
<td>Luwingu</td>
<td>9.2</td>
<td>6.8</td>
</tr>
<tr>
<td>Mbala</td>
<td>9.3</td>
<td>9.8</td>
</tr>
<tr>
<td>Mpika</td>
<td>7.3</td>
<td>8.3</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>4.3</td>
<td>6.5</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>10.6</td>
<td>9.5</td>
</tr>
<tr>
<td>Mungwi</td>
<td>7.1</td>
<td>7.3</td>
</tr>
<tr>
<td>Nakonde</td>
<td>9.5</td>
<td>9.6</td>
</tr>
<tr>
<td>Province</td>
<td>8.6</td>
<td>8.2</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chinsali</td>
<td>4.2</td>
<td>3.6</td>
<td>3.8</td>
</tr>
<tr>
<td>Isoka</td>
<td>4.4</td>
<td>4.2</td>
<td>4.3</td>
</tr>
<tr>
<td>Kaputa</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kasama</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luwingu</td>
<td>5.8</td>
<td>5.7</td>
<td>4.0</td>
</tr>
<tr>
<td>Mbala</td>
<td>4.4</td>
<td>4.0</td>
<td>5.7</td>
</tr>
<tr>
<td>Mpika</td>
<td>4.7</td>
<td>4.0</td>
<td>4.6</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>5.0</td>
<td>3.9</td>
<td>4.6</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mungwi</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nakonde</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
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>
<thead>
<tr>
<th>Indicator</th>
<th>Year</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>First antenatal coverage (percentage)</td>
<td>101</td>
<td>93</td>
</tr>
<tr>
<td>Average number of antenatal visits</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Institutional deliveries (percentage)</td>
<td>34</td>
<td>31</td>
</tr>
<tr>
<td>Trained Traditional Birth Attendants (percentage)</td>
<td>30</td>
<td>27</td>
</tr>
<tr>
<td>Percentage of supervised deliveries</td>
<td>64</td>
<td>58</td>
</tr>
<tr>
<td>First postnatal attendance (percentage)</td>
<td>46</td>
<td>46</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>District</th>
<th>Visits</th>
<th>Target</th>
<th>Percentage of visits to the target</th>
<th>Visits</th>
<th>Target</th>
<th>Percentage of visits to the target</th>
<th>Visits</th>
<th>Target</th>
<th>Percentage of visits to the target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>4,371</td>
<td>4,311</td>
<td>101</td>
<td>4,360</td>
<td>4,496</td>
<td>97</td>
<td>4,410</td>
<td>4,659</td>
<td>95</td>
</tr>
<tr>
<td>Chinsali</td>
<td>8,754</td>
<td>8,213</td>
<td>107</td>
<td>7,909</td>
<td>8,525</td>
<td>93</td>
<td>7,888</td>
<td>8,853</td>
<td>89</td>
</tr>
<tr>
<td>Isoka</td>
<td>6,042</td>
<td>6,236</td>
<td>97</td>
<td>6,463</td>
<td>6,436</td>
<td>100</td>
<td>5,837</td>
<td>6,643</td>
<td>88</td>
</tr>
<tr>
<td>Kaputa</td>
<td>5,682</td>
<td>5,490</td>
<td>103</td>
<td>5,219</td>
<td>5,796</td>
<td>90</td>
<td>4,839</td>
<td>5,775</td>
<td>84</td>
</tr>
<tr>
<td>Kasama</td>
<td>9,625</td>
<td>10,82</td>
<td>89</td>
<td>10,30</td>
<td>11,08</td>
<td>93</td>
<td>9,893</td>
<td>11,43</td>
<td>87</td>
</tr>
<tr>
<td>Luwingu</td>
<td>6,034</td>
<td>5,023</td>
<td>120</td>
<td>5,183</td>
<td>5,198</td>
<td>100</td>
<td>5,809</td>
<td>5,372</td>
<td>108</td>
</tr>
<tr>
<td>Mbulu</td>
<td>11,07</td>
<td>8,942</td>
<td>124</td>
<td>8,236</td>
<td>9,292</td>
<td>83</td>
<td>9,809</td>
<td>9,648</td>
<td>102</td>
</tr>
<tr>
<td>Mpika</td>
<td>8,718</td>
<td>8,851</td>
<td>98</td>
<td>8,538</td>
<td>9,004</td>
<td>95</td>
<td>8,521</td>
<td>9,156</td>
<td>93</td>
</tr>
<tr>
<td>Mporoko</td>
<td>4,478</td>
<td>6,061</td>
<td>74</td>
<td>4,215</td>
<td>6,273</td>
<td>67</td>
<td>4,840</td>
<td>6,497</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>4,272</td>
<td>3,844</td>
<td>111</td>
<td>4,746</td>
<td>4,001</td>
<td>119</td>
<td>4,798</td>
<td>4,167</td>
<td>115</td>
</tr>
<tr>
<td>----------</td>
<td>-------</td>
<td>-------</td>
<td>-----</td>
<td>-------</td>
<td>-------</td>
<td>-----</td>
<td>-------</td>
<td>-------</td>
<td>-----</td>
</tr>
<tr>
<td>Mpuung</td>
<td>7,917</td>
<td>7,271</td>
<td>109</td>
<td>7,584</td>
<td>7,538</td>
<td>101</td>
<td>7,683</td>
<td>7,819</td>
<td>98</td>
</tr>
<tr>
<td>Nakonde</td>
<td>5,884</td>
<td>7,126</td>
<td>83</td>
<td>6,265</td>
<td>7,551</td>
<td>83</td>
<td>6,389</td>
<td>7,821</td>
<td>82</td>
</tr>
<tr>
<td>Province</td>
<td>82,855</td>
<td>82,193</td>
<td>101</td>
<td>79,024</td>
<td>85,196</td>
<td>93</td>
<td>80,716</td>
<td>87,840</td>
<td>92</td>
</tr>
</tbody>
</table>

*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>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th></th>
<th>2006</th>
<th></th>
<th>2007</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>First</td>
<td>Average</td>
<td>Total</td>
<td>First</td>
<td>Average</td>
</tr>
<tr>
<td>Chilubi</td>
<td>13,060</td>
<td>4,371</td>
<td>3.0</td>
<td>12,950</td>
<td>4,360</td>
<td>3.0</td>
</tr>
<tr>
<td>Chinsali</td>
<td>23,281</td>
<td>8,754</td>
<td>2.7</td>
<td>21,464</td>
<td>7,909</td>
<td>2.7</td>
</tr>
<tr>
<td>Isoka</td>
<td>16,186</td>
<td>6,042</td>
<td>2.7</td>
<td>16,836</td>
<td>6,463</td>
<td>2.6</td>
</tr>
<tr>
<td>Kaputa</td>
<td>15,895</td>
<td>5,682</td>
<td>2.8</td>
<td>14,237</td>
<td>5,219</td>
<td>2.7</td>
</tr>
<tr>
<td>Kasama</td>
<td>28,366</td>
<td>9,625</td>
<td>2.9</td>
<td>28,802</td>
<td>10,306</td>
<td>2.8</td>
</tr>
<tr>
<td>Luwingu</td>
<td>14,608</td>
<td>6,034</td>
<td>2.4</td>
<td>12,550</td>
<td>5,183</td>
<td>2.4</td>
</tr>
<tr>
<td>Mbala</td>
<td>29,084</td>
<td>11,077</td>
<td>2.6</td>
<td>24,937</td>
<td>8,236</td>
<td>3.0</td>
</tr>
<tr>
<td>Mpika</td>
<td>26,818</td>
<td>8,718</td>
<td>3.1</td>
<td>25,046</td>
<td>8,538</td>
<td>2.9</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>11,817</td>
<td>4,478</td>
<td>2.6</td>
<td>11,361</td>
<td>4,215</td>
<td>2.7</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>19,143</td>
<td>5,884</td>
<td>2.9</td>
<td>18,466</td>
<td>6,584</td>
<td>2.9</td>
</tr>
<tr>
<td>Province</td>
<td>234,392</td>
<td>82,855</td>
<td>2.8</td>
<td>224,975</td>
<td>79,024</td>
<td>2.8</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>Institutional deliveries</th>
<th>trained Traditional Birth Attendants (tTBA)</th>
<th>Supervised deliveries (institutional plus tTBAs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>20</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>Chinsali</td>
<td>37</td>
<td>34</td>
<td>29</td>
</tr>
<tr>
<td>Isoka</td>
<td>36</td>
<td>28</td>
<td>35</td>
</tr>
<tr>
<td>Kaputa</td>
<td>24</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>Kasama</td>
<td>45</td>
<td>38</td>
<td>45</td>
</tr>
<tr>
<td>Luwingu</td>
<td>30</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>Mbala</td>
<td>38</td>
<td>38</td>
<td>43</td>
</tr>
<tr>
<td>Mpika</td>
<td>35</td>
<td>32</td>
<td>33</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>24</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td>Mpingu</td>
<td>32</td>
<td>32</td>
<td>35</td>
</tr>
<tr>
<td>Mungwi</td>
<td>41</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td>Nakonde</td>
<td>23</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>Province</td>
<td>34</td>
<td>31</td>
<td>33</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>Health Centre</th>
<th></th>
<th></th>
<th>Hospital</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All deliveries</td>
<td>Percentage</td>
<td>All deliveries</td>
<td>Percentage</td>
<td>Percentage</td>
<td>Percentage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>complicated</td>
<td></td>
<td></td>
<td>complicated</td>
<td>caesarean</td>
</tr>
<tr>
<td>Chilubi</td>
<td>857</td>
<td>7.9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chinsali</td>
<td>1,868</td>
<td>4.9</td>
<td>608</td>
<td>9.3</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Isoka</td>
<td>936</td>
<td>2.1</td>
<td>1,319</td>
<td>15.5</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Kaputa</td>
<td>1,649</td>
<td>5.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kasama</td>
<td>4,970</td>
<td>6.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Luwingu</td>
<td>636</td>
<td>3.1</td>
<td>843</td>
<td>9.2</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Mbabala</td>
<td>3,133</td>
<td>1.5</td>
<td>891</td>
<td>30.6</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>Mpika</td>
<td>2,937</td>
<td>9.6</td>
<td>1,453</td>
<td>9.9</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>1,452</td>
<td>6.4</td>
<td>758</td>
<td>8.0</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>1,386</td>
<td>8.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>Mungwi</td>
<td>2,672</td>
<td>6.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nakonde</td>
<td>1,905</td>
<td>6.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>22,190</td>
<td>5.6</td>
<td>5,872</td>
<td>13.9</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

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

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

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>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Visits</td>
<td>Target</td>
<td>Percentage of visits to target</td>
</tr>
<tr>
<td>Chilubi</td>
<td>1,250</td>
<td>4,152</td>
<td>30</td>
</tr>
<tr>
<td>Chinsali</td>
<td>4,399</td>
<td>7,910</td>
<td>56</td>
</tr>
<tr>
<td>Isoka</td>
<td>3,606</td>
<td>6,005</td>
<td>60</td>
</tr>
<tr>
<td>Kaputa</td>
<td>3,829</td>
<td>5,286</td>
<td>72</td>
</tr>
<tr>
<td>Kasama</td>
<td>4,302</td>
<td>10,424</td>
<td>41</td>
</tr>
<tr>
<td>Luwingu</td>
<td>3,392</td>
<td>4,837</td>
<td>68</td>
</tr>
<tr>
<td>Mbala</td>
<td>4,010</td>
<td>8,613</td>
<td>47</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>2,879</td>
<td>8,524</td>
<td>34</td>
</tr>
<tr>
<td>Mpolungu</td>
<td>1,344</td>
<td>5,834</td>
<td>23</td>
</tr>
<tr>
<td>Mungwi</td>
<td>1,026</td>
<td>7,000</td>
<td>14</td>
</tr>
<tr>
<td>Nakonde</td>
<td>3,041</td>
<td>7,000</td>
<td>43</td>
</tr>
<tr>
<td>Province</td>
<td>36,324</td>
<td>79,150</td>
<td>46</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deaths</td>
<td>Deliveries</td>
<td>Ratio</td>
</tr>
<tr>
<td>Chilubi</td>
<td>0</td>
<td>830</td>
<td>0.0</td>
</tr>
<tr>
<td>Chinsali</td>
<td>14</td>
<td>2,912</td>
<td>177.0</td>
</tr>
<tr>
<td>Isoka</td>
<td>2</td>
<td>2,176</td>
<td>33.3</td>
</tr>
<tr>
<td>Kaputa</td>
<td>8</td>
<td>1,247</td>
<td>151.3</td>
</tr>
<tr>
<td>Kasama</td>
<td>18</td>
<td>4,732</td>
<td>172.7</td>
</tr>
<tr>
<td>Luwingu</td>
<td>13</td>
<td>1,442</td>
<td>267.8</td>
</tr>
<tr>
<td>Mbala</td>
<td>9</td>
<td>3,238</td>
<td>104.5</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Period in years</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully immunised under 1 year (percentage)</td>
<td>73</td>
</tr>
<tr>
<td>BCG-Measles dropout rate (percentage)</td>
<td>18</td>
</tr>
<tr>
<td>Pregnancies with tetanus toxoid protection (percentage)</td>
<td>87</td>
</tr>
<tr>
<td>Under weight prevalence (percentage)</td>
<td>22</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Immunised</td>
<td>Target</td>
<td>Coverage percentage</td>
</tr>
<tr>
<td>Chilubi</td>
<td>1,968</td>
<td>3,193</td>
<td>62</td>
</tr>
<tr>
<td>Chinsali</td>
<td>4,184</td>
<td>6,086</td>
<td>69</td>
</tr>
<tr>
<td>Isoka</td>
<td>3,485</td>
<td>4,620</td>
<td>75</td>
</tr>
<tr>
<td>Kaputa</td>
<td>3,486</td>
<td>4,067</td>
<td>86</td>
</tr>
<tr>
<td>Kasama</td>
<td>5,475</td>
<td>8,018</td>
<td>68</td>
</tr>
<tr>
<td>Luwingu</td>
<td>2,461</td>
<td>3,719</td>
<td>66</td>
</tr>
<tr>
<td>Mbala</td>
<td>5,417</td>
<td>7,271</td>
<td>75</td>
</tr>
<tr>
<td>Mpika</td>
<td>4,193</td>
<td>6,556</td>
<td>64</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>2,968</td>
<td>4,489</td>
<td>66</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>2,407</td>
<td>3,125</td>
<td>77</td>
</tr>
<tr>
<td>Mungwi</td>
<td>5,537</td>
<td>5,387</td>
<td>103</td>
</tr>
<tr>
<td>Nakonde</td>
<td>3,600</td>
<td>5,279</td>
<td>68</td>
</tr>
<tr>
<td>Province</td>
<td>45,181</td>
<td>61,810</td>
<td>73</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>BCG Coverage</th>
<th>BCG Drop Out Rate</th>
<th>Measles Coverage</th>
<th>Measles Drop Out Rate</th>
<th>BCG Coverage</th>
<th>BCG Drop Out Rate</th>
<th>Measles Coverage</th>
<th>Measles Drop Out Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>149</td>
<td>90</td>
<td>40</td>
<td>110</td>
<td>88</td>
<td>20</td>
<td>146</td>
<td>117</td>
</tr>
<tr>
<td>Chinsali</td>
<td>147</td>
<td>92</td>
<td>97</td>
<td>130</td>
<td>105</td>
<td>19</td>
<td>134</td>
<td>106</td>
</tr>
<tr>
<td>Isoka</td>
<td>144</td>
<td>93</td>
<td>19</td>
<td>133</td>
<td>103</td>
<td>22</td>
<td>117</td>
<td>99</td>
</tr>
<tr>
<td>Kaputa</td>
<td>131</td>
<td>99</td>
<td>24</td>
<td>118</td>
<td>95</td>
<td>19</td>
<td>103</td>
<td>106</td>
</tr>
<tr>
<td>Kasama</td>
<td>114</td>
<td>90</td>
<td>21</td>
<td>144</td>
<td>131</td>
<td>9</td>
<td>121</td>
<td>173</td>
</tr>
<tr>
<td>Luwingu</td>
<td>136</td>
<td>118</td>
<td>13</td>
<td>125</td>
<td>122</td>
<td>2</td>
<td>135</td>
<td>129</td>
</tr>
<tr>
<td>Mbaula</td>
<td>104</td>
<td>101</td>
<td>2</td>
<td>88</td>
<td>85</td>
<td>4</td>
<td>111</td>
<td>103</td>
</tr>
<tr>
<td>Mka</td>
<td>123</td>
<td>103</td>
<td>16</td>
<td>132</td>
<td>124</td>
<td>6</td>
<td>123</td>
<td>151</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>91</td>
<td>74</td>
<td>20</td>
<td>89</td>
<td>83</td>
<td>7</td>
<td>80</td>
<td>82</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>92</td>
<td>92</td>
<td>-1</td>
<td>143</td>
<td>102</td>
<td>28</td>
<td>129</td>
<td>108</td>
</tr>
<tr>
<td>Mungwi</td>
<td>149</td>
<td>126</td>
<td>15</td>
<td>157</td>
<td>132</td>
<td>16</td>
<td>124</td>
<td>119</td>
</tr>
<tr>
<td>Nakonde</td>
<td>91</td>
<td>73</td>
<td>20</td>
<td>104</td>
<td>102</td>
<td>2</td>
<td>106</td>
<td>98</td>
</tr>
<tr>
<td>Province</td>
<td>118.0</td>
<td>96.0</td>
<td>18</td>
<td>123.0</td>
<td>108.0</td>
<td>12.0</td>
<td>118.0</td>
<td>119.0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>District</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Immunised</td>
<td>Target</td>
<td>Percentage covered</td>
</tr>
<tr>
<td>Chilubi</td>
<td>4,454</td>
<td>4,311</td>
<td>103</td>
</tr>
<tr>
<td>Chinsali</td>
<td>7,417</td>
<td>8,213</td>
<td>90</td>
</tr>
<tr>
<td>Isoka</td>
<td>4,956</td>
<td>6,236</td>
<td>79</td>
</tr>
<tr>
<td>Kaputa</td>
<td>6,259</td>
<td>5,490</td>
<td>114</td>
</tr>
<tr>
<td>Kasama</td>
<td>9,838</td>
<td>10,825</td>
<td>91</td>
</tr>
<tr>
<td>Luwingu</td>
<td>3,700</td>
<td>5,023</td>
<td>74</td>
</tr>
<tr>
<td>Mbaula</td>
<td>7,182</td>
<td>8,942</td>
<td>80</td>
</tr>
<tr>
<td>Mpia</td>
<td>6,863</td>
<td>8,851</td>
<td>78</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>3,859</td>
<td>6,061</td>
<td>64</td>
</tr>
<tr>
<td>Mpulungu</td>
<td>3,302</td>
<td>3,844</td>
<td>86</td>
</tr>
<tr>
<td>Mungwi</td>
<td>7,372</td>
<td>7,271</td>
<td>101</td>
</tr>
<tr>
<td>Nakonde</td>
<td>6,280</td>
<td>7,126</td>
<td>88</td>
</tr>
<tr>
<td>Province</td>
<td>71,842</td>
<td>82,193</td>
<td>87</td>
</tr>
</tbody>
</table>

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 5.21 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

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

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>
<thead>
<tr>
<th>District</th>
<th>Number of insecticide treated nets</th>
<th>Source of insecticide treated nets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Received</td>
<td>Distributed</td>
</tr>
<tr>
<td>Chilubi</td>
<td>40,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Chinsali</td>
<td>80,000</td>
<td>80,000</td>
</tr>
<tr>
<td>Isoka</td>
<td>50,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Kaputa</td>
<td>40,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Kasama</td>
<td>89,000</td>
<td>89,000</td>
</tr>
<tr>
<td>Luwingu</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mbala</td>
<td>90,000</td>
<td>90,000</td>
</tr>
<tr>
<td>Mpika</td>
<td>50,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Mporokoso</td>
<td>51,700</td>
<td>51,700</td>
</tr>
<tr>
<td>Mplusungu</td>
<td>21,000</td>
<td>21,000</td>
</tr>
<tr>
<td>Mungwi</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>District</th>
<th>Number of water samples collected</th>
<th>Number of water samples with satisfactory results</th>
<th>Percentage satisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Chinsali</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Isoka</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kaputa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kasama</td>
<td>60</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Luwingu</td>
<td>4</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Mbala</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Mpika</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mporokoso</td>
<td>8</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>Mupulungu</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mungwi</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nakonde</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Province</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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), Mupulungu (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

<table>
<thead>
<tr>
<th>District</th>
<th>Total number of incinerators</th>
<th>Number operational</th>
<th>Number, not operational</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chilubi</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>Needs replacement</td>
</tr>
<tr>
<td>Chinsali</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Isoka</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Kaputa</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Province</td>
<td>Kasama</td>
<td>Luwingu</td>
<td>Mbala</td>
<td>Mphika</td>
</tr>
<tr>
<td>----------</td>
<td>--------</td>
<td>---------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

20 Health centre need incinerators

Standard only

Source: Environmental Health Reports

References


