

**Nutrition Information in Namibia:**

**Situation Analysis**

**&**

**The Way Forward**

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## ABBREVIATIONS and ACRONYMS

AIDS:	Acquired Immune Deficiency Syndrome	RED:	Reaching Every District
BMI:	Body Mass Index	REMU:	Regional Emergency Management Unit
CBS:	Central Bureau of Statistics	SADC:	Southern African Development Community
CDC:	Center for Disease Control	UWC:	University of Western Cape
CED:	Chronic Energy Deficiency	UNAM:	University of Namibia
CPI:	Consumer Price Index	UNICEF:	United Nations Children's Fund
CSI:	Coping Strategies Index	VAC:	Vulnerability Assessment Committee
DFID:	Department for International Development	WFS:	World Food Summit
EMU:	Emergency Management Unit	WFP:	U.N World Food Programme
EPI:	Expanded Programme on Immunization	WHO:	World Health Organization
EU:	European Union		
FANR:	Food Agriculture and Natural Resources		
FANTA:	Food and Nutrition Technical Assistance		
FAO:	Food and Agriculture Organization		
FIVIMS:	Food Insecurity and Vulnerability Information and Mapping Systems		
FPI:	Food Price Index		
FSNTC:	Food Security and Nutrition Technical Committee		
FSNC:	(National) Food Security and Nutrition Council		
FSNS:	Food Security and Nutrition Secretariat		
GMP:	Growth Monitoring and Promotion		
GRN:	Government Republic of Namibia		
HIS:	Health Information System		
HIV:	Human Immunodeficiency Virus		
IDA:	Iron Deficiency Anaemia		
IDD:	Iodine Deficiency Disorders		
MAWF:	Ministry of Agriculture, Water and Forestry		
MGECW:	Ministry of Gender Equality and Child Welfare		
MI:	Micronutrient Initiative		
MOHSS:	Ministry of Health and Social Services		
MWTC:	Ministry of Works, Transport and Communication		
NDHS:	Namibia Demographic and Health Survey		
NEMC:	National Emergency Management Committee		
NFSNAP:	National Food Security and Nutrition Action Plan		
NGO:	Non-governmental Organization		
NHIES:	National Household Income and Expenditure Survey		
NEWFIU:	National Early Warning and Food Information Unit		
NMS:	Namibia Meteorological Services		
NPC:	National Planning Commission		
OPM:	Office of the Prime Minister		
OVC:	Orphans and Vulnerable Children		
PHC:	Primary Health Care		
PPA:	Participatory Poverty Assessment		
PS:	Permanent Secretary		

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## **EXECUTIVE SUMMARY**

Namibia is facing numerous challenges. Chronic food insecurity, recurring weather hazards (drought and floods), and HIV/AIDS (a fifth of the population is infected) have had dire effects on people's lives and livelihoods. There has been growing concern about the impact of these rising threats on people's health and nutritional well-being in the short, medium and long term. Malnutrition is widespread in Namibia, with nearly one fourth of the children under-five stunted and underweight (i.e. 23.6% and 24%, respectively) and 9% of them wasted; moreover little progress has been made in the last 15 years towards reducing malnutrition. As a result, food security and nutrition surveillance has received renewed attention; and representatives from both the Ministry of Health and Social Services (MOHSS) and the United Nations Children's Fund (UNICEF) have indicated that the nutrition situation among vulnerable groups needs to be monitored on a regular basis.

In this context, UNICEF contracted Tulane University School of Public Health and Tropical Medicine (Department of International Health) in New Orleans, U.S.A, to provide technical cooperation for the development of nutrition surveillance in Namibia through capacity building in this context. The field researchers, Sophie Chotard and Joel Conkle, from Tulane, visited Namibia from September 4<sup>th</sup> to October 24<sup>th</sup> 2006 for this purpose. This report results from this cooperation.

The approach adopted was the following:

1. Review of existing information systems for health, nutrition, early warning and food security; and identification of their strengths and weaknesses.
2. Assessment of the Health Information System (HIS) and the Growth Monitoring and Promotion (GMP) Programme.
3. Identification of nutrition information needs and gaps for policy formulation, programme design/planning and programme management/monitoring.
4. Identification of possible options (data collection systems) to fill information gaps and development of project proposal and tools for the proposed systems.

The review of existing information systems on nutrition, health, early warning and food security, and identification of information needs enabled us to identify critical information gaps with regard to nutrition and related factors. First, it was found that monitoring nutrition trends among vulnerable groups is needed for timely warning, programme planning and monitoring of programme outcomes. In addition, information on programme performance and quality of health care with regard to nutrition related activities is required to inform decision-making for programme management.

It was found that HIS and the National Early Warning and Food Information Unit (NEWFIU) already collect much needed nutrition and early warning information. Indeed, nutrition data (e.g. underweight among children under five, low birth weight etc.) are already being collected on a monthly basis in all health facilities across the country through the GMP, which feeds into HIS. However, there are major concerns with regard to the validity and quality of the data generated and delays in data transfer and reporting. For early warning, NEWFIU produces regular food security bulletins, which provide valuable information from a variety of sources (e.g. rainfall performance, crop production, food prices etc.); this information can be used to better understand and interpret nutrition trends.

Our proposal for the development of nutrition surveillance and additional nutrition information systems therefore builds on existing structures, which will enable us to minimize costs, avoid work overload and ensure sustainability.

The proposed data collection systems are not mutually exclusive but complementary. These include:

1. **Sentinel Sites Nutrition Surveillance** (facility-based and based on HIS), for timely warning, programme planning and monitoring of programme outcomes.
2. **Revamped HIS**, for programme management/monitoring, policy formulation and programme planning.
3. **National surveys (NDHS, NHIES)** for policy formulation and programme design, programme management/monitoring.
4. **Health Facilities Supervisory Visits** (yearly) for improved programme management and monitoring.

### **Sentinel Sites Nutrition Surveillance**

The proposed sentinel sites nutrition surveillance system builds on GMP and HIS. It does not imply a modification of HIS data collection and reporting procedures; instead, it will rely on the existing system and focus on improving methods (with training, provision of adequate scales etc.), which will result in more accurate data and faster data transfer. The only differences with the existing system are a) Data will be transferred by phone on a monthly basis directly from facilities to national level (to ensure timely reporting); b) Data will be entered in a separate database at national level for semi-automated generation of tables and graphs. The system will be facility-based and rely on sentinel sites (health facilities), i.e. 13 sites in total (one per region). Sentinel facilities will be purposively selected based on vulnerability levels, relative size (i.e. number of children weighed per month) and other considerations. Data will be collected and reviewed monthly; it will be consolidated/reported quarterly at national level and shared with a wide audience. Two quarterly reports will be produced: a Nutrition Surveillance Bulletin for timely warning, which will be incorporated into a Quarterly Food Security and Nutrition Bulletin produced by the VAC Technical Committee; and a more comprehensive Internal (MOHSS) Quarterly Nutrition Surveillance Report, which will include programme management/monitoring information and related recommendations (for national/regional/district/facility health staff).

## **Revamped HIS**

There is an urgent need to revamp HIS, and in particular, the software application, so as to enhance the use/usability of HIS information at all levels. This can be done by:

- Incorporating new information needs,
- Facilitating data flow and ensuring timeliness,
- Providing user-friendly data analysis and reporting tools tailored to information needs at all levels.

## **National Surveys**

National cross-sectional surveys, such as the Namibia Demographic and Health Survey (NDHS) and the Namibia Household Income and Expenditure Survey (NHIES), will continue to provide in-depth information for policy formulation and programme planning, and for programme management/monitoring.

This report suggests how the NDHS questionnaire could be modified to fill specific nutrition information gaps. In addition, efforts should be made to ensure that NDHS are designed in a way that helps build/improve sentinel sites nutrition surveillance. Indeed, by surveying populations located in the catchment areas of sentinel sites, national surveys can help assess coverage and selection bias in sentinel sites' samples.

## **Health Facility Supervisory Visits**

Nutrition related activities have received little attention at facility level. As a result, the Food and Nutrition sub-division has expressed the need for regular information on programme performance and quality of service delivery with regard to nutrition-related activities (growth monitoring, feeding counseling etc.).

The objectives of the proposed annual health facility supervisory visits are to:

- Institutionalize regular supervision and monitoring of nutrition-related activities.
- Use the information generated to manage and monitor programmes.

It is suggested that Health Facility Supervisory visits be carried out once a year by district Health Programme Administrators for PHC, supported by regional Health Programme Administrators for PHC. The visits will be conducted in a (random) sample of health facilities in every district every year.

Data collection instruments will include a supervisory checklist based on observations of healthcare activities (e.g. accuracy of weighing practices and equipment at growth monitoring stations, assessment of feeding/breastfeeding counseling, quality of treatment for severe malnutrition etc.) and, possibly, a short questionnaire to be administered to mothers present at health facilities on the day of the visit.

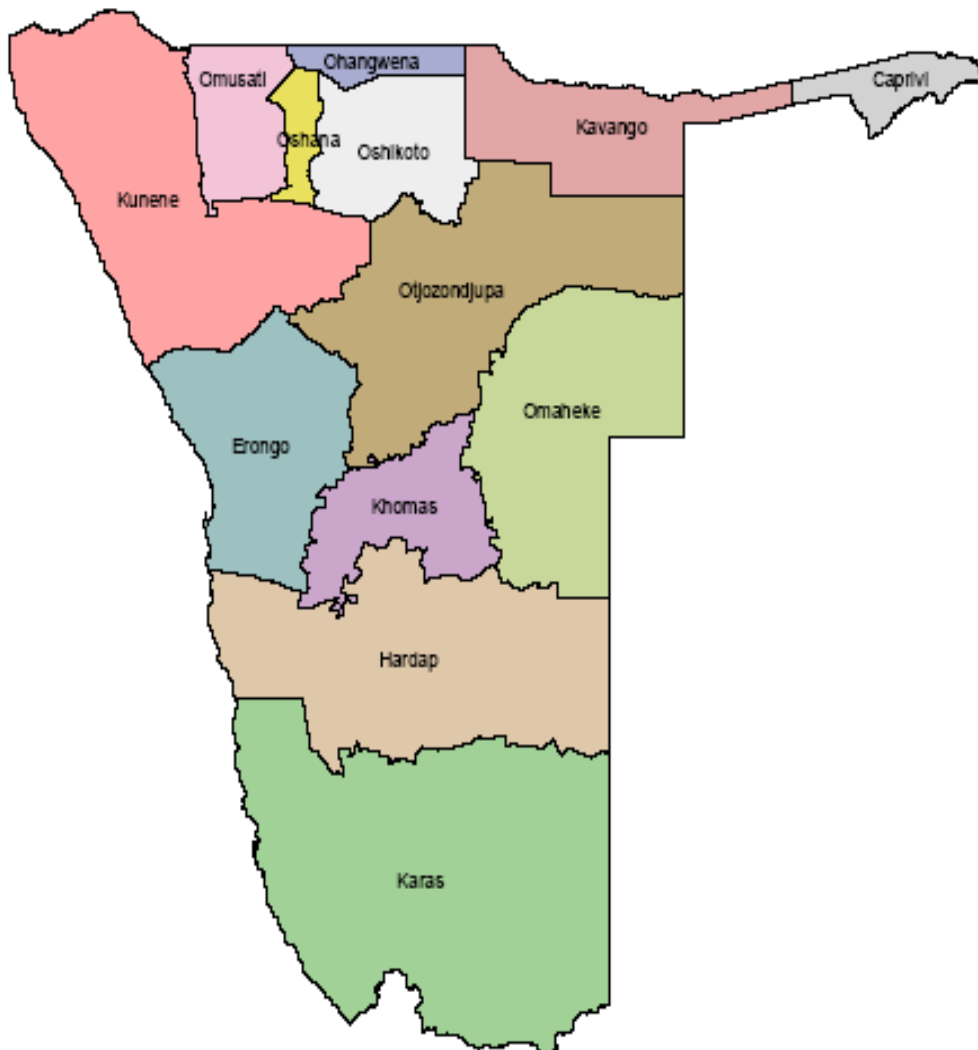
The proposed system establishes a direct link between information and action by involving district and regional PHC Programme Administrators (supervisors), thereby enabling on-the-job training and immediate corrective measures when a problem is identified.

Data collected from the visits will be channeled to - and analyzed at - national level for overall programme management and decision-making (e.g. provision of training, logistical support etc.).

It is hoped that the proposed systems will contribute to improvements in policy making, programme planning and programme management related to nutrition. While we have attempted to minimize extra capacity requirements and costs, implementing the above-mentioned schemes will still require notable efforts. Although most of the tools have been developed for the implementation of sentinel sites nutrition surveillance (e.g. reporting formats, database for data entry and analysis etc.), more work needs to be done before the system can be operational. The workplan enclosed in annex 12, describes the activities to be carried out over the next 6 months to ensure successful implementation of sentinel sites nutrition surveillance and other activities.

**Map 1.**

## MAP OF NAMIBIA



**Source: NDHS 2000.**

# **I. Introduction**

## **1. Background to this Mission**

Namibia, with a population of 1.8 million, is facing numerous challenges. Chronic food insecurity due to poor soils, lack of water and resources, recurring weather hazards (drought and floods), and HIV/AIDS (a fifth of the population is infected) have negatively impacted on the lives and livelihoods of the Namibian people. There has been growing concern about the effects of these rising threats on people's health and nutritional well-being in the short, medium and long term. As a result, food security and nutrition surveillance has received renewed attention in Namibia. The Ministry of Health and Social Services (MOHSS) and the United Nations Children's Fund (UNICEF) have jointly agreed on the need to monitor the nutrition situation among vulnerable groups on a regular basis, and obtain valid and timely data on nutrition trends, as a complement to national surveys (NDHS and NHIES).

In this context, UNICEF contracted Tulane University School of Public Health and Tropical Medicine (Department of International Health) in New Orleans, U.S.A, to provide technical support and build local capacity for the development of a nutrition surveillance system in Namibia. Sophie Chotard and Joel Conkle, from Tulane, visited Namibia from September 12 to October 24 2006 for this purpose; John Mason was prevented from traveling during this time due to an accident, but was able to provide input through frequent communications.

## **2. Methodology**

In order to carry out the mission the following steps were undertaken:

1. Review of existing information systems for health, nutrition, early warning and food security; and identification of their strengths and weaknesses.
2. Assessment of Namibia Health Information System (HIS) and the Growth Monitoring and Promotion (GMP) programme; and identification of strengths, weaknesses and constraints to implementation.
3. Identification of nutrition information needs and gaps for policy formulation, programme design/planning and management/monitoring.
4. Identification of possible options (information/data collection systems) to fill information gaps. Development of proposal and tools for the proposed systems.

Following this approach, the following activities were carried out:

- Conducted a literature review of nutrition, health, early warning and/or food security in Namibia and reviewed assessment reports on existing information systems.
- Interviewed a variety of stakeholders from line Ministries, UN agencies and private businesses. A large part of our time was spent with MOHSS personnel, especially in the Food and Nutrition sub-division, to get an in-depth understanding of the status of nutrition information (see annex 13 for list of persons met).
- Visited the northern regions of Oshana and Omusati, with focus on implementation of HIS and GMP. Met with personnel from the Health Directorate at regional, district, and health facility level. Visited several health facilities (including one mobile clinic), observed daily GMP activities and saw demonstrations on HIS computerized system.
- Developed a proposal and tools for the implementation of sentinel sites nutrition surveillance and related information systems; and presented them to various audiences for feedback/comments.

### **3. Report Content**

This report is organized in two main parts. Section II and III comprise the situation analysis, and section IV to VII describe the proposed methods for collecting much needed nutrition and related information.

In this report, we first provide an overview of the nutrition and food security situation in Namibia, looking at trends over time, major problems identified and possible causes (section I). Section II provides a detailed review of information systems for nutrition, health, food security and early warning that are currently in place in Namibia. The section ends with the identification of information gaps and proposes possible options (data collection systems) for filling the gaps identified.

Sections IV, V, VI and VII describe the proposed data collection/information systems. Section IV is the detailed project proposal for the Sentinel Sites Nutrition Surveillance System, and describes in detail all implementation modalities for the proposed system. Section V includes suggestions for the future revamping of HIS. Section VI proposes possible modifications to future national surveys so that they better suit nutrition information needs. Finally, section VII provides suggestions for the implementation of Health Facility Supervisory Visits, aimed at institutionalizing regular supervision and monitoring of nutrition-related activities for programme management and monitoring.

The report's last section highlights the main conclusions arising from this study and recommendations for the way forward (section VIII).

## **II. The Nutrition and Food Security Situation in Namibia**

### **1. Major Challenges Facing Namibia**

Namibia, with a population of 1.8 million (70% in rural areas), is characterized by an arid climate, water shortages and poor soils, and only 1% of its land is arable. As a result, many people in Namibia suffer from chronic food insecurity, which is compounded by a communal land tenure system in many areas of the country, which significantly limits access to credit. Furthermore, in recent years, Namibia has been the victim of recurring weather hazards, such as drought and flood, which have further threatened food security and livelihoods.

Despite the country's middle-income status a large proportion of the population is dependent on low or no wages and subsistence agriculture. The moderate economic growth and stable macroeconomic conditions have not helped significantly in reducing poverty or income inequality, and although Namibia's per capita income of US\$ 1,527 in 2002 is among the highest in sub-Saharan Africa, the country is marked by significant income inequalities, with an estimated Gini coefficient of 0.67, one of the highest in the world. According to the UNDP Human Development Report 2002, 35% of the Namibian population live on US\$ 1 a day and 55.8 per cent live on US\$ 2 a day (UNDP, 2002).

Namibia is also one of the countries worst affected by the HIV/AIDS pandemic, which constitutes the country's foremost challenge to fulfilling rights to life and health, and impacts on every aspect of people's life (loss of relatives, labour and income, rising healthcare expenses etc.). In 2004, HIV prevalence in Namibia was 19.7%, a 2.3 percentage points-decrease compared to 2002. By the end of 2003 more than 136, 000 HIV cases had been reported. According to information from the MOHSS, AIDS has been the leading cause of death since 1996, being responsible for 26% of all reported deaths and 46% of deaths among 15 to 49 year olds in 1999.

Malnutrition in Namibia is common in children. Poor diet, poor caring practices (exacerbated by HIV/AIDS causing parents' illness or death) and lack of access to safe water are often cited as the most common causes of malnutrition.

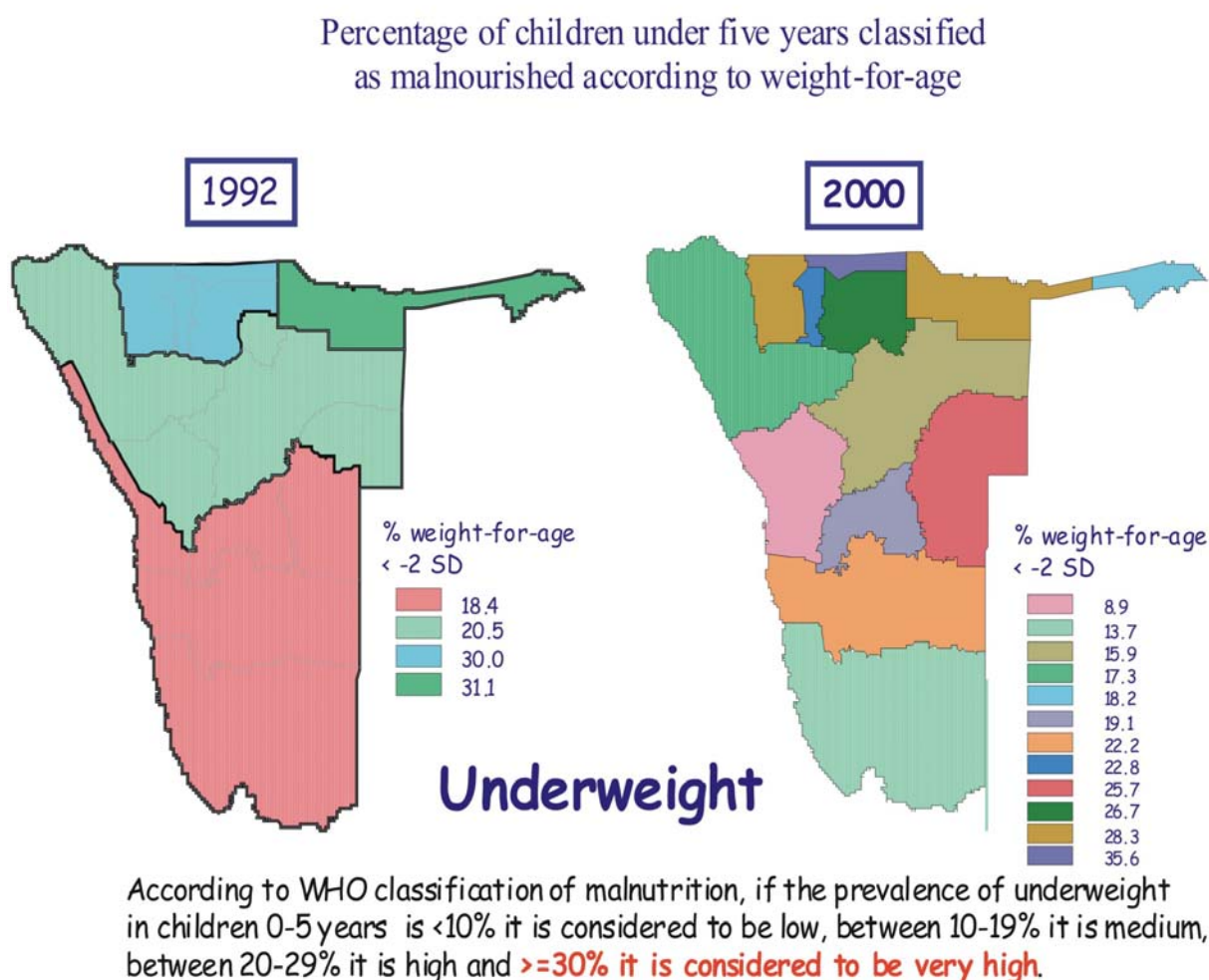
### **2. Child Nutrition**

In Namibia, malnutrition among children under five is widespread. According to the NDHS conducted in 2000, 23.6% of children under five were found to be stunted, this is a decline from 28% in 1992. The prevalence of stunting increased with age, from 5.7% in children under-six months to 33.4% in children two years old. Stunting varied by region; the highest levels were in the north-east (26.5%) and the lowest in the central region (15.8%). The proportion of children under five wasted was estimated at 9% (1.7% severely), remaining steady compared to 1992. Wasting was most common among children aged 10 to 23 months (16%), and highest in the northwest (11.2%) with the central part of the country having the lowest rate at 6.5%.



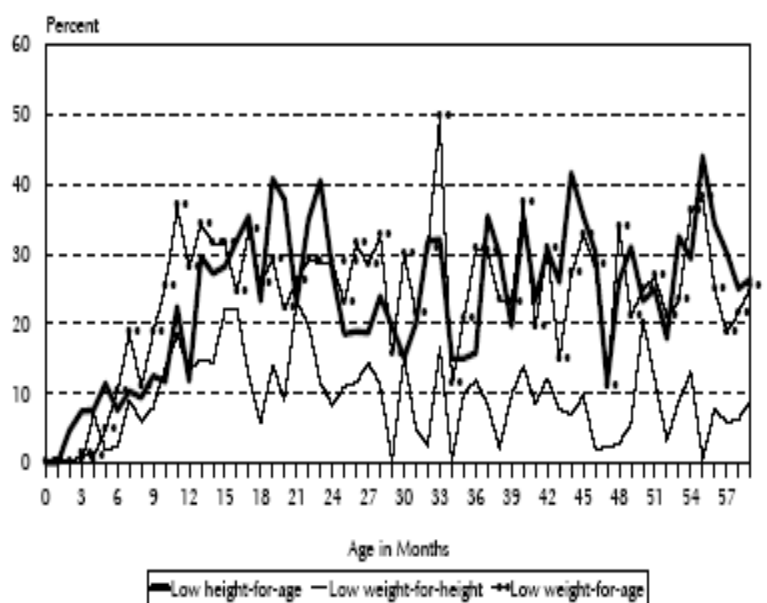
Underweight was found in 24% of children aged 6 to 59 months (5.3% severely); this is a 3 percentage-points-decline compared to 1992 estimates. The prevalence of underweight was found to be lower among children under six months of age (1.3%), and was the highest in the central regions and lowest in the southern region (see map 2 and figure 1).

Map 2.



Source: FIVIMS with data from NDHS 1992 and 2000.

Figure 1. Percentage of Children with Low Height-for-Age, Low Weight-for-Height, and Low Weight-for-Age, by Age of Child.



NDHS 2000

The regional differences in malnutrition levels are striking, children in the northern regions (especially the northwest), where the majority of the country's population live, are experiencing nearly twice the level of wasting, stunting and underweight than those in the central region (MOHSS, 2003).

In the 2000 NDHS, the likelihood of being malnourished (either stunted, wasted or underweight) varied little by sex of the child, but rose with birth order. Malnutrition prevalence was also found to be lower among better-educated mothers (MOHSS, 2003).

Low birth weight is related to the mother's nutritional status, and forecasts future growth. According to the NDHS conducted in 2000, 8% of all babies weighed less than 2.5 kg at birth, an improvement from the 14% measured in 1992. Caprivi and Oshana regions (northeast and northwest) had low proportions of low-birth-weight babies, while Kavango region (northeast) had by far the highest prevalence of low birth weight.

### 3. Maternal Nutrition

There is little data on maternal nutrition available in Namibia. The 1992 NDHS survey found that 14% of the women surveyed had a low Body Mass Index (BMI) (below 18.5 cut-off) indicating Chronic Energy Deficiency (CED). The women in the south and central regions were less affected at a rate of 11% compared to 16% in the northeast and northwest regions. It was also found that the prevalence of low BMI was lower among women in urban areas (9%) and higher among rural women (17%), while the risk of CED was highest in the women younger

than 20 years of age (18.9%) compared to those between 20 and 34 years of age (12.4%) (FAO, 2001).

## 4. Micro-Nutrient Deficiency

In 1992, the MOHSS conducted a survey to assess the extent of Iodine, Vitamin A, and Iron Deficiency Disorders. Iron levels, determined by serum ferritin values, were considered acceptable. However, iodine and vitamin A deficiencies were present. Results from a global survey carried out by Tulane for 2000 estimated prevalences of anemia in children at 42%, and for women at 35% (non-pregnant) and 32% (pregnant). Vitamin A deficiency was estimated at 59%, and IDD at 18%.<sup>1</sup>

### 4.1 Iodine deficiency

The 1992 survey identified high levels of iodine deficiency among children 8-12 years with notable variations between regions. According to the survey, the prevalence of goiter among the 8-12 years old ranged from 2% in the south to 55% in Caprivi (see table 1). In response to the 1992 survey, the MOHSS began supplementing severely affected populations with iodine oil capsules. Salt iodization legislation passed in 1994, which stipulates that salt produced for human consumption must be iodized. In 1999, a follow-up study on iodine deficiency disorders (IDD) was carried out by the MOHSS. This cross-sectional survey used primary schools to select 1,646 children from ages 8 to 12. The results showed improvement in the median urinary iodine concentration, with the national average increasing from 5.81 mg/dl to 21.63 mg/dl, and almost the complete elimination of goiter. However, the national average of severe iodine deficiency from urinary iodine (which fluctuates more than goiter) remained relatively high, at 14.9% (MOHSS, 2001) (see table 1 and 2).

Table 1. Iodine Deficiency Status (% Goiter and Median Urinary Iodine) in 1992 and 1999.

Area	Goiter		Median Urinary Iodine (mg/dl)	
	1992	1999	1992	1999
Caprivi	55 %	-	2.5	19.9
Kavango	25 %	-	4.6	2.8
Northwest	15 %	-	4.6	21.4
Central and South	2 %	-	9.5	30.1
<b>National</b>	<b>22%</b>	<b>0.2%</b>	<b>5.81</b>	<b>21.63</b>

Source: MOHSS 1992, 1999.

<sup>1</sup> Mason et al, 2005; UNU Food Nutr Bull, Vol 26, No. 1, pp 1-110 (see p 108), March 2005.

Table 2. Prevalence of Severe, Moderate and Mild Iodine Deficiency among Children 8-12 Years, in 1999, based on urinary iodine.

	<b>Severe ID (&lt;2 mg/dl)</b>	<b>Moderate ID (2-4.9mg/dl)</b>	<b>Mild ID (5-5.9mg/dl)</b>	<b>No Deficiency (&gt;10mg/dl)</b>
National	14.9% (239)	4.8% (77)	9% (144)	71.3% (1142)

Source: MOHSS, 2001.

Regional variations showed problems still exist. One district, Nankudu, showed 65% having severe deficiency (<2mg/dl). Kavango region was the worst, with 46.6% severely deficient and both the northeast and the northwest had over 10 % severely deficient. It was also shown that rural areas were worse off than urban areas. The same survey reported that 90.3% of households use adequately iodized salt. Kavango was the only region well below this, at 55.4% (MOHSS, 2001).

The NDHS conducted in 2000 showed that only 56.9% of households used adequately iodized salt. In Omaheke it was 15.5% and in Kavango, 30.6%. The discrepancy between the 2000 NDHS and 1999 survey may be explained by the latter's use of primary schools to select children. This can not be truly representative of the population as over 14% of children do not attend primary school (MOHSS, 2003).

The problem of non-iodized salt still exists in Namibia, especially in certain regions. The 1995 National Food Security and Nutrition Policy produced by the National Food Security and Nutrition Council recommended that all salt, whether for human or animal consumption, be iodized. This same document also recommends fortifying mahangu (millet), maize meal, and cooking oil with vitamin A. However, measures have not been taken to follow the policy.

## 4.2 Vitamin A Deficiency

Vitamin A deficiency is considered one of the major causes of blindness in Namibia. According to the national Policy Guidelines for Health workers, "Namibia has a serious problem of Vitamin A deficiency (MOHSS 1995). Furthermore, according to a survey on vitamin A deficiency that was carried out in 17 villages in 1992, 20.4% of 290 children between 2 and 6 years had vitamin A levels below 0.70 umol/l (MOHSS, 1992).

In 1999 the MOHSS produced policy guidelines for health workers in the prevention, control, and treatment of Vitamin A deficiency. In 2000, NDHS showed that 38% of children had received a vitamin A supplement in the last 6 months. Postpartum Vitamin A supplementation stood at 33%.

There is no legislation for vitamin A fortification in Namibia. According to a report from 2003 by the Micro-nutrient Initiative (MI), there is one mill in Namibia adding Vitamin A to maize meal. The other large mills operating in the country are capable of fortification, but they are not doing it.

### 4.3 Iron Deficiency

In Namibia, causes of iron deficiency include poor bio-availability of iron in the diet and a high prevalence of parasitic infestation. Widespread malaria contributes to anemia. The consequences of anemia and iron deficiency include reduced physical work capacity and productivity, impaired cognitive functions and brain metabolism, and reduced immunocompetence.

There is no recent data available on IDA. According to the latest data available from 1993, there were 1,437 cases of anaemia among children younger than five years of age and 2, 419 cases among children five years and older (MOHSS, 1993). Most cases of anaemia were reported in the north-west regions, where 55% of children under five and 59% of children five years and older were observed to suffer from anaemia. It was estimated that high percentages of girls (33.7 %) and boys (43.9 %) of 380 children, aged 6-18 years, from 8 primary schools in the Cuando River area of eastern Caprivi, were biochemically anaemic, whilst less than 1 % of the children showed clinical signs of anaemia.

Haemoglobin tests administered to pregnant women attending antenatal clinics in 2004 indicated that the Kavango region had the highest percentage of anaemic pregnant women (21%), followed by Caprivi (16%), Khomas (13%), Ohangwena (12%) and Hardap (11%) (MOHSS, 2003).

## 5. Food Security

National food production in Namibia is insufficient to cover the country's food needs. The 'normal' production of the main cereals (maize, *mahangu* [millet], sorghum and wheat) on both communal and commercial farms, ranged from 66,000 to 119,000 MT from 1993 to 2000, and this variation largely depended on rainfall (VAC, 2002). Every year, wheat and maize imports are required to fill the national cereal deficit. However, Namibia has no food availability problem at the national level. Indeed, the country's per capita income of US\$ 1,527 is large enough to enable the country to import enough food for its people from international markets, and due to its ready access to the world grain market and its closeness to South Africa, one of the world's largest maize producers, there is no danger that Namibia will be unable to import food. Yet, there is notable food insecurity at the household level where affordability is a major problem. According to the available information, most rural households do not have meaningful incomes. They earn from N\$ 250 to N\$ 320<sup>2</sup> per month, which is insufficient to purchase food for households comprising 7 to 10 persons.

On average, communal farmers cultivate 95 per cent of arable land, while commercial farmers cultivate the rest. The capacity of Namibian households to meet their food needs through their own production is hampered by the poor soil conditions, lack of water, recurring weather hazards and limited access to the resources needed to grow crops and raise animals that provide the necessary nutritional outcomes. Indeed, many Namibians still lack meaningful access to the productive resources and facilities including land, improved technology, credit (largely due to

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<sup>2</sup> 1 US\$ = 7.5 N\$.

communal land tenure), extension advice and training and access to markets. These factors are necessary for the production of sufficient food for subsistence.

### **III. Review of Information Systems for Nutrition, Health, Early Warning and Food Security**

#### **1. Institutional Framework for Nutrition & Food Security**

##### **1.1 Progress Made in the 1990s**

The 1990s were marked by the strong commitment of the Government of the Republic of Namibia (GRN) to address both chronic and acute food insecurity and malnutrition across the country. In 1992, the Prime Minister declared the Namibian Food and Nutrition Decade, making it a government-wide effort to improve conditions for the most vulnerable. This commitment was renewed following Namibia's participation in the International Conference on Nutrition that same year.

In 1994, the GRN established an institutional framework to ensure that issues of food security and nutrition were actively addressed and appropriately linked at the policy and decision-making level, as well as at the technical level. A three-tier institutional structure was established; it includes the "National Food Security and Nutrition Council" (FSNC), which comprises the Permanent Secretaries of seven relevant Ministries<sup>3</sup> and is responsible for policy and decision-making; a "Food Security and Nutrition Technical Committee" (FSNTC) to support the council on technical issues, and a "Food Security and Nutrition Secretariat" (FSNS) to support the Technical Committee and the Council in day to day operations.

In 1995, the FSNC developed the Food and Nutrition Policy for Namibia to "provide the necessary framework and guidelines to actively address the problems of food insecurity and malnutrition in Namibia over the medium to long-term." The Policy identified three key areas to be addressed in order to purposefully and meaningfully tackle the underlying causes of food insecurity and malnutrition. These three areas include: a) Improving Household Level Resources, b) Improving Knowledge, Attitudes and Practices, and c) Improving Social and Supporting Services (FSNC, 1995). The Policy recognized that up to date information on the prevalence of nutritional problems is important, both for management of nutritional interventions and as an indicator of living standards in the population. The Policy recommended that a comprehensive food and nutrition monitoring system be developed with the following components: rainfall and food production data building on and improving the present Early Warning and Food Information system; better use of Health Information System – to give incidence of nutrition

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<sup>3</sup> Ministries represented include the Ministry of Health (Chair), the Ministry of Agriculture, Water and Forestry, the Ministry of Education, the Ministry of Trade and Industry, the Ministry of Lands, Resettlement and Rehabilitation, the Ministry of Regional and Local Government and Housing and the National Planning Commission.

related diseases as presented at health facilities; a system of reporting back information from the Community-based Growth Monitoring and Promotion programme – so that eventually this will develop into a comprehensive nutrition surveillance system; and the development of a Household Food Security Monitoring system (including nutritional status data).

Also in 1995, the FSNC developed the National Food Security and Nutrition Action Plan (NFSNAP) to help achieve Government's food security and nutrition related goals and objectives. The Plan provides a detailed strategic framework for the implementation of Government's food and nutrition policies. It also emphasizes that food security and nutrition surveillance are necessary to improve household food security and nutrition through informed decision-making, multi-sectoral planning, programme monitoring and evaluation, problem identification and advocacy, timely warning systems and policy development. Therefore, one of the proposed activities under the NFSNAP was to establish and maintain a Household Food Security and Nutrition Monitoring and Surveillance System for early warning and poverty alleviation (FSNC, 1995).

Following the World Food Summit (WFS) in 1996, Namibia and another 185 countries adopted guiding principles to eradicate hunger, with the goal of halving the number of undernourished people by 2015. GRN's specific commitments included fighting poverty, reducing social disparities and achieving sustainable food security. The GRN has set tight goals for eradicating malnourishment and has formulated targets to be achieved, especially through the National Development Plans, and more recently through Vision 2030, a longer-term development framework. The target was to eliminate famine and famine related death, starvation and nutritional deficiency diseases within a decade from 1995. It is difficult to assess whether these set targets have been met, partly due to a lack of accurate data. We hope that the NDHS, which is about to be carried out across the country, will answer some of these questions. All we can say is that although notable progress has been made in some areas, it is unlikely that the government has met the above-mentioned targets. Some of the key constraints identified in efforts to achieve the WFS commitments in Namibia included the lack of standardization of methods and techniques for information gathering, analysis and reporting, information networking and sharing of information; and the lack of monitoring and evaluation strategies and systems (Rodgers, 2004). It is hoped that the surveillance and information systems proposed in this report will contribute to improvements in these areas.

One of the other outcomes of the WFS was the government's commitment to the development of Food Insecurity and Vulnerability Information and Mapping Systems (FIVIMS) to identify the underfed and undernourished.

Following the severe drought in 1992, the Southern African Development Community (SADC) undertook efforts to strengthen drought management in the region. This resulted in the formulation of the Food Security Strategy Framework in 1997, and an operational strategy to ensure drought preparedness and enhanced capacity to cope with future droughts in the region. In Namibia, this led to the formulation of the Drought Policy and Strategy - for integration of drought risk management into development policy - and to the establishment of the National Early Warning Unit (Awases, 2005). The role of the Early Warning Unit and its activities will be reviewed in section III.

The need for an institutional structure to coordinate relief operations has led to the establishment of the National Emergency Management Committee (NEMC) and the Emergency Management Unit (EMU), which was recently upgraded to Directorate level within the Office of the Prime Minister.

The National Emergency Management Committee (NEMC) is the inter-ministerial body that has the complete authority and specific responsibilities to make decisions as appropriate for the state of preparedness of the country and the mobilisation of local resources to meet the urgent needs created by the emergency. NEMC is directly responsible to the Cabinet thus operating outside the normal government bureaucracy and facilitating speedy decisions. It is composed of permanent secretaries, and supposedly UN agencies and national non-governmental organizations (NGO) dealing with food, medical supplies, labour, storage, meteorology, early warning for food security, Transport etc.

The EMU is the executive arm of NEMC and the coordinating body, which, under the Office of the Prime Minister (OPM) serves as national focal point for all emergencies. The EMU coordinates monitoring of disasters and planning and preparedness for emergencies. It functions in liaison with line ministries, Civil Defence organizations, NGOs and major donors. EMU is also present at regional level. Regional Emergency Management Units (REMU) are chaired by the regions' governors and composed of some government departments and representatives of NGOs in the region. In practice, REMUs tend to become operational only when an emergency is declared either regionally or nationally.

Finally, the Ministry of Agriculture, Water and Forestry (MAWF) has established two committees: the Standing Committee (composed of Directors and chaired by the Deputy Permanent Secretary) and the Technical Committee on Drought (composed of technical staff from all Directorates and chaired by the Director of Extension and Engineering Services).

## **1.2 Recent Progress**

While the 1990s were marked by a strong commitment and major steps were taken towards improvements in nutrition and food security in Namibia, recent years have seen little action. The FSNC, which is supposed to meet twice a year, has not met in two years. The main reason given was that it has been impossible to gather all Council members at the same time (and without all members present no decision can be made). As for the FSNTC, it has not met since 2005. The likely reason is that the Committee Chair has been moved from MAWF to the Ministry of Local Government, which has not called any meeting since the hand-over. In addition, neither the National Food and Nutrition Policy nor the Action Plan has been revised since 1995. Note however that since recently every region has had a (separate) Food security and Nutrition Action Plan for 2006-2015. The revision of the Food Security and Nutrition policy is now likely to fall under the responsibility of the Food and Nutrition sub-division at the MOHSS. However, the unit lacks (staffing) capacity to undertake this major task. In addition, the unit is waiting for results from the National Household Income and Expenditure survey (in particular the food consumption data) to develop relevant policies. The new policy document will also have to take into account nutrition in relation to HIV. On a more positive note, most of the activities that were



included in the 1995 Food Security and Nutrition Action Plan have been implemented, nutrition surveillance being one of the exceptions. Furthermore, the Namibia Food Security and Nutrition Assessment Report, which was first produced in 1995 has been revised by the FSNTC and should be released soon.

As part of the SADC initiative, the Vulnerability Assessment Committee (VAC) was established in 2002. The EMU chairs, coordinates and provides the secretarial function to the VAC. The WFP Country Director is the Deputy Chairperson. The VAC is a multi-sectoral committee, with representatives from government departments (MAWF, MOHSS, Ministry of Works, Transport and Communications - MWTC, Ministry of Gender Equality and Child Welfare - MGECW, Ministry of Local Government and National Planning Commission - NPC) as well as aid/donor agencies (Food and Agriculture Organization - FAO, United Nations Development Programme – UNDP, World Food Programme – WFP, UNICEF, Department for International Development – DFID and the Namibian Red Cross Society). As per its Terms of Reference, the VAC's main objective is “coordinating and leading the process of vulnerability assessment in the country in order to enhance understanding of the levels of vulnerability and guide emergency and development planning and response”. Specific objectives include (among others): define targeting of assistance and the type of assistance; harmonise and coordinate vulnerability assessment methodologies in Namibia; monitor the populations at risk through key indicators; inform Government through the EMU on emerging situations and advise on appropriate actions and interventions; produce annual reports on vulnerability issues in the country and rapid assessment reports as need arises (Awases, 2005). It must be noted however that the VAC has not been as active as these ToRs suggest. Indeed, Committee members have not been meeting on a regular basis; instead the VAC has mainly been operating on an ad hoc basis (i.e. in case of emergency). So far, the VAC has led one Emergency Needs Assessment in 2002 (see section III). It is hoped that discussions recently held with EMU and VAC members in the context of the development of nutrition surveillance will help revive the Committee (see section IV).

## **2. Nutrition & Health Information and Surveillance Systems**

### **2.1 The Health Information System (HIS)**

#### **2.1.1 Overview of HIS**

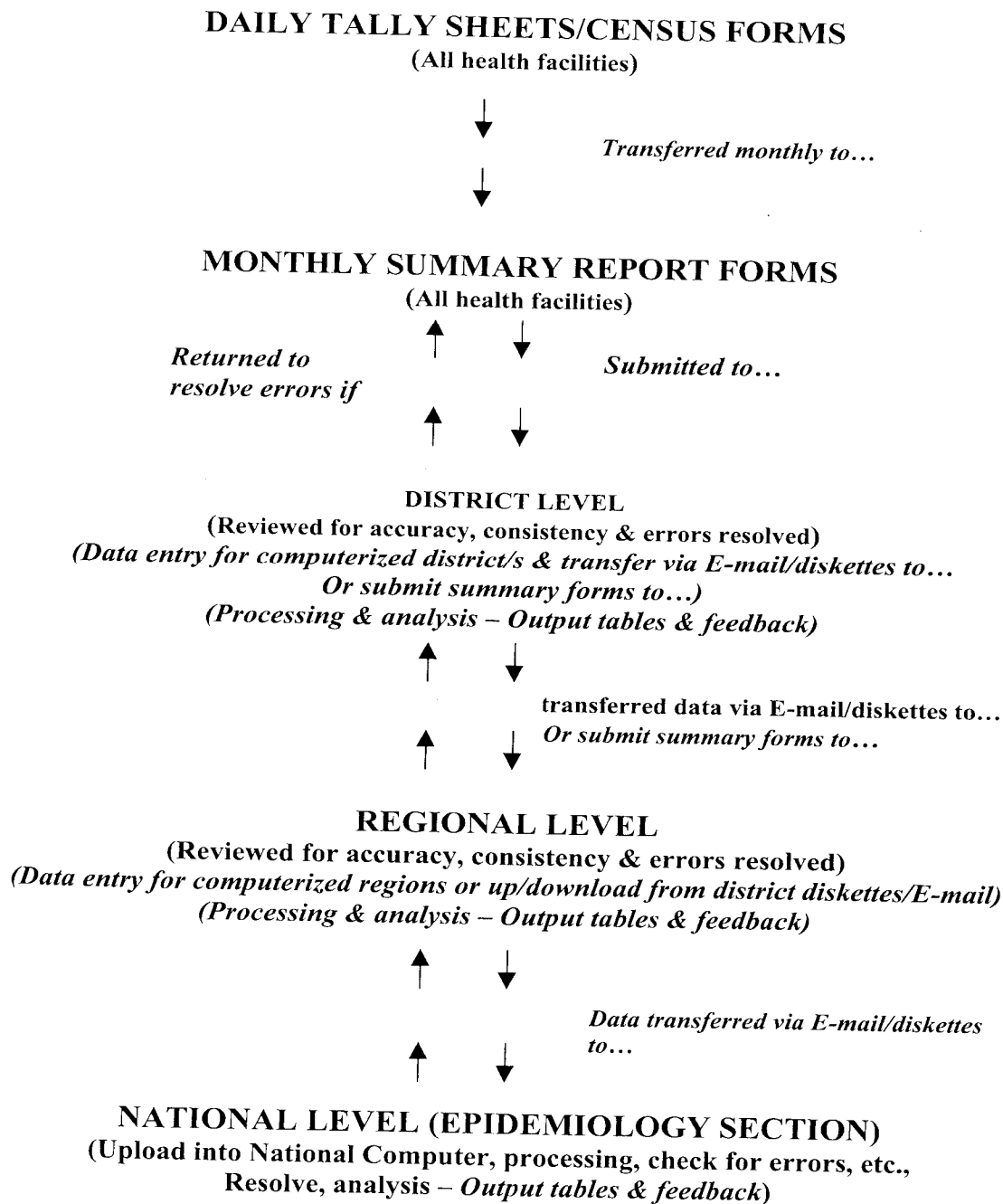
The Namibian HIS is a routine health and management information system, which was first introduced in Namibia in 1992. HIS underwent a major revision in 1994 and new forms, procedures and computerized systems were introduced in 1995. The system was revised again in 2000 and the new version of HIS (HIS2K) began operating in January 2001.

HIS was tasked with the responsibility of collecting routine data from all health facilities (Hospitals (36), Clinics (281), Health Centers (33) and Outreach points). The raw data is collated, analysed and processed into information that can be used for programme planning, implementation, evaluation and can also influence changes in policies, strategies, programmes and resource allocation. This system of collecting information is usually passive and the report is written according to the indicators in the system.

Standard tally sheets are used in every health facility. Data from the tally sheets are summarized into standard monthly report forms. Standard registers (Outpatient Department, Inpatient, Antenatal Care, Immunization and Weighing) are retained at health facilities and are used to provide a permanent record of patient encounters in more detail than what is reported to the HIS.

In an effort to improve independent use of data at all levels, HIS has been decentralized and computerized to all regions (13) and health districts (34). Data is entered from the standard monthly report forms into the computerized system at health district level on a monthly basis. Data is passed by diskette or e-mail from district to regions and usually by e-mail from regional offices to national level. At each level basic analysis can be performed, and a series of preformatted reports can be viewed, using variables selected and aggregated/disaggregated according to the specific needs of the user (e.g. facility/district/regional level). The flow chart below describes the HIS data flow (see next page).

**FLOW OF DATA IN THE MOHSS**



Source: HIS 2001.

Charts of indicators and progress have been developed for use at facility level. These charts are used for regular tracking of progress on key indicators that health workers select to monitor (MOHSS, 2003). This feature recognizes that, despite protocols and best intentions, data from district or regional levels are often NOT reported back to facilities, yet there is a desire among facility staff to routinely use data to monitor their own progress (Healthnet website, 2006).

The computerised system was developed using dBASE for Windows Version 5.7. Arguments that Access should have been used as the database for the system were dispelled due to poor computer capacity (i.e. insufficient memory etc.). The other argument brought forward by the MOHSS was that the dBase is a highly structured menu-driven format to which users had become accustomed to during the five years of use of the former system (developed in dBASE for DOS 5.0). Many users are not familiar or comfortable with Windows' unstructured approach. According to MOHSS personnel, the menu driven approach reduces the opportunities for errors or for attempting to do something that can or should not be done (Healthnet website, 2006).

The MOHSS publishes reports on HIS findings on an irregular basis. The reports' objectives are:

- To improve the ability of health service providers, managers and policymakers to assess both individual and institutional performance with respect to coverage of the catchment area, the quality of the services provided and the effectiveness of the different strategies;
- To compare performance over time, and compare their own situation to that of other facilities, districts/regions as well as to national targets;
- To identify health facilities, districts and regions in need of support and supervision; and
- To monitor trends in coverage, quality and effectiveness - which can guide policy development, planning and budgeting (MOHSS, 2003).

HIS reports include information on Reproductive Health, Expanded Programme on Immunization (EPI), National Vector-borne Disease Control Programme, HIV/AIDS and National Tuberculosis Control Programme and diseases/conditions seen at outpatient and inpatient departments. The reports also include analysis of routine surveillance data for morbidity and mortality trends over time, by administrative region and/or health district, as well as vaccination coverage by district.

Although the reports provide useful information, they tend to be published with significant delay. At present, the latest HIS report available is from 1999-2001. The next report (to be released soon) will cover 2002-2005. The above-mentioned delays put into question the usefulness of these reports for programme management.

Furthermore, we understand that regional health directorates are supposed to produce reports on "Essential Indicators" on a yearly basis; however, it seems that not all regions produce these reports on a regular basis. Moreover, it appears that many reports never reach national MOHSS offices.

A team of three consultants from the University of Western Cape (School of Public Health) conducted a situational analysis of health management information systems in Namibia in 2004. This assessment was requested by the MOHSS as a first step towards the development an integrated Health Management Information System (HMIS). One of the main recommendations that arose from the review of HIS (among other information systems) was the need to replace the

HIS software by a more efficient and user-friendly software application. The DHIS (the Access application used in South Africa for health management information systems) was given as a possible basis for the development of the Namibian information system (Gouws et. al., 2004). The MOHSS subsequently decided to follow the above-mentioned recommendations and contracted the same consultants for the development of a new software application for the Namibia HIS, based on the DHIS. Two years later, the consultants still haven't submitted a proposal for a new HIS computerized system, which has caused major frustrations within the MOHSS. One major concern with the Namibian HIS D-base is that it cannot be modified at all to accommodate new information or analysis and reporting needs. The consultant who originally developed the database passed away, which is a major impediment to any modification. MOHSS is now very eager to establish a new software application that better suits its needs, it seems however that the situation has been and will be in a standstill for many months. To overcome these difficulties, the Center for Disease Control (CDC) is planning to bring in a consultant in the next couple of months to look at possible options for revamping the HIS software application.

## 2.1.2 Nutrition Information in HIS and Growth Monitoring and Promotion

### *Growth Monitoring and HIS at Facility Level*

The Growth Monitoring and Promotion programme (GMP) implemented in health facilities enables capturing some nutrition data. Data on underweight and vitamin A supplementation (and immunization) is captured in the Immunization and Weighing Tally Sheets (paper sheets) at health facilities on a daily basis (see annex 14). At the end of each month, health workers in every health facility summarize the information captured in the tally sheets into the Immunization and Weighing Monthly Summary Report Form (paper sheet) (see annex 15). Outreach teams (mobile clinics) also complete these summary forms for every outreach point visited during the month (note that the Form distinguishes between data from fixed health facilities and data coming from outreach services). The Summary Report forms are then forwarded from health facilities to the district data clerk who enters the information in the HIS database. The data are subsequently forwarded (on a diskette or by e-mail) to regional level and from regions to national level.

Weight data is supposed to be collected for all children under five who visit health facilities. At growth monitoring stations, children are weighed and health workers assess their nutritional status by plotting their weight and age (i.e. the point plotted is where the child's weight meets the line for the child's age) on the growth chart, in the child's Growth Card. Depending on whether the point is above the middle reference line on the chart, between the middle and lower line or below the lower line, the child is diagnosed with normal weight, moderate underweight or severe underweight, respectively. Children are not supposed to be assessed for oedema, except in the 12 districts where the IMCI programme is being implemented, and where health workers were trained in assessing oedema. After being weighed, children should receive vitamin A supplementation and/or immunization depending on their age and supplementation / immunization already received (which is noted in the Growth Card). Routine vitamin A supplementation is to be given to children every 6 months between 9 months and 6 years of age (note that if a child is sick, he/she should receive vitamin A capsule after 4 months) and

immunization is given at birth (Polio 0 and BCG), 6 weeks (Polio1 and DPT1), 10 weeks (Polio 2 and DPT 2), 14 weeks (Polio 3 and DPT 3), 9 months (measles) and 5 years (DT + Polio and BCG). For children weighed, data on nutritional status, vitamin A supplementation and immunization is recorded in a) the child's Growth Card; b) the Immunization and weighing tally sheet; and c) the facility Register, which provides detailed information on health status and treatment given to each patient.

Data on low birth weight (<2.5 Kg) is also captured in HIS at maternity wards in district hospitals and summarized into the Maternity (Inpatient) Department Monthly Summary Report Form at facility level at the end of every month (see annex 16).

Data on diarrhoea cases (with and without blood) is captured at facility level by age group (i.e. under 5, 5-17 years, 18 and over) and summarized every month into the Outpatient Department Monthly Summary Report Form (see annex 17). For both low birth weight and diarrhoea, data flow follows the same process as the one mentioned above for underweight data.

Based on visits of several clinics and health centers (including one mobile clinic) in the Northern regions of Oshana and Omusati, discussions with health workers (nurses, district and regional health programme administrators) and observations at growth monitoring stations, we noted that HIS and growth monitoring were functional in all the facilities that we visited. However, we also noted major constraints that need to be addressed:

- **Attendance to GMP is poor except for very young ages when immunization is required:** Children being immunized at six, ten, and fourteen weeks of age, as well as at nine months for measles, are available to be weighed. After that, most children are only brought to the clinic if they are sick and are not regularly participating in GMP. Therefore, GMP has very poor attendance after 9 months (and between 14 weeks and 9 months). There are signs that educating/sensitizing mothers/communities on the benefits of GMP and vitamin A supplementation can improve attendance.
- **There is a lack of accurate scales to weigh children in all/most facilities:** In many of the health facilities we visited (including mobile clinics), children are weighed using bathroom scales that are only accurate to the nearest kilogram; this results in gross under or over-estimation of children's weight (i.e. rounding down or more frequently rounding up). It seems that a number of health facilities do have Salter scales, however, some of them are not used because there is nowhere to hang them.
- **We observed poor weighing practices in several facilities:** Where we were able to observe children being weighed, we noted that a) most of them were weighed with most of their clothes on (while they should only keep very light clothing); b) scales were never calibrated.
- **Oedema is not assessed at growth monitoring stations.**
- **It is not clear whether all children who come to health facilities are systematically weighed, especially those who are sick.**

- **In some facilities, there is a lack of trained staff to provide nutrition promotion, and there are few/no education materials for distribution to mothers/caretakers.**
- **Outreach services (mobile clinics) are functional in some areas only (this has been confirmed by talking to all regional health officers).** Lack of transport tends to be a major constraint in many regions/districts. Lack of staff is another major issue in both fixed health centers and mobile clinics. Where outreach services are operating attendance to GMP is improved.
- **Districts and health facilities have difficulty estimating target population and thus coverage** (for instance for immunization or vitamin A supplementation). This is mainly because health districts' boundaries are different from administrative boundaries, i.e. constituencies - which are used for population estimates in the census. Another problem is that people routinely go to clinics outside of their area.
- **Data issues:** a) Some accuracy checks of HIS data are performed manually (e.g. checking that numbers tally) but there is no automated accuracy check built in the software for nutrition data; b) Double-counting of children weighed is an issue: In some clinics, children are being tallied several times if they come several times over the reporting period; this does not reflect true prevalence and needs to be corrected (note that the tally sheet mentions that data should be entered "AT FIRST weighing in the month"). .
- **Analysis and use of nutrition data at facility, district and regional level is very limited.** At best, health workers compare the number of underweight cases (not prevalence) to the previous month to identify an increase/decrease or no change. By contrast, immunization and HIV data is carefully looked at, and data is plotted on time series charts on a monthly basis to monitor coverage (for immunization) and analyze trends. Nutrition is clearly not a priority. HIV and immunization get most of the attention.
- **Health facilities and districts do not receive any feedback from regional or national level** unless a specific problem with the data is identified (e.g. tallying error). This contributes to lack of motivation in recording data and completing reports. Health workers indicated that they would like to obtain feedback and compare their facility/area's performance to other facilities, districts, regions.

### *Nutrition Data Analysis and Reporting at National Level*

Based on the above-mentioned completed monthly forms, HIS produces some statistics on nutrition and related issues, such as number and percentage of children under 5 with normal weight, moderate and severe underweight among those weighed at clinics (by age group), number of vitamin A capsules supplied to children under five (disaggregated as follows: <1 year and 1 year or above), prevalence of low birth weight (<2.5 Kg) among births attended in health facilities, number of deaths due to malnutrition, diarrhea cases among outpatients (by age group including under fives), malaria and pneumonia cases etc. However, there are a number of

constraints that result in very little use of the information at national level. First, the HIS database does not provide up-to-date information. Indeed, there can be long delays between the time the data are collected and the information is available for use. This can be explained by various factors including constraints in the transfer of data from districts and regions to national level (e.g. due to computer broken, e-mail not functioning, no transport etc.) and insufficient staff for data entry at district level (nurses enter the data). Second, although some data may be available within a month (for the previous month), it is rarely complete (i.e. data for some facilities, districts or regions are missing). Third, the HIS database does not provide information in a format that is useful to managers in improving service delivery or in monitoring the situation. Indeed, reporting is limited and does not produce user-friendly outputs. HIS (database) reports exclusively consist of collated data rather than analysed information. Nutrition data in particular is delivered in a format that is very hard to read and very lengthy. Therefore, data obtained from HIS have to be summarized manually, and tables and graphs have to be developed from scratch in order to display information that is easy to read and understand, and can be used for programme management and planning. Therefore, not only does it take time to obtain HIS data (specific requests for data are submitted to the only HIS data clerk at the MOHSS in Windhoek) but it is also very time-consuming to summarize, analyze and display the data in a meaningful format. This, combined with staff shortages (the Food and Nutrition sub-division responsible for reporting on HIS nutrition data has four positions, two of which are vacant at the moment) can largely explain why none of the latest HIS reports (i.e. 1999-2001 and 2002-2005) include any malnutrition data from growth monitoring. HIS data on nutrition is thus only used on an ad hoc basis, for instance when an aid agency requests up-to-date information (in the absence of recent national survey results). It has also been reported that the information generated by HIS for nutrition is not used for decision-making at national level.

## **2.2 Namibia Demographic and Health Surveys (NDHS)**

NDHS were conducted in 1992 and 2000. Both surveys were carried out during the same period (i.e. September –December), they are therefore comparable. Another NDHS is being carried out at present, field work is due to start in November; the survey should be completed by January/February 2006. Note that the dates do not correspond exactly with previous surveys; this might pose problems with regard to the comparability of survey data.

The 2000 NDHS was patterned after the 1992 NDHS so as to maximise the ability to measure trends on similar indicators between 1992 and 2000. The ultimate intent was to use the NDHS information “to evaluate existing programmes and design new strategies in order to ensure delivery of health and social welfare services to the population in a cost effective and efficient manner” (MOHSS, 2003).

The surveys were undertaken by the MOHSS in collaboration with the Central Bureau of Statistics (CBS) at the NPC. For the NDHS conducted in 2000, MOHSS was the main source of funding with additional financial assistance from UNICEF, HSSSP, UNFPA, French Cooperation, EU, GTZ, WHO, Spanish Cooperation and NaSoMa. Technical assistance was provided by the DHS programme at ORC Macro (MOHSS, 2003).



The 1992 and the 2000 NDHS provided much needed information on household and respondent characteristics, fertility, family planning, infant and child mortality, maternal and adult mortality, maternal and child health, infant feeding and nutrition. In addition, the 2000 survey included data on HIV/AIDS and other sexually transmitted diseases, smoking, alcohol abuse and women's health tests, as well as access to and cost of health care.

The latest NDHS infant feeding and child nutrition module included the following information: breastfeeding and complementary feeding practices, micro-nutrient supplementation (provision of vitamin A capsules, and use of iodized salt – test kits were used) and nutritional status of children, i.e. height-for-age (stunting), weight-for-height (wasting), and weight-for-age (underweight). For nutritional status, data was analysed by age group, sex, birth order, birth interval, residence (urban/rural), mother's education, health directorate and region (note that 1992 NDHS only included children of mothers who were interviewed - therefore the data did not represent all children - while the 2000 survey included all children, i.e. also children not living with their mothers (MOHSS, 2003).

The 2006 NDHS is expected to provide the same type of information since the questionnaire has largely remained unchanged. In addition, it was hoped that the survey would include HIV testing, which has been a common aspect of other DHS conducted in the region. However, MOHSS felt that adequate information is already being gathered from HIV sentinel surveillance and hence did not see the need to include HIV testing in the survey.

The surveys are designed to provide valid estimates at regional (and national) level, not at district level. They have been a valuable source of information for policy formulation, programme planning, monitoring and evaluation within the MOHSS and among aid agencies and donors. It is important to note however that the Food and Nutrition sub-division at the MOHSS has not been involved in any aspect of the NDHSs conducted so far, including the one being carried out at present.

### **2.3 National Household Income and Expenditure Surveys**

Two National Household Income and Expenditure Surveys (NHIES) were conducted in Namibia. The first NHIES was carried out in 1993/94 and provided baseline information on living conditions in Namibia. The follow-up survey took place ten years later, in 2003/2004; a summary report was published in March 2006 and the full report - originally scheduled for July 2006 - is to be published.

The main objectives of the NHIES 2003/2004 include “providing data necessary for policy making at different sectors and levels as well as to evaluate and monitor various development Programmes” such as National Development Plans, The Poverty Reduction Strategy for Namibia, and The National Human Resources Plan (NPC, 2006).

NHIES are carried out by the CBS at the NPC. They are conducted over a one-year period. NHIES 2003//2004 was carried out from September 2003 to August 2004 and comprised 13 survey rounds, and a Post Enumeration Survey, which was intended to serve as a quality check

of the main survey. NHIES rely on a large sample; the total number of respondent households in 2003/2004 was 9, 801.

NHIES collect data on household socio-demographic characteristics, main sources of water and income, ownership of/access to selected goods and animals and annual household consumption and income. The surveys are designed to provide valid estimates at regional (and national) level, not at district level.

The NHIES collected data from daily records of food and beverage consumption over a one-week period for every household sampled. However, numerous problems with scales were reported, which implies that quantities of food consumed may not be accurate and units of measurements may not be standardized. The NHIES also collected weight and height data (and age) for all persons in the household. Unfortunately, anthropometric and food consumption data from the 2003/2004 survey have not been analyzed. It is our understanding that the analysis should have been carried out by the MOHSS (Food and Nutrition sub-division); however the unit is too understaffed to undertake this activity. It was hoped that the authors of this report could spend some time on analyzing the anthropometric (and possibly some food consumption) data during their mission; however, the data was not made available. The MOHSS still intends to conduct the analysis, as it will provide information that is not available from any other source, i.e. nutritional status among school-going children and adolescents and detailed information on daily food consumption, which could be used to estimate the nutrient content of foods consumed among the population. The possibility of MOHSS contracting a student from the University of Namibia (UNAM) will be considered. Technical guidance could be provided by a relevant institution (e.g. FAO, Food and Nutrition Technical Assistance - FANTA); but resources need to be located first.

## **2.4 HIV Sentinel Surveys**

Since 1992, Namibia has followed internationally accepted guidelines developed by the World Health Organization (WHO) for implementing HIV Sentinel Surveillance. HIV sentinel surveys (cross-sectional study) among pregnant women attending antenatal care services at various health facilities in the country have been conducted every two years in order to monitor the magnitude and progress of the epidemic in the country. Surveys are implemented by the Directorate of Special Programmes in the MOHSS in collaboration with the Namibia Institute of Pathology and a number of development partners.

Sentinel surveillance sites (24 sites in total) were chosen taking into consideration regional coverage, the type of the population (urban and rural) and the volume of ANC clients at each site. For the 2004 sero-survey, the sentinel sites selected covered all 13 regions and included sites with both rural and urban characteristics. A minimum of 200 blood samples are collected at each site to ensure valid results for each site. The sampling period is usually 8 weeks and may be extended if the minimum sample size has not been reached in a particular site (MOHSS, 2005).

The last HIV sentinel survey was conducted in 2004; the 2006 survey is currently being carried out. Survey results are released to the public about 6 months after survey completion.

HIV sentinel surveillance data has helped to map the epidemic and monitor HIV infection trends in the country and has served as an advocacy tool. The data are useful for understanding the magnitude of the HIV/AIDS problem in certain geographic areas and among special populations and for monitoring the impact of relevant interventions.

## **2.5 The World Health Survey**

The World Health Survey was carried out in 2003/2004 in Namibia, as part of WHO's global efforts to assess the performance of healthcare services provided around the world and to better understand people's own perception of their health status. The survey collected a wide range of information, from health problems experienced by the respondents to treatment received, cost of and access to healthcare, performance of healthcare services, access to water and sanitation, mortality etc. The survey also included a module on child health covering immunization and vitamin A supplementation. In addition, all respondents were asked to report their weight and height. The survey was conducted at household level. A total of 5,000 households were selected following probability sampling methods.

The World Health Survey therefore gathered a wealth of information relevant to the MOHSS and aid agencies. However, the data collected has not been entered, analysed and reported. It is not clear what WHO's expectations were with regard to data processing. What we know is that the MOHSS does not have the capacity to process and analyze the survey data (large surveys like NDHS are usually implemented with notable external support and technical assistance). Reportedly, WHO indicated that they will take measures to ensure that data entry, analysis and report writing are carried out; however, it is not clear how and when this will be done.

## **2.6 National Population and Housing Census**

National Population and Housing Censuses were conducted in Namibia in 1991 and 2001. They gather a wide range of information on the whole population, including data on fertility, mortality, orphanhood, water supply and sanitation, as well as household socio-economic status. Information generated from censuses can be used for policy formulation, programme planning and monitoring, and for targeting. Censuses are one of the only information sources providing valid data at district level.

Colleagues at the MOHSS have indicated that it would be helpful if censuses could provide detailed information on age composition for the under one and under five population (which could be used to calculate specific age groups for target population – e.g. 9-months old, and to plan programmes and estimate coverage).

## **3. Information Systems for Early Warning and Food Security**

In Namibia, the Early Warning System for Food Security is composed of two main components:

The National Early Warning and Food Information Unit (NEWFIU) - in the Ministry of Agriculture, Water and Forestry - and Vulnerability/Food Security/Poverty Assessment structures.

### **3.1 The National Early Warning and Food Information Unit (NEWFIU)**

The NEWFIU sits within the MAWF in the Directorate of Planning, Division of Policy and Planning, as a unit in the sub-division of Statistics and Early Warning. It plays a crucial role in collecting, consolidating and disseminating much needed early warning information on a regular basis. The unit's role is to provide accurate and timely food security information to planners and policy makers and advise policy makers on food security issues. In particular the unit is charged with implementing the official national programme, namely to:

- a) Enhance the capacity for forecasting and providing early warning of adverse conditions, including impending food emergencies in the agriculture sector through effective monitoring of climate and weather patterns, and of plant and animal diseases and pests;
- b) Design and implement programmes and projects that strengthen disaster preparedness and the ability of the agriculture sector to mitigate the negative impacts of emergencies; and
- c) Establish and implement local capacities and mechanisms for coping with emergencies through guiding the choice of agricultural practices, technologies and support services to reduce vulnerability and enhance resilience within the sector.

The NEWFIU is staffed with four persons, two statisticians and two agriculture economists. It produces Food Security Bulletins three times a year (in March for crop forecast, in June for reporting on actual harvest and in December for reporting on pre-planting situation/readiness), and is planning to shift to quarterly reporting in the near future. Those bulletins are shared with a wide audience in relevant ministries and aid agencies and the information is used to determine food imports and plan interventions (e.g. for food assistance) (Awases, 2005). Bulletins are usually produced and released within 3 weeks following the field assessment. The bulletins include a variety of data, both primary and secondary (see annex 4).

Primary data is collected in the six Northern regions only (i.e. crop producing communal areas, namely Ohangwena, Omusati, Oshana, Oshikoto, Kavango and Caprivi). The information gathered includes crop situation and crop production estimates/forecast (based on rapid assessments among farmers) which is obtained in collaboration with Agriculture Extension technicians. Note that the unit does not collect information on livestock and grazing conditions. Since 2005, they have also been collecting information at household level on food access and coping mechanisms: Indicators monitored include Coping Strategies Index (CSI), Food Consumption Score – to assess dietary diversity – and Food Sufficiency – which refers to the number of months the household harvest is expected to last. Household livelihood sources are also included in the surveys. Note that household level data are provided at regional level (only for the six northern regions) but rely on a very small convenient sample (30 households per region). Indeed, the unit can only rely on four people (the unit's staff) to conduct household

surveys (teams spend only two days in every region); and it does not have the capacity, nor the resources, to conduct large-scale household surveys (Awases, 2005). Note that the NEWFIU does not analyze and report on all the information collected at household level. Indeed, the Household Food Security Monitoring questionnaire – which is similar to questionnaires used for VAC assessments in other countries – also includes data on household demographics, chronic illness, access to water, sanitation and electricity, household assets and livestock, household income and debt. However, NEWFIU does not have the capacity nor the mandate to analyze all this information; which results in quite a waste. Note again that sample size is an issue.

The NEWFIU also gathers data on national food supply to compile food (cereal) balance sheets, which include data on domestic supply and utilization as well as planned imports and exports.

Secondary data incorporated in the Bulletin includes:

- Rainfall performance and water availability, obtained from the Namibia Meteorological Services (NMS) at the MWTC and the Department of Water Affairs at MAWF.
- Livestock and grazing condition, from the Directorate of Veterinary Services at MAWF.
- Prices. Monthly producer prices for livestock (beef and sheep) – from the Meat Board of Namibia - and commodity (cereal) prices – from Namibia Agronomic Board and SAFEX - are reported nationally (with comparisons to previous years for livestock prices). Trends in monthly Consumer and Food Price Index (CPI, FPI) (at national level) are also included. CPI/FPI data comes from CBS.

A major concern is that the NEWFIU focuses on crop assessment/forecasting and only conducts assessments in the six northern regions. It does not cover livestock aspects – mainly due to capacity and resource constraints. Information on livestock is provided by the Veterinary services and the Meat Board of Namibia, which attempt to determine the impact of drought on livestock and grazing. However, this information is not included in the Food Security Bulletins (Awases, 2005).

The early warning information analysed and compiled by the NEWFIU is presented to the Drought Task Force within the MAWF and to the National Emergency Management Committee (NMEC).

The EMU collaborates with the NEWFIU on several topics, namely food production (national-level forecast and identification of at-risk areas for food shortages), rainfall monitoring, identification of drought-prone areas, numbers and profile of people vulnerable to natural disasters, type of support needed and design of interventions.

### **3.2 Agricultural Surveys**

It has been reported that since 1996 agricultural surveys have been conducted on a yearly basis. Data collection is carried out in a sample of farming households in crop producing areas only, i.e. the six northern regions (namely Ohangwena, Omusati, Oshana, Oshikoto, Kavango and Caprivi). Therefore, areas where livelihoods are mainly livestock-based are excluded. Field

teams collect data on area planted, yield and production of pearl millet (mahangu), sorghum, maize and some data on livestock. Results are supposed to be published by the CBS, however, there are major delays (sometimes several years) in the processing and reporting of the information and constraints related to access to users (Awases, 2005).

### **3.3 Vulnerability, Food Security and Poverty Assessments**

Vulnerability, Food Security/Nutrition and Poverty Assessment structures currently operate from different Ministries and agencies, such as EMU/VAC, Forestry Division, WFP and Poverty Division (Awases, 2005).

#### **3.3.1 National Food Security and Nutrition Assessments**

As part of Government's efforts to improve food security and nutrition in Namibia in the 1990s, the National Food Security and Nutrition Technical Committee conducted a Food Security and Nutrition Assessment in 1994, which provided the basis for the development of the Food Security Nutrition Policy and Action Plan. The assessment covered national food security and nutrition information (agricultural production, food imports food consumption patterns and nutritional status), macro-economic and sectoral analysis, and sub-national analysis of available food security and nutrition information. The assessment was mainly based on secondary data (FSNTC, 1995). Another National Food Security and Nutrition assessment was conducted in July/August 2005 as a follow-up to the 1994 exercise. The assessment was coordinated by the Division of Rural Development through its Sub-division on Food Security and Nutrition, which provides the secretariat to the National Food Security and Nutrition Technical Committee. The assessment was considered critical in light of developments regarding HIV/AIDS, orphans, rising food insecurity and poverty etc. The aim is to provide information which can be used for a comprehensive Food Security and Nutrition programme (Awases, 2005). This exercise was also an opportunity to identify critical information gaps, one of which was the lack of nutrition surveillance data. The report is to be published soon.

#### **3.3.2 VAC Assessments**

In 2002, the crop and food security assessment conducted by EMU and EWFIU in April-May showed alarming findings on the food security situation in the country as a result of prolonged drought. Alarmed by the situation, the Namibian Government, SADC, FAO and WFP recommended a verification of the crops assessments and a needs assessment of drought affected people. The Vulnerability Assessment Committee (VAC) conducted an Emergency Needs Assessment in collaboration with SADC, Food Agriculture and Natural Resources (FANR) in response to the above-mentioned request.

SADC proposed that the Namibia Needs Assessment should follow an approach similar to that currently implemented in the other six countries in the region (Zimbabwe, Malawi, Zambia, Mozambique, Lesotho, and Swaziland) and be implemented in all of Namibia's 13 regions.

The general objectives of the assessment were to:

- Jointly verify the Namibian government's crop assessment;
- Conduct an emergency needs assessment of all areas;
- Confirm the food aid assistance needs;
- Define geographic and temporal targeting of assistance;
- Characterise social groups for purposes of targeting;
- Identify the most appropriate type of assistance; and
- Identify key monitoring indicators.

The assessment was carried out at regional, community and household level. For household level surveys, VAC teams interviewed up to 18 households per constituency (district) (877 households in total) from different geographical areas to collect information on past and present access to food and income, production, access to inputs, current asset holdings, livestock ownership, meals consumed and dietary diversity (VAC, 2002).

Findings from the assessment were used to plan and implement emergency interventions (food aid etc.) in response to the drought.

### 3.3.3 Participatory Poverty Assessments

The NPC, through its Poverty Reduction and Human Resource Planning Division carried out Participatory Poverty Assessments (PPAs) in all 13 regions of Namibia in 2005/2006. This activity was envisaged in relation to the Poverty Reduction Action Plan (NPRAP). PPAs are defined as “a tool for involving poor people and their institutions in defining and analyzing poverty from their own perspectives”. PPAs collect data at the grassroots level and therefore complement information provided by other information systems (Awases, 2005). PPAs provide information on poverty in terms of its causes, character, dimensions, dynamics and experience at local levels. They complement other data on poverty-related issues, particularly the NHIES, and provide a basis for the formulation of poverty reduction policies and programmes. PPAs can also be used to monitor the impact of poverty reduction policies at local levels.

### 3.3.4 WFP Community and Household Surveillance

WFP has been providing individual rations to orphans and vulnerable children (OVCs) in six northern regions of Namibia, in collaboration with the Ministry of Gender Equality and Child Welfare (MGEWCW). The Community and Household Surveillance (CHS) system implemented by WFP in Namibia is designed to monitor programme outcomes. These outcomes include improvements in livelihood and food security at the household level and also improvements to the nutritional well-being of individual beneficiaries. The first round of CHS data collection was completed recently among 636 households, including 2,575 children aged 0-18 years; and will serve as a baseline for other CHS rounds.

A stratified random sampling approach was used for the survey. Data on beneficiary and non-beneficiary households was collected at 36 food distribution points across the survey area. At each FDP, 10 WFP beneficiary households and a further 10 non-beneficiary households were selected for interviews. The survey questionnaire included a wide range of demographic and food security information. In addition, anthropometric measurements were taken on 330 children 6-59 months of age and on around 250 children 5 to 9 years of age. Information was also collected on all children up to 18 years of age. The survey report will be released soon.

### **3.4 Databases: FIVIMS and Dev Info**

#### **3.4.1 FIVIMS**

Following the WFS of 1996, it was decided that Namibia would be one of the selected countries to pilot the establishment of the Food Insecurity and Vulnerability Information Mapping Systems (FIVIMS). FIVIMS aims at establishing and strengthening mechanisms to identify food insecure and vulnerable groups, to ascertain the prevalence and degree of under-nutrition among them, and to determine the causes of their food insecurity and vulnerability. This information is used to plan and implement appropriate interventions (Awases, 2005).

FIVIMS is a centralized information system which gathers, integrates and displays secondary data related to food security and vulnerability from various sources. The FIVIMS database (Key Indicator Data System - KIDS) was developed by a local consultancy company (Geo Business Solutions) contracted by FAO. The database mainly comprises data that is available across the country, from sources such as the MAWF, Atlas, NDHS and Censuses. By November 2005, Geo Business Solutions had entered all relevant data into the system, developed the user manual, trained government staff from various ministries and completed the FIVIMS website. FIVIMS was thus ready for hand-over to the government. However, the hand-over never took place. FIVIMS is operational but not being used because no institution is hosting it. We understand that there has been confusion and indecision among government officials regarding which ministry should host the system and we were recently told that FAO will host FIVIMS until the government is ready.

#### **3.4.2 DevInfo**

DevInfo is not an information system; it is a stand-alone tool to assist countries in their reporting. The package offers a common platform for dissemination of statistics, providing agencies with a database system to organize, store and display data in uniform format to facilitate data sharing between government departments and UN agencies using the same system. DevInfo can be used for evidence based planning, monitoring and evaluation. The programme offers a user-friendly interface that can produce tables, graphs and maps for their further inclusion in various reports, documents, advocacy materials etc.

In Namibia, DevInfo is at an early stage. Government counterparts (personnel from the NPC and focal points from various ministries) have participated in extensive training and Dev Info has



been endorsed by the CBS as the common database. However, it is not ready for use yet, as UNDP is currently entering all available data into the DevInfo database. So far, data entry has focused on economic data and much less so on health.

#### **4. Nutrition Information Gaps and Proposed Data Collection Systems**

After reviewing the above-mentioned information systems, the authors had lengthy discussions with colleagues at the MOHSS (the Food and Nutrition sub-division), other ministries and UNICEF regarding information needs for policy formulation, programme design/planning and programme management/monitoring related to nutrition.

Going back to the mid-1990s, the Food Security and Nutrition Policy (1995) had identified the need for the development of a “comprehensive nutrition surveillance system” (NFSNC, 1995). In recent years, food security and nutrition surveillance has received renewed attention due to concerns over the short and long-term effects of three disasters (drought, floods and HIV/AIDS). The lack of a coherent Food Security and Nutritional Surveillance System to guide policy and resource allocation by government and donors within the country has thus been a source of frustration (Rodgers, 2004). This has been a recurring theme in the conversations held with most stakeholders during our mission (MOHSS, UNICEF, NEWFIU, EMU etc.) as they expressed the need for timely and regular data on nutrition trends in relation to both rapid and slow onset emergencies (such as HIV/AIDS). This issue was also brought forward in several consultants’ reports recently produced in Namibia (Awases 2005, Rodgers 2004).

In addition to information on nutrition trends, the Food and Nutrition sub-division at the MOHSS expressed the need for regular information on programme performance and quality of service delivery for nutrition-related activities.

Based on the above, in collaboration with the Food and Nutrition sub-division, we developed an indicator matrix. The matrix identified specific information needs (indicators), and for each of them, the authors suggested possible data collection methods (see annex 18). The proposed data collection systems are not mutually exclusive but complementary; all of them build on existing systems and structures; the proposed systems include:

1. **Sentinel Sites Nutrition Surveillance** (facility-based and based on HIS), for timely warning, programme planning and monitoring of programme outcomes.
2. **Revamped HIS**, for programme management/monitoring, policy formulation and programme planning.
3. **National surveys (NDHS, NHIES)** for policy formulation and programme design, programme management/monitoring.
4. **Health Facilities Supervisory Visits** (yearly) for improved programme management and monitoring.

Sections IV, V, VI and VII will review the proposed systems in more detail.

## **IV. Sentinel Sites Nutrition Surveillance**

### **1. Introduction**

As mentioned above, there is agreement in Namibia on the need to collect nutrition data on a regular basis for timely warning, programme planning and programme management purposes. However, the design and modalities according to which this system would operate had to be worked out by ourselves. The original ToRs for this mission had proposed to conduct repeated (representative) surveys in sentinel sites on a regular basis. This option was considered, however, discussions with MOHSS representatives quickly revealed that the MOHS has very limited capacity for survey implementation. The hurdles experienced with the World Health Survey in 2003/2004 illustrate well the capacity constraints experienced within the MOHSS (see section III). Subsequently, a closer look at HIS and GMP revealed that useful - but poor quality - nutrition data was already being collected, yet, put to very limited use (see section III). We thus considered improving existing methods and systems to obtain reliable nutrition data on a regular basis. This idea was reinforced by two reports that we reviewed. In her report on Nutrition in Under 5 Year Old Children in Namibia, P. Rodgers recommended (among other things) that nutrition surveillance be implemented through GMP. Furthermore, in his report entitled “Assessment of the Early Warning System for Food Security in Namibia”, A. Awases, recommended “improving growth monitoring data collection and analysis and setting up of a nutrition surveillance system”. According to the same report, at the National Workshop on Disaster Risk Management held in Windhoek on 22-23 November 2005, when asked about opportunities for collection of information on food utilization (nutrition related), participants encouraged the “utilization of existing information without further assessment” (Awases, 2005). In light of the above, we decided to recommend that nutrition surveillance should build on existing growth monitoring and HIS systems.

The advantages of the proposed Sentinel Sites Nutrition Surveillance System are:

- It builds on existing systems;
- It is simple to implement;
- It involves minimal extra costs;
- It involves minimal extra workload;
- It will generate clear benefits to users.

In the sub-sections below, we describe in detail implementation modalities for the proposed sentinel reporting system.

### **2. Rationale**

#### **2.1 Problems Identified**

The nutrition situation in Namibia showed little improvement between 1992 and 2000, as reflected by marginal decreases in underweight and stunting prevalence; and unchanged levels of wasting (around 10%). At present, malnutrition prevalence remains at unacceptably high levels (see section II). Of particular concern is the effect of HIV and related stress (loss of income,

orphanhood etc.) on the nutritional status of vulnerable groups. In addition, over the past few years, several parts of Namibia have experienced recurring natural disasters and harsh weather conditions (drought, floods). The Government of the Republic of Namibia (GRN) and UNICEF are increasingly concerned with the effects of these developments on the nutritional status and health of vulnerable groups (children under five, pregnant women).

## **2.2 Information Gaps**

National cross-sectional surveys, such as NDHS and NHIES are conducted every 6 and 10 years (more or less), respectively, and provide accurate estimates of malnutrition prevalence (wasting, underweight and stunting) among children under five at regional and national level. In addition, monthly data on nutritional status (weight-for-age) among children weighed at health facilities are captured as part of routine Growth Monitoring and Promotion (GMP) and feed into HIS. However, there are major concerns with regard to GMP selection bias and data accuracy. In addition, current analysis and reporting tools within HIS make it cumbersome and complex to obtain nutritional trends data (see section III).

Therefore, there is a need for more regular data on malnutrition trends as a complement to national surveys; and this need is not currently filled by HIS or any other information system. The proposed nutrition surveillance system, which will rely on sentinel sites reporting, is expected to fill in that gap.

## **3. Definition, Goal and Objectives**

### **3.1 Defining Nutrition Surveillance**

Nutrition surveillance should be distinguished from nutrition surveys. Nutrition surveillance means “to watch over nutrition, in order to make decisions which will lead to improvements in nutrition in populations” (WHO, 1984). Therefore, nutrition surveillance refers to a continuous process and focuses on monitoring trends over time rather than providing estimates of absolute levels of malnutrition. Moreover, the proposed sentinel sites reporting system does not provide a representative sample of a population because it serves a different purpose than survey data (i.e. monitoring trends). Finally, nutrition surveillance should provide a basis for decisions; this implies that surveillance data should be used to identify and trigger required actions/interventions.

### **3.2 Goal**

The overall goal of the Food and Nutrition sub-division at the MOHSS is to “improve the nutritional status of the Namibian population with special emphasis on vulnerable groups (women and children) resulting in the reduction of morbidity and mortality due to or associated with malnutrition.” (MOHSS, 2005). The proposed surveillance system will assist in monitoring

progress towards the stated goal and provide a basis for decisions related to policy, planning and management of programmes relating to improvement of food consumption and nutritional status.

### **3.3 Purpose and Objectives**

The overall purpose of the nutrition surveillance system is to monitor trends in nutritional status among vulnerable groups (children under five, pregnant women) and associated factors known to precede deterioration in status.

The specific objectives are:

- To detect timely signs of a food and nutrition crisis and inform emergency programme planning.
- To identify potentially at risk areas.
- To monitor the impact of ongoing programmes/policies and progress towards stated goals.
- To plan interventions (identify needed medium to long-term interventions).
- To strengthen capacity for the use of surveillance information at various levels.

## **4. Surveillance Design**

The proposed nutrition surveillance builds on the GMP and HIS data collection formats. Nutrition surveillance data will be collected in the same way HIS data are now collected (using the same tally sheets and reporting formats). It is thus important to note that, the proposed sentinel site reporting system does not imply a modification of HIS data collection and reporting procedures; instead, it will rely on the existing system and focus on improving methods (especially with regard to data accuracy and rapidity of data transfer) in 13 purposefully selected sentinel facilities. The only differences with the existing system are a) Data will be transferred by phone on a monthly basis directly from facilities to national level (to ensure timely reporting); b) Data will be entered in a separate database at national level for semi-automated generation of tables and graphs. The system will be facility-based and rely on sentinel sites (health facilities), i.e. 13 sites in total (one per region). Sentinel facilities will be purposively selected based on vulnerability levels, relative size (i.e. number of children weighed per month) and other considerations. Data will be collected and reviewed monthly; it will be consolidated/reported quarterly at national level and shared with a wide audience. Two quarterly reports will be produced: A Nutrition Surveillance Bulletin for timely warning, which will be incorporated into a Quarterly Food Security and Nutrition Bulletin produced by the VAC Technical Committee; and a more comprehensive Internal (MOHSS) Quarterly Nutrition Surveillance Report, which will include programme management / monitoring information and related recommendations (for national/regional/district/facility health staff).

## 4.1 Sentinel Sites

### 4.1.1 Why Sentinel Sites?

Nutrition surveillance will be facility-based since it builds on existing GMP implemented in district hospitals, clinics and health centers across the country. The decision to focus on sentinel sites (here, a “site” refers to a health facility) rather than all facilities arises from concerns regarding (i) data accuracy (see section III); (ii) timeliness of data flow and reporting (from facility to national level); and (iii) burden of data collection, analysis and reporting information for nationwide coverage.

It is expected that by focusing efforts on 13 facilities, data accuracy will be much improved through training and provision of adequate equipment (scales); timeliness will be guaranteed through the use of telephone for quick data transfer; and the burden of data collection, analysis and reporting will be limited; all this should contribute to more efficient data collection and analysis. This also implies that requirements for human and financial resources (in addition to routine GMP and HIS) for the nutrition surveillance system to function will be limited.

### 4.1.2 Purposeful Selection of Sites

The decision to purposefully select sentinel facilities (as opposed to random selection) is based on the following considerations. First, using nutrition surveillance data for timely warning purposes implies monitoring areas that are the most likely to be affected by shocks. Sites are thus selected based on their relative vulnerability in order to provide first-alert information in a timely fashion. This relates to the concept of vulnerability to shocks (e.g. natural disaster, price fluctuations, disease outbreak etc.) and implies that, within each region, the sentinel facilities should be located in the most vulnerable areas (district). Secondly, we want to ensure that sentinel sites are spread across the main agro-ecological zones so that they are all represented. Finally, in order to obtain a reasonable sample size, to be selected, health facilities will need to have a minimum of 30 children 6-11 months coming every month (on average).

In light of the above we have established the following criteria for the purposeful selection of sentinel sites; each of them should meet a combination (not necessarily all) of these criteria.

- Spread across the main agro-ecological zones/regions (see annex 1);
- Both in urban and rural areas;
- In most vulnerable areas within regions;
- Where HIV surveillance is conducted (24 sites in all 13 regions);
- near/in towns where price data are collected<sup>4</sup>;
- Where HIS and GM, including outreach are functional (note that capacity can be strengthened, see below linkages with the RED initiative);

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<sup>4</sup> For Consumer/Food Price Index: Oshakati, K Mulilo, Otjiwarongo, Windhoek, Gobabis, Mariental, Keetmashoop and Swakopmund.

- In health facilities that have a reasonably large target population/number of children coming for weighing (for minimum sample size).

#### 4.1.3 Number of Sites

It is suggested that nutrition surveillance be implemented in 13 sentinel sites, i.e. one per region. This way, all regions will be involved in this project and will – hopefully - see the benefits of using nutrition surveillance data for improved programme delivery. Indeed, it is expected that nutrition surveillance will create an incentive in every region to improve data collection methods and growth monitoring and promotion in all facilities. In addition, having sentinel sites spread across all 13 regions will facilitate the interpretation of nutrition surveillance data in relation to early warning information (some of the early warning data collected cover the whole country; other data focuses on the 6 northern regions).

The phasing in of nutrition surveillance could be staggered, starting with, say, 5 sites (starting with the most vulnerable areas), and progressively expanding to 13 sites.

Colleagues at the MOHSS (national and regional level) and at the MAWF have expressed the desire to have more than one site per region for sentinel site reporting. At a later stage, one should consider the feasibility of expanding the number of sites.

#### 4.1.4 Selection Process

##### *Pre-selection of Sites*

Sentinel sites have already been selected using the following methodology. One health district per region was selected based on ranking of HIS data. The HIS indicators considered for the ranking included: a) number of diarrhea cases, b) underweight prevalence, c) low birth weight prevalence, and d) malaria incidence. An overall score was assigned to each district within a given region based on the level of each indicator, which enabled identification of the districts with the “worst” performance. The selection of health facilities within the selected districts was based on the average number of children 6-11 months weighed per month (the minimum threshold was set at 30). In health districts with more than one possible facility (i.e. more than 30 children weighed), one constituency was selected based on the following socio-economic indicators (obtained from 2001 Census Report): a) rate of unemployment, b) low socio-economic status (using type of roofing as proxy), and c) access to sanitation; there again selecting the “worst” constituency. Facilities were also selected to represent the main agro-eco zones in the country as well as both rural and urban areas.

The list of pre-selected sites is included in annex 2. This list is not final as we are still waiting for feedback from some of the regions to finalize the selection (see below).

### *Final Selection of Sites*

The list of pre-selected sites - together with guidelines on sites' selection - was submitted to Regional Health Directors for feedback. We have received feedback from some of the regions (some of whom were satisfied with the selection, others who suggested another, more vulnerable site). The list of sentinel sites should be finalized within the next week.

## **4.2 Frequency of Data Collection and Reporting**

The sentinel sites surveillance system will be based on monthly data collection as per routine HIS procedures and consolidated quarterly for Food Security and Nutrition Bulletins, which will incorporate non-HIS data (which will be monthly or quarterly depending on the data).

Efforts should be made to ensure timeliness of data transfer every month from health facilities to national level. Currently, within HIS, there tends to be a time lag between the time the data are entered at district level and the time it can be extracted from the HIS consolidated database at national level (there can be delays up to a few months). In order to ensure timeliness of nutrition surveillance, we suggest that the data transfer route for sentinel sites be shortened. This can be done by communicating monthly results directly from sentinel facilities to the national level by phone, on the second or third day of each month (here we assume that sentinel health facilities have fixed telephones or health workers have mobile phones and can be called every month, which is a reasonable assumption). Note that this will require for the person responsible for data entry at national level to have a master list of health workers responsible for nutrition surveillance in sentinel facilities (i.e. main person responsible and alternate) as well as district PHC supervisors and their contact details. For each sentinel district, data on child malnutrition, immunization and diarrhea will be collected from the sentinel facility (which will include outreach data in the facility's catchment area) and the district hospital for data on low birth weight.

Independently, the growth monitoring data collected in sentinel sites will continue to feed into HIS following the routine data flow procedures.

## **5. Indicators and Sources of Information**

Nutrition surveillance will focus on nutrition and health indicators (for timely warning) and complementary information for early warning and interpretation of nutrition trends. The nutrition and health indicators will be collected from sentinel facilities (as per routine HIS procedures). The early warning data will be obtained from other information systems that are already in place.

## 5.1 Nutrition and Health Indicators (timely warning)

The proposed nutrition surveillance system will monitor trends in the following indicators:

- Prevalence of underweight (moderate and severe) among children 6 – 11 months;
- Number of children <1 year immunized for measles, from which will be derived % of children immunized for measles among children 6-11 months weighed and measles immunization coverage.
- Number of cases of moderate and severe underweight among all under-fives;
- Number of diarrhea cases among children under five;
- Prevalence of low birth weight (among births in district hospitals).

These indicators are reviewed in detail below.

### 5.1.1 Prevalence of underweight (moderate and severe) among children aged 6-11 months.

Prevalence will be calculated as follows: (number of children underweight/number of children weighed)\*100).

Weight-for-age is a composite index, which reflects both wasting and stunting, or any combination of both. Previous research conducted in Southern Africa has showed that weight-for-age is an appropriate outcome indicator of a food crisis; by contrast changes in wasting (– 2 SD weight-for-height) are not easily detectable due to a “rare event” problem (Mason et. al., 2005).

Underweight relies on two components, weight and age, which must be determined accurately. Visits to various health facilities revealed that weight measurements are not accurate (see section III) but these can be much improved through training and better equipment (see section IV. 8). At health facilities, age is calculated based on the child’s birth date and date of interview. The child’s birth date is systematically recorded on the Child Growth Card (yellow card). According to the DHS 2000 report, almost three quarters (74%) of the children aged 12-23 months had a Health Card (MOHSS, 2003). In addition, health workers indicated that most mothers/caretakers will know their child’s birth date, even if the child health card or birth certificate is missing. It is therefore reasonable to assume that, with good training (on calculation of exact age), exact age can be obtained for most children.

The selection of the six to eleven month age group for clinic-based monitoring of underweight prevalence is the result of high clinic-based immunization coverage. Children being immunized at six, ten, and fourteen weeks of age, as well as at nine months for measles, are available to be weighed. After that, children are only brought to the clinic if they are sick and are not regularly participating in growth monitoring. In 2005, measles coverage was at sixty-eight percent. This implies that by relying on the 6-11 months old (which include the 9-month old who come for immunization), there will be a relatively representative sample of children in that age group. With accurate measurements, it is thus reasonable to assume that a reliable estimate of underweight prevalence for the age group will be obtained.



Comparisons in underweight between children 6-11 months and the under-five year age group in the national DHS conducted in 2000 showed that regional variations in underweight prevalence between the two age groups significantly correspond. Prevalence in the six to eleven month age group can thus serve as a proxy for the rest of the under-five population, although the exact corresponding levels are not known.

Comparison of DHS and HIS data for 2000 also revealed that HIS underestimates underweight prevalence both regionally and nationally. This is a major issue that needs to be fixed. From visiting various clinics we have seen that many children are weighed with most of their clothes on and scales are not calibrated. Selection bias is not likely as immunization coverage is high. The lack of reliability is thus believed to be a result of inaccurate measurements and errors in identification of nutritional status, which can and will have to be corrected through training.

Finally, looking at HIS data from the Caprivi region, we found that HIS can currently reflect changes in nutrition status and show the effect of large events (e.g. drought, floods, disease outbreak) on nutrition (see annex 3 for full details on the above).

In sum, in order to have complete confidence in the data received we must ensure accurate measurements and reporting with the establishment of sentinel sites. When this is accomplished the six to eleven month age group can serve as a proxy for the rest of the children under five years of age, but the relationship between the various age groups must be explored further to make accurate extrapolations.

Data on underweight (i.e. number of children with normal weight/moderate/severe underweight by age group) is already being collected in health centers through the growth monitoring programme and compiled on a monthly basis into the Immunization and Weighing Monthly Summary Reports Form, which feed into HIS.

#### 5.1.2 Number of children <1 years immunized for measles.

This indicator will enable the monitoring of two elements that can provide information on sample representativeness. First, with these data we can calculate the percentage of children who come for measles immunization among the 6-11 month old who are weighed (this can be done by calculating the following  $(\text{number of children } <1 \text{ immunized for measles} / \text{number of children } 6-11 \text{ weighed}) \times 100$ ). Second, based on the number of children <1 year immunized for measles, we can estimate coverage. Ideally, this figure should be annual and based on the following calculation:  $(\text{number of children } <1 \text{ immunized for measles for year } x / \text{target population } <1 \text{ year}) \times 100$ . It should also be possible to report on measles coverage on a quarterly basis, as follows:  $(\text{number of children } <1 \text{ immunized for measles this quarter} / (\text{target population } <1 \text{ year} / 4)) \times 100$ . Based on these indicators, we can monitor to what extent our 6-11 month sample is representative of the whole population (6-11 months) in sentinel sites' catchment areas; the higher the figure, the more representative the sample is expected to be.

Attention should be paid to the estimation of target population for calculation of coverage. Indeed, until recently, health districts were not in a position to estimate their target population

accurately due to mismatches between administrative boundaries (i.e. constituencies or districts) on which the census (and therefore population data) relies and health district boundaries. Some colleagues at MOHSS now argue that this has been sorted out thanks to the polio campaign conducted recently which seems to provide more accurate estimates of target population within health district boundaries. But not everyone at MOHSS agrees with this view. Another issue is that Namibian people are very mobile, therefore population sizes in specific areas fluctuate. Efforts should thus be made to ensure that the issue of target population figures is discussed with regional, district and health facility personnel and that ways to obtain the most accurate estimates are identified.

Data on the number of children <1 years immunized for measles are already being collected in health centers through the immunization programme and compiled on a monthly basis into the Immunization and Weighing Monthly Summary Reports Form; which feed into HIS. Target population figures for estimation of coverage should be available at district and facility level as well.

#### 5.1.3 Number of cases of moderate and severe underweight among children under five.

Monitoring the number of cases of severe and moderate malnutrition among all children under five on a monthly basis will enable us to pick up changes in malnutrition levels among other age groups. It is expected that a notable increase in the number of cases will reflect a problem (which might not be picked up by underweight prevalence among 6-11 months. One possible reason for this would be that only older children are affected).

Data on the number of children who are moderately and severely malnourished are already being collected in health facilities through GMP and compiled on a monthly basis into the Immunization and Weighing Monthly Summary Reports Form; which feed into HIS. The data are organized by age groups (0-5; 6-11; 12-23; 24-35; 36-47; 48-59 months) and can be consolidated into larger age bands.

#### 5.1.4 Number of diarrhea cases among children under five.

Diarrhea is associated with malnutrition, i.e. both as an outcome and late stage predecessor to increased malnutrition. It is expected that diarrhea and underweight indicators will change in the same direction, as they have in the past as shown by the analysis of HIS data (annex 3). Monitoring trends in diarrhea cases may thus provide possible explanations to changes in malnutrition trends and vice-versa. It will be important to distinguish bloody diarrhea from other diarrhea; since a notable increase in the incidence of bloody diarrhea (dysentery) would reflect a critical situation.

Data on diarrhea are already being collected through outpatient services and are compiled on a monthly basis into the Outpatient Department Monthly Summary Report Form, which feeds into HIS. Note that this distinguishes between diarrhea with and without blood.

#### 5.1.5 Prevalence of low birth weight (<2.5 Kg) - among births attended at district hospitals.

Low birth weight can be used as a proxy indicator for mother's low Body Mass Index (BMI) and is likely to reflect decreased food consumption, especially in the last 3 months of pregnancy (WHO, 1994). Collecting low birth weight data will thus enable us to monitor nutrition trends among pregnant women and also to forecast trends in child underweight.

Because birth weights in Namibia tend to be relatively high, and the actual prevalence of low birth weight – based on the 2.5 Kg threshold - is relatively low (i.e. around 8% according to DHS 2000), it would be preferable to record exact birth weights, which would enable us to monitor mean birth weight or compile birth weight data according to various thresholds or bands (e.g. <2.5; 2.5 – 3 Kg). However, this would require modifying current practice and HIS reporting formats, which is not feasible at this stage. Nevertheless, we recommend that this modification be done when HIS is revamped (see section V).

Data on low birth weight are already being collected in district hospitals (maternity inpatient departments) and compiled on a monthly basis into the Maternity (Inpatient) Department Monthly Summary Report Form, which feed into HIS; therefore it can easily be obtained for nutrition surveillance purposes.

## 5.2 Early Warning Indicators

The proposed nutrition surveillance system will monitor trends in indicators that are known to precede deterioration in nutritional status. The NEWFIU at the Ministry of Water and Forestry gathers information on the following indicators:

- **Rainfall performance and water availability.** This includes data on amount of rainfall and availability of water (at reservoirs), including comparisons with the previous year.
- **Crop situation and food production (by region and only for the 6 northern regions).** This includes estimated area planted and production forecasts/estimates by type of cereal and region (including comparisons with previous year). Qualitative information on the crop situation by region is also provided.
- **Prices.** Monthly producer prices for livestock (beef and sheep) and commodity (cereal) prices are reported nationally (with comparisons to previous years for livestock prices). Trends in monthly Consumer and Food Price Index (at national level) are also included.
- **Household food security (only for 6 northern regions),** and more specifically access to food and coping mechanisms: Indicators monitored include Coping Strategies Index (CSI), Food Consumption Score – to assess dietary diversity – and Food Sufficiency – which refers to the number of months the household harvest is expected to last. Household livelihood sources by region are also included. Note that household level data are provided at regional level (only for the six northern regions) but relies on a very small convenient sample.

- **National food supply.** Food (cereal) balance sheets for previous and next marketing year are produced. These include data on domestic supply and utilization as well as planned imports and exports.

Data on all of the above-mentioned are included in the Food Security Bulletins produced by the NEWFIU at the MAWF (they are currently produced three times a year but will be produced quarterly as of next year) (see annex 4). Nutrition surveillance data will be interpreted in light of early warning information in the consolidated Food Security and Nutrition Bulletins produced by the VAC on a quarterly basis.

The Food and Nutrition sub-division will also include price data, i.e. Consumer and Food Price Index (CPI and FPI) in its own nutrition surveillance bulletin. Indeed, Consumer and Food Prices affect purchasing power. Changes (increases) in food prices tend to result in reduced access to food, which may in turn lead to increased malnutrition. FPI/CPI is an indicator of the relative price of food and has been shown to be related to malnutrition in previous studies (UNICEF, 2003).

Prices included in CPI are collected by the National Planning Commission on a monthly basis from more than 650 retail outlets in 8 localities across the country (i.e. Oshakati, K. Mulilo, Otjiwarongo, Windhoek, Gobabis, Mariental, Keetmashoop and Swakopmund). The index is published about 15 days after the end of the reference month to which it relates (Namibia Consumer Price Index (NCPI), Republic of Namibia, National Planning Commission Secretariat, Central Bureau of Statistics, August 2006). Data on consumer and food price index can be obtained directly from the National Planning Commission (by e-mail) or from the MAWF NEWFIU.

### **5.3 Role of National Surveys and Other Information Sources**

The proposed nutrition surveillance system will rely on regular national cross-sectional surveys (NDHS, NHIES or other) to obtain other useful information (e.g. on breastfeeding practices) and valid estimates of malnutrition prevalence. In addition, efforts should be made to ensure that national surveys are designed in such a way that they can provide information that can help build/improve the nutrition surveillance system. By surveying populations located in catchment areas of sentinel sites, national surveys (or small-scale cross-sectional surveys) can help assess coverage and selection bias in sentinel sites' samples. This could be done by collecting data on frequency of children's visits to health facilities, in particular for growth monitoring and immunization, household socio-economic characteristics etc. More specifically, for each child weighed in the survey, the following questions could be asked (a) is the child in a catchment area of a sentinel facility for nutrition surveillance? (b) does the child have a growth chart from that clinic? (c) when was the child last weighed? or record the last several weighings and immunization. The surveys could also be used to assess the validity of HIS data (i.e. underweight prevalence etc.).

UNICEF is hoping to progressively phase in Child Health Days within the next year; starting with a pilot. Child Health Days activities would be carried out district-wide, twice a year and should include growth monitoring. It has been suggested that pilot Child Health Days be conducted in the districts where nutrition surveillance sentinel facilities are located. This would also be an incentive for health workers in those areas to participate in nutrition surveillance. Child Health Days are expected to reach a much larger sample of children from larger age bands (compared to 6-11 months) and provide more valid estimates of underweight among the under-fives. In addition, once child health days are implemented country wide (i.e. from all/most clinics), they can provide finer geographic results once or twice a year. Efforts should thus be made to ensure that data collected on Child Health Days be reported - through HIS or independently – and used for nutrition surveillance and other purposes. Note that plans to implement Child Health Days are at a pre-mature stage and need to be further discussed with MOHSS.

## **6. Data Entry, Analysis, Interpretation and Reporting**

### **6.1 Data Entry, Analysis and Interpretation**

At the beginning (by the 5<sup>th</sup>) of every month, health workers at sentinel facilities will communicate monthly data from Immunization and Weighing Monthly Summary Reports Forms, Outpatient Department Monthly Summary Report Forms and Maternity Department Monthly Summary Reports to the Nutrition Surveillance Officer over the phone. In addition to monthly figures, complementary qualitative data should also be captured.

A template has been developed to capture information given by health workers to national nutrition surveillance officer over the phone (see annex 5). The form will capture both quantitative and qualitative information, such as health workers' explanations on nutrition trends (i.e. explain patterns in view of local events), concerns and constraints with nutrition surveillance or growth monitoring implementation. It is important to use that form to write down all the information given by health workers. Quantitative data from the data capture form (paper based) will then be entered into the Excel database. The qualitative information will be used to interpret trends and write the internal nutrition surveillance reports (i.e. section on Implementation of Nutrition Surveillance and Growth Monitoring). The advantage of having the data on paper every month is to have a data back up in case the excel database file is lost/deleted. Secondly, it minimizes the risk of error due to quick data entry into the Excel database while on the phone. Thirdly, it enables spot-check monitoring of data entry and identification of data entry errors.

Data will be treated as a new sample each month (i.e. not taking into account repeated visits over several months). Indeed, because we rely on prevalence among 6-11 months, the majority of whom come for immunization, we assume that there will not be many repeats (that might change if growth promotion and education on the benefits of GM becomes effective and children actually start coming back for growth monitoring). One possibility could be to monitor the number of repeats in selected sites; this option should be considered.

Quantitative data will be entered and analysed in Excel. Database templates and routine analysis with semi-automated functions and charts (based on pivot tables) were built-in to facilitate the process (see EMPTYDATABASE.xls). Guidelines have been prepared that describe the analysis routine to be undertaken in Excel on a quarterly basis to produce standard tables and graphs (see annex 6). Note however that the analysis should not be limited to the templates we prepared; the analyst is strongly encouraged to conduct additional analysis as the system develops. For this reason, two persons in the Food and Nutrition sub-division were trained in conducting trend analysis and creating graphs and tables from scratch based on the Training Manual developed for this purpose (see annex 7). The surveillance team may also want to conduct additional analysis in real time (i.e. based on this quarter's data). Secondary analysis to explore how various indicators relate to each other (e.g. diarrhea and underweight; HIV and underweight) would not necessarily be conducted in real time but retroactively based on data accumulated over time. This type of analysis could be used for programme monitoring and evaluation. We have made suggestions and created chart templates for additional analysis but this should be used as a starter and can be further expanded (see annex 8).

One advantage of using Excel pivot tables (in addition to the fact that they are very easy to use) is that the type of analysis mentioned above can be applied to all HIS data (transferred from HIS database to Excel). This enables for instance monitoring underweight among children 6-11 months in all health facilities/districts/regions (keeping in mind issues of data accuracy and prevalence under-estimation in non-sentinel sites).

The analysis of nutrition surveillance data will include the following standard tables and charts:

- Trends in the number of cases of severe and moderate underweight among children under 5 (i.e. by quarter and year), by sentinel site (bar chart).
- Trends in underweight prevalence (moderate and severe) among children 6-11 months (i.e. by month and year), by sentinel site (line chart).
- Change in underweight prevalence among children 6-11 months: change (in percentage points and percent) compared to the previous quarter and compared to the same quarter last year (i.e. considering seasonality) (table).
- Trends in prevalence of low birth weight (i.e. by month and year), by sentinel site (line chart).
- Trends in number of diarrhea cases among children < 5 (by quarter and year), by sentinel site (bar chart).
- Trends in national Food Price Index/Consumer Price Index ratio (by month).

Additional analysis to be included for the Internal Quarterly Nutrition Surveillance Bulletin will include:

- Measles immunization as % of the total number of children 6-11 months weighed (by quarter and site).
- Immunization coverage – only calculated once a year.

Additional analysis may include:

- Trends in diarrhea (number of cases) and underweight prevalence (among 6-11 months), by month and year at site level.

- HIV and underweight prevalence (among 6-11 months) by site for a given month/year (i.e. when sero-prevalence surveys are conducted), only for sites that are also HIV sentinel sites.
- Trends in underweight prevalence (among 6-11 months) and trends in FPI/CPI ratio (by month and year), for a given site (for underweight).
- Trends in underweight prevalence and natural disasters (e.g. drought/flood) - or other major event - by month and year, at site level (see annex 3, figure 13).

Annex 8 includes the output (tables and charts) to be derived from the above-mentioned analysis.

It is important to keep in mind that the unit of analysis is the sentinel site (i.e. 13 in total). It would not make sense for instance to average the data from various sentinel sites to come up with overall trends. In addition, it should be stressed that nutrition surveillance data will provide useful estimates of trends but should not be used to estimate absolute levels of prevalence. Thus, the data are of limited use for comparison between areas based on prevalence (see annex 3). In addition, the data only reflect changes in sentinel facilities; it does not necessarily reflect a pattern at district level (and even less at regional level). To find out whether the patterns identified are typical of a wider area (e.g. district), further investigation will be required.

Nutrition surveillance data will be interpreted in light of the qualitative information provided by health workers in sentinel sites, knowledge of seasonality patterns and early warning information. Clues on how to interpret nutrition surveillance data are provided in annex 9.

Finally, the surveillance system should be able to evolve to understand the nutrition situation; this implies that the analysis of nutrition surveillance data should be further developed as the system evolves and (research) questions arise (therefore, the analysis and reporting tools we have prepared are just suggestions and are in no way set in stone). Given limited capacity at the MOHSS, technical guidance and capacity building in data analysis and interpretation could be provided by UNICEF/Tulane University or any other relevant institution, if the need arises. The MOHSS could also consider sponsoring participation of the Nutrition Surveillance Officer in public health courses with focus on public nutrition. Short (winter/summer) courses, as well as distance-learning in public health - with coursework in nutrition assessment, analysis etc. - are available at the University of Western Cape (UWC) (School of Public Health). Participation of the Nutrition Surveillance Officer in these courses could contribute to local capacity building in nutrition surveillance in the medium and long term.

## **6.2 Report Writing and Dissemination**

Two reports will be produced on a quarterly basis: A Nutrition Surveillance Bulletin for timely warning, which will be incorporated into a Quarterly Food Security and Nutrition Bulletin produced by the VAC Technical Committee; and a more comprehensive Internal (MOHSS) Quarterly Nutrition Surveillance Report, which will include programme management / monitoring information and related recommendations (for national/regional/district/facility health staff).

### 6.2.1 Quarterly Nutrition Surveillance Bulletins and VAC Bulletins

Nutrition surveillance reports for timely warning will be produced by the Food and Nutrition sub-division on a quarterly basis. The bulletins will describe and interpret trends in nutrition and related indicators (diarrhea and FPI/CPI ratio) and make recommendations for action. Bulletins should be submitted to the VAC technical task force<sup>5</sup> by 15<sup>th</sup> of the month that follows the end of the quarter (e.g. if the reporting period is the first quarter of the year, the bulletin should be submitted by April 15<sup>th</sup>). Upon submission of the bulletin, the VAC technical task force will review nutrition surveillance and food security/early warning information (based on quarterly Food Security Bulletins produced by the NEWFIU at MAWF) and produce a consolidated bulletin on Food Security and Nutrition, where nutrition surveillance data will be interpreted together with food security information. In addition to nutrition data, the bulletin will include information on rainfall and water availability, crop situation and food production, livestock condition, price data, household food security and overall food supply. The VAC bulletin will include a section on recommendations for action – as guidance to decision-makers. It should be disseminated by no later than the end of the month following the quarter (e.g. if the reporting period is the first quarter of the year, the bulletin should be submitted by April 30). A report template for the Nutrition Surveillance Bulletin produced for timely warning can be found in annex 8.

### 6.2.2 Internal (MOHSS) Quarterly Nutrition Surveillance Report

The internal Nutrition Surveillance reports will also be produced quarterly. In addition to describing and interpreting trends in nutrition and related indicators, the internal reports will include a section on nutrition surveillance and growth monitoring implementation. This section will provide information that helps assess the sample's representativeness for underweight trends and will discuss implementation issues (e.g. identify constraints with reporting timeliness, data accuracy, scales, staffing issues etc.) as well as best practice. The report will also include a section on information-based action for Growth Monitoring and Promotion, i.e. follow-up of malnourished children, counseling and multi-sectoral assistance (e.g. social support, food supplement etc.) and identify related constraints and possible solutions, as well as best practice. If additional analysis is conducted, findings should also be included in the internal report. Based on the above, a section on recommendations for national, regional, district and facility health staff (for programme management and planning) will be included. Internal reports should thus be used as an ongoing programme management tool for nutrition surveillance and growth monitoring programmes. Internal Nutrition Surveillance Reports should be finalized and submitted by 15<sup>th</sup> of the month that follows the end of the quarter (e.g. if the reporting period is the first quarter of the year, the bulletin should be submitted by April 15<sup>th</sup>). A report template for the Internal Nutrition Surveillance report can be found in annex 8.

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<sup>5</sup> Members of the technical task force will include the Head and the surveillance officer in the Food and Nutrition sub-division, a representative from the Early Warning Unit in the MAWF, the Head of the Emergency Management Directorate and others (UNICEF??).



### 6.2.3 Reports Dissemination

Both the Food Security and Nutrition bulletins and the Internal Nutrition Surveillance Report should be forwarded to sentinel sites' staff and relevant district, and regional PHC supervisors for information and feedback. The reports should also be circulated to relevant units (PHC Directorate etc.) within the MOHSS.

The VAC Food Security and Nutrition Bulletin should be disseminated among all VAC members as well as the National Emergency Management Committee for decision-making and Regional Emergency Management Units (REMU). Other ministries that are not involved in the VAC should also receive the report (e.g. Ministry of Women Affairs and Child Welfare, Ministry of Local Government etc.).

If the Nutrition Surveillance Bulletins are to be used for timely warning purposes and programme management, it is very important that the Bulletins be produced and disseminated as soon as possible (i.e. within two weeks following the end of the reporting period). Indeed, none of these reports will be useful if they are released after several months. In this regard, it is our understanding that all MOHSS publications must be approved/cleared by the Permanent Secretary (PS) before being released. In the past, this has caused notable delays in the release of information. While this will not apply to the Internal Nutrition Surveillance Report; it is likely to be an issue for the release of the Nutrition Surveillance Bulletins and consolidated Food Security and Nutrition Bulletins to be produced by the VAC. Measures must thus be taken to ensure that the approval process does not delay the dissemination of the above-mentioned bulletins. One way to handle this could be to obtain prior-approval based on the Bulletin templates once and for all; therefore clearance would not be required every time (quarter) a bulletin is released. Another possibility would be to have a list of bulletin recipients (including VAC members, Donors, representatives of line Ministries etc.) submitted for prior approval to the PS. Based on the approved list, Bulletins could be posted on the web protected by a password, which would only be given to those who are on the recipients' list.

## **7. Institutional Arrangements, Users and Decisions**

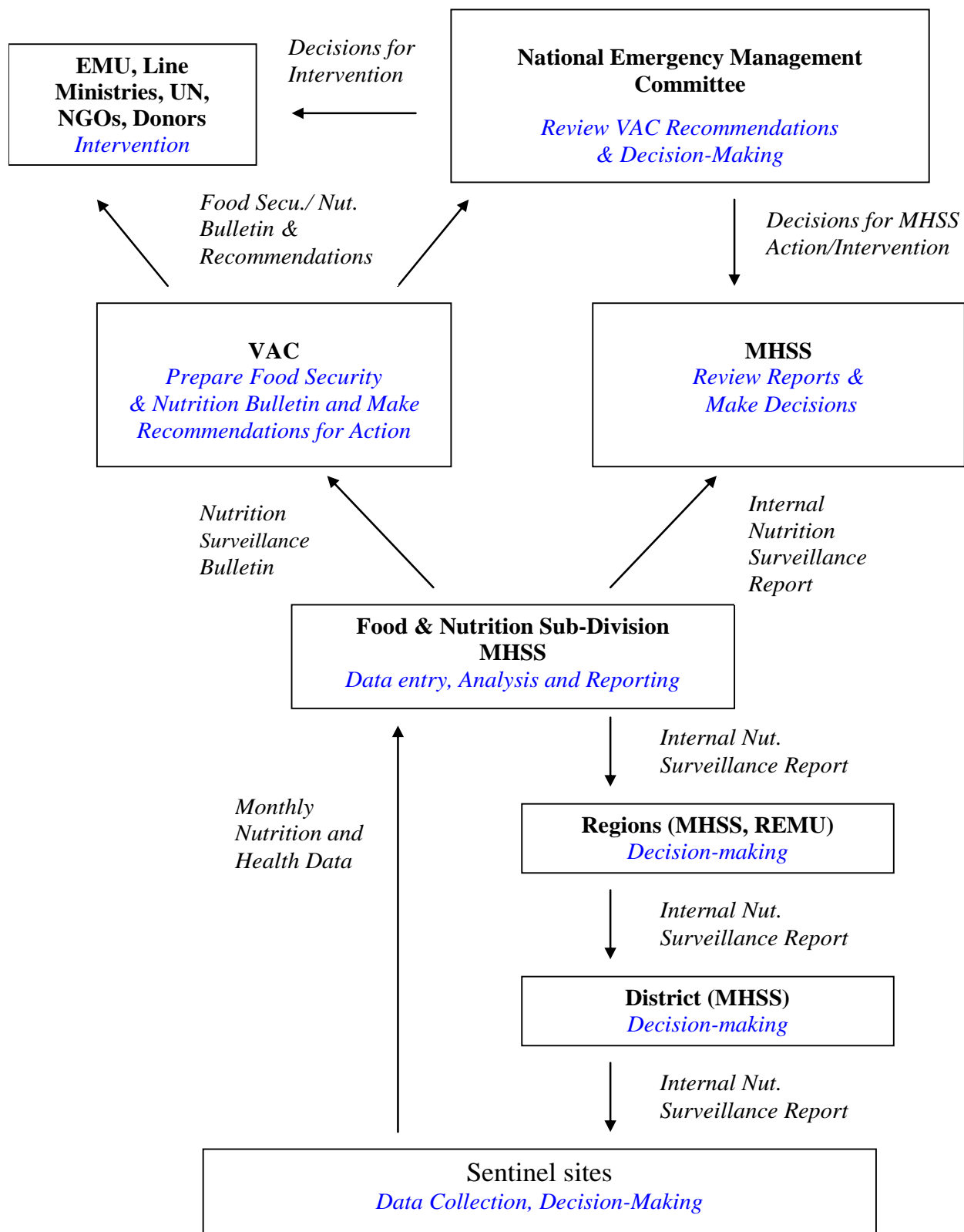
### **7.1 Institutional Arrangements**

Nutrition surveillance will be coordinated and implemented by the Food & Nutrition subdivision, under the Primary Health Care Directorate at the MOHSS. There should be close collaboration and information sharing with UNICEF. UNICEF should consider providing support if required.

VAC Quarterly Food Security and Nutrition Bulletins should be shared with the National Emergency Management Committee (NEMC) for decision-making. The committee is composed of Permanent Secretaries from various ministries and chaired by the Secretary to Cabinet. It meets regularly (usually once a month or on an ad hoc basis for emergencies) and makes decisions on emergency interventions. The Emergency Management Directorate in the Office of the Prime Minister will act upon the NEMC's decisions.

The flow chart below describes information flow and decision-making process for the proposed sentinel sites reporting system.

## Nutrition Surveillance Information Flow & Decision Making Process



## **7.2 Linkages with disease surveillance**

It has been agreed with colleagues at the MOHSS responsible for communicable disease surveillance that communication and information sharing - on a monthly basis - between the nutrition surveillance and disease surveillance officers was essential. Disease outbreaks or detected cases of major communicable diseases (such as dysentery, cholera etc.) are reported to national level within 24 hours; when outbreaks or major disease cases are reported, the nutrition surveillance officer should be informed. Vice versa, when nutrition surveillance identifies a problem in a sentinel site, such as a sudden peak in malnutrition, the disease surveillance officer should be notified. This will enable us to better understand nutrition trends and will also trigger careful monitoring of the nutrition situation when a disease outbreak arises.

## **7.3 Possible Users**

Users of the proposed nutrition surveillance system will include MOHSS personnel at all levels, i.e. from health facility to national level. Within MOHSS, nutrition information will be used for timely warning and programme planning (in particular emergency interventions), and as a programme management tool for growth monitoring and for monitoring the effects of other nutrition related programmes.

Other ministries, such as the MAWF - in particular the NEWFIU, Ministry of Local Government, the OPM, and within it the Emergency Management Directorate, may use the information generated by the nutrition surveillance system to plan programmes and monitor programme outcomes.

The FIVIMS database comprises HIS data (although not updated), including data on underweight prevalence. It is not clear to what extent nutrition surveillance information can feed into FIVIMS, as many hope. First, the systems serve a different purpose; the purpose of sentinel sites is primarily to give a signal of change; while FIVIMS's objective is to identify the underfed and undernourished for improved programme planning. Second, units of analysis between FIVIMS and nutrition surveillance may not coincide. The units of analysis for nutrition surveillance are sentinel sites, and sentinel sites are not intended to be representative of an area (e.g. district); rather, they are a sub-sample of a district. FIVIMS on the other hand tends to gather and generate data based on administrative boundaries, i.e. at district, regional and national level. Discussions with FAO/Government will have to take place to clarify this issue.

Aid agencies, i.e. UN agencies (e.g. UNICEF, WFP, FAO) NGOs (e.g. the Red Cross), as well as donors (e.g. DFID, USAID) will be able to use the information generated by the surveillance system to plan/fund further investigations (e.g. rapid assessment or nutrition survey in a specific area) and/or programmes (emergency interventions).

As mentioned above, the National VAC will use nutrition surveillance information in relation to food security information to make recommendations for interventions, which will be then forwarded to NEMC and aid agencies for decision-making.

Because nutrition surveillance plans to rely on outreach services (mobile clinics), it is hoped that communities will be kept informed of nutrition surveillance findings and find possible solutions to deal with the problems identified. Feedback to communities could be given by health workers when visiting the communities on outreach days or to health committees (which include community members) at their monthly meetings (at health facilities).

## **7.4 Possible Decisions**

### **7.4.1 Further Investigation**

In most cases, once a problem (most likely a notable increase in malnutrition) is identified by the nutrition surveillance system, the next step is conduct further investigation. Indeed, inquiry will be required in most cases in order to a) confirm that there is a problem; b) assess the extent of the problem (how serious and how widespread, i.e. estimate number of people and area affected) and c) identify or confirm the causes of the problem and most affected groups. The investigation can take various forms depending on the nature, severity and urgency of the situation.

One possibility is to conduct a rapid qualitative assessment, whereby a team from MOHSS at national (Food and Nutrition sub-division) and/or regional level (PHC supervisors) undertakes a visit to the sentinel facility (and area around) where the problem was spotted to find out whether the problem is real and whether it applies to a wider area (e.g. is the whole district affected?). This would imply meeting with health workers, checking health facility data etc., and based on this recommending further action. This could lead to a validation survey if necessary (and if time and capacity allow). These surveys would rely on a representative sample of children under five and provide reliable estimates of underweight and wasting; these surveys would also inquire about the causes of the problem. Data collection instruments, nutrition and food security survey forms, have been developed and pre-tested for this purpose by P. Rodgers in 2004 (see annex 10). The Nutrition Survey questionnaire, which include anthropometry, morbidity (recent illness), immunization and care practices could be used for validation surveys (for food security, the MAWF has been using a household questionnaire that is relatively similar to those used by VACs in other countries).

Given that the proposed nutrition surveillance system only focuses on sentinel sites; it may miss or not gather data in other areas affected by an important event. However, depending on the nature of the problem, in many cases, problems in other areas can be spotted by early warning systems; in this case the NEWFIU should inform the Food and Nutrition sub-division at MOHSS immediately. When a problem is identified by the Early Warning Unit and is estimated to be quite serious - and thus justifies immediate investigation, the Unit conducts a rapid assessment. The possibility of conducting joint nutrition and food security assessments, i.e. involving both MAWF and MOHSS (Food and Nutrition sub-division) has been discussed and agreed upon. These assessments could look at the three dimensions of food security (food availability, access and utilization). These assessments would imply for colleagues at the Food and Nutrition surveillance unit to visit health facilities in the affected area, discuss with health workers the impact of the event on nutrition and review monthly data from growth monitoring. Those rapid

assessments could also imply collecting anthropometric data (MUAC as proxy for mortality, or weight-for-age/weight-for-height) in a sample of individuals. In addition, if the nutrition situation needs to be monitored, the Food and Nutrition sub-division should ensure that the data obtained from the Growth Monitoring programme in the area (if it is not already a sentinel site) is accurate (this could entail conducting rapid training of health workers in weighing children, providing electronic scales and closely monitoring nutrition trends by getting regular data by phone).

It must be noted that both MAWF (Early Warning) and MOHSS (Food and Nutrition) participated in the (only) VAC assessment conducted in 2002, together with the Emergency Management Unit from the Office of the Prime Minister and other Government Ministries, as well as several UN agencies (UNICEF, WFP, UNDP, FAO) and the Namibian Red Cross. VAC members indicated that their agencies still have the capacity to conduct this type of assessment if the need arises. In 2002, the VAC assessment was carried out at regional, community and household level (more than 800 households were included in the sample) and included nutrition (anthropometry) and health data (recent illness etc.) among children 6-59 months. However, due to difficulties with estimation of age and other constraints (such as time constraints and inadequate training) the results obtained for many indicators were questionable and appeared not to accurately represent the situation. As a result, wasting was the only indicator of malnutrition that was reported. It is thus important to note that, although there is capacity to conduct this type of assessment, the difficulties encountered during the 2002 assessment should be addressed prior to considering conducting another one.

#### 7.4.2 Emergency Interventions

When the problem identified is urgent (life threatening) and obvious (e.g. large flood causing massive displacement or severe food shortage); emergency interventions may need to be implemented right away without prior in-depth investigation. Emergency programmes may include food aid and/or supplementary feeding programmes, emergency public works, provision of shelter, water etc.

For efficient crisis response, it is preferable to have pre-established intervention and resources plans. Consideration should thus be given to linking nutrition surveillance information with pre-determined action. This would imply defining appropriate interventions according to trigger levels in malnutrition trends (say an increase in underweight by more than 10% within a quarter will result into such and such actions/interventions). This would ensure that nutrition surveillance findings are actually acted upon adequately. In addition, some programmes, such as emergency public works employment programmes are not very efficient unless they are planned in advance.

### 7.4.3 Advocacy

Funds for interventions tend to be released upon provision of evidence that there is a problem. Nutrition surveillance data can be used for that purpose and should facilitate mobilization of resources, especially in an emergency situation (e.g. for international relief assistance). Note however that prior decisions on funding are preferred for timely intervention.

### 7.4.4 Programme Monitoring and Evaluation

Nutrition surveillance information can be used as a programme management tool. Information gathered in the quarterly internal bulletin can be used to improve programmes, to plan new programmes and to target programmes. In addition, as an outcome monitoring tool, nutrition surveillance data can simply show that the nutrition situation is under control. Nutrition surveillance as a programme management tool does not have to be used for nutrition programmes only (e.g. Growth Monitoring); it can also provide relevant information to monitor the effects of other health or development programmes for instance.

### 7.4.5 Policy formulation and long-term programme planning

Sentinel sites nutrition surveillance data is of limited use for policy formulation and medium to long-term programme planning. National surveys such as DHS and NHIES better suit this purpose. However, information gathered by nutrition surveillance may provide complementary information that is relevant for policy formulation and programme planning. It may for instance enable the identification of specific areas (or groups) where vulnerability needs to be decreased in the medium to long term.

### 7.4.6 Further Research

Findings from nutrition surveillance data analysis, and in particular secondary analysis, may provide a basis for further research. For instance, secondary analysis may explore relationships between indicators (e.g. how HIV and malnutrition interact), which may trigger a desire to understand better the patterns identified through more extensive research.

## **8. Requirements for Smooth Implementation**

By building on existing systems, the proposed nutrition surveillance system minimizes additional efforts and capacity required for smooth implementation. This section describes the various requirements for successful implementation of nutrition surveillance in particular with regard to staffing, training and equipment.

## 8.1 Preconditions for Successful Implementation

The preconditions for smooth implementation of nutrition surveillance in sentinel facilities are:

- HIS is functional, and in particular data collection and reporting activities;
- Staffing is adequate, i.e. there is sufficient staff to carry out growth monitoring and promotion and to consolidate, analyze and report on growth monitoring data on a monthly basis;
- Outreach is functional, i.e. there are mobile clinics visiting a sufficient number of outreach points every month to ensure maximum coverage of the district population, and there is a dedicated outreach team at district level.

Note that providing outreach services is a challenge in many parts of the country. Lack of transport and staff shortages have been cited as recurring constraints in many areas. In some regions/districts (e.g. Kunene region), outreach is not functioning at all. This issue must be considered in light of UNICEF's and WHO's plans to implement the Reaching Every District (RED) approach in the very near future. This initiative aims at improving the organization of immunization services in order to guarantee sustainable and equitable immunization for every child. To achieve this objective, one of the RED approach's operational components is to re-establish or strengthen outreach services. There is therefore an opportunity to piggy back on this initiative and coordinate efforts so that nutrition surveillance areas experiencing difficulties with the implementation of outreach are prioritized for implementation of the RED approach. UNICEF recently submitted a US\$2.8 million project proposal to a donor agency for the implementation of RED in Namibia over a period of three years. Nutrition surveillance staff should follow-up.

## 8.2 Staffing

Provided that the above-mentioned preconditions are met, there should not be any need for additional staff at facility, district or regional level to implement nutrition surveillance. However, there is concern among MOHSS staff that nutrition surveillance (and nutrition in general) will not get the required attention. Indeed, at the moment, although nutrition is one of the identified priorities of the MOHSS it is not receiving commensurate attention as do EPI and HIV/AIDS. Currently, there is no staff dedicated to nutrition at regional or district level; instead, nutrition – and all other family health issues - falls under the responsibility of PHC Chief Health Programme Administrators at regional level and Senior Health Programme Administrators for PHC at district level. Even if nutrition surveillance does not imply much additional work; we still need to get the momentum and interest going at all levels. This might be a challenge in light of these staffing constraints.

At national level, one person should be responsible for coordinating, implementing and monitoring nutrition surveillance activities. His/her tasks will include training health workers in sentinel sites, finalizing and updating nutrition surveillance guidelines, monitoring project implementation in sentinel sites, ensuring timely data transfer from sites to national level, performing quality control and accuracy checks on nutrition surveillance data, entering and



analyzing the data, collecting complementary data (e.g. price data), writing quarterly nutrition surveillance bulletins/reports, preparing the consolidated Food Security and Nutrition Bulletin with other VAC members and disseminating information, i.e. circulating reports/bulletins. The candidate should have a degree in public health and, if possible, have some knowledge of nutrition and experience in data analysis.

It has been agreed with the head of the Food and Nutrition Sub-division at the MOHSS, Marjorie Van Wyk, that the above-mentioned nutrition surveillance tasks will be carried out by the Nutrition Surveillance Officer (Senior Programme Administrator level) to be recruited in the Food and Nutrition sub-division hopefully within the next 6 months (the post already exists but it is currently vacant – since September 2006). Based on the post's Terms of Reference, it is expected that the Nutrition Surveillance Officer will be able to spend about a third of his/her time on nutrition surveillance (other areas of work include infant feeding and maternal nutrition). This should be sufficient once the system is up and running; note however that time requirements for nutrition surveillance will be concentrated around certain periods, i.e. beginning of each month for data capture and entry and during the month following every quarter for data analysis and report writing. The Head of the Food and Nutrition sub-division will be responsible for supervising the Nutrition Surveillance Officer's work and reviewing nutrition surveillance analyses and reports. The supervisor should also ensure that the Nutrition Surveillance Officer undertakes regular monitoring visits at sentinel sites and takes corrective action/conducts on the job-training if necessary. During the first few months of implementation, the nutrition surveillance officer's capacity to handle all nutrition surveillance tasks - in addition to other duties (infant feeding and maternal nutrition) - should be assessed. If all nutrition surveillance tasks cannot be handled by that single person, consideration should be given to modifying his/her terms of reference with regard to other duties or shifting some of the nutrition surveillance tasks (such as conducting monitoring visits and performing data entry) to other staff in the unit. In any case, all staff in the Food and Nutrition sub-division should be trained in nutrition surveillance (so that essential duties can be carried out by others in the absence of the Nutrition Surveillance Officer) and conduct monitoring visits that cover nutrition surveillance, as part of their regular/routine supervisory visits. Measures have been already taken towards that effect since both the Head of the Food and Nutrition sub-division and the person responsible for micro-nutrients in the division have been trained (by the authors) in nutrition surveillance data analysis and reporting using the Excel programme developed for this purpose.

As mentioned above, the Nutrition Surveillance post within the Food and Nutrition sub-division is currently vacant and is unlikely to be filled before spring 2007 at the earliest. In order to launch the implementation of the nutrition surveillance system as soon as possible (MOHSS set January 2007 as the desired date), MOHSS will assign nutrition surveillance duties to another person in the Food and Nutrition sub-division, i.e. the Officer responsible for Micro-nutrients. She will be responsible for finalizing the design of the nutrition surveillance system (based on this proposal and the tools prepared by S. Chotard and J. Conkle), piloting it, modifying it as required, setting up appropriate systems and procedures, training health workers and launching nutrition surveillance in all sentinel sites, under close supervision by the Head of the sub-division, Marjorie Van Wyk, since she has been fully involved in this process since the very beginning and is thus very familiar with the implementation modalities of the proposed system. At the end of the first quarter, the "interim officer" together with the Head of the Food and

Nutrition sub-division will be responsible for producing the first nutrition surveillance quarterly bulletin and (internal) report. They will also be responsible for training the Nutrition Surveillance Officer once appointed and ensuring smooth hand-over. Here again, the interim officer together with the Head of the Food and Nutrition sub-division should carefully assess the feasibility of this option (i.e. nutrition surveillance being temporarily assigned to the staff member responsible for micro-nutrients). The finalization and launching of the nutrition surveillance project is likely to be a full-time job during the first month at the very least (developing training guidelines and modules for health workers in sentinel facilities and conducting the training will take quite a bit of time). Since it is understood that the interim officer will have to pursue micro-nutrients related activities in the same time, there is a high risk that the implementation of the nutrition surveillance project be delayed due to work overload for the interim person responsible. As the situation develops, the MOHSS might want to consider other (temporary options) such as seconding another person within MOHSS or requesting support from UNICEF.

### 8.3 Training

#### 8.3.1 Training for Nutrition Surveillance Personnel at National Level

The Head of the Food and Nutrition sub-division and the Officer responsible for Micro-nutrients within the division have been trained in data entry, analysis and reporting using the Excel database and routine analysis tools developed for this project. At this stage, it is not clear whether additional training or technical support will be required from UNICEF/Tulane. This should become clear within the next few months (MOHSS to notify UNICEF of any capacity constraints or training needs).

#### 8.3.2 Training for Health Workers in Sentinel Facilities

The Food and Nutrition sub-division will conduct training for health workers in sentinel facilities. District PHC supervisors (and possibly regional PHC coordinators) should also take part in the training. The training should include the following modules:

- **Introduction to malnutrition (types, causes/conceptual framework) and good nutrition/feeding practices for children under five.**
- **Introduction to nutrition assessments** (review of anthropometric and other indicators, methodologies for collecting nutrition data, i.e. cross-sectional surveys, surveillance, growth monitoring etc.)
- **The Namibia Nutrition Surveillance System** (purpose and objectives, surveillance design, implementation modalities, expected output/reports, linkages with early warning, use of information for decision-making etc.).
- **Implementation of nutrition surveillance at facility level:**
  - Standardized weighing methods, determination of age and assessment of nutritional status (this module should include a practical session, i.e. weighing children etc.)

- Recording and compiling data, performing data quality control, calculating prevalence, conducting basic analysis (plotting trends on line chart), interpretation, and reporting.
- **Linking Information with Action:** The Triple A Cycle, growth promotion, follow-up of malnourished children, establishing support services for children in difficulty etc.

Training should be conducted over two to three days with repeated practical sessions for weighing, assessment of nutritional status and data recording/compilation.

The Food and Nutrition sub-division has mentioned the possibility of combining the nutrition surveillance training with regular training in prevention of malnutrition, micro-nutrient deficiencies and appropriate feeding practices for infants and young children (this training is to be delivered as part of technical backstopping to the regions).

Measures must be taken to ensure that nutrition surveillance alternates (one or two per health facility) are also trained (so that in the absence of the main person responsible for nutrition surveillance, the work can be pursued).

## 8.4 Equipment

One of the main reasons for the poor accuracy of growth monitoring data so far is the use of inadequate weighing scales. Indeed, in many health facilities, children are weighed using bathroom scales that are only accurate to the nearest kilogram; this has resulted in gross under or over-estimation of children's weight (i.e. rounding down or more frequently rounding up). It seems that a number of health facilities do have salter scales, however, some of them are not used because there is nowhere to hang them; others are used but never calibrated.

To address this crucial issue, we have recommended that all sentinel health facilities be equipped with the UNICEF electronic scales (UNISCALES). The UNICEF electronic scale is a floor scale for weighing children as well as adults (capacity 150 kg). It has a precision of 100 g and a digital display. The child may be weighed directly, if possible. Alternatively, if the child cannot stand or is frightened, the mother can first be weighed alone and then weighed while holding the child in her arms, and the scale will automatically compute the child's weight by subtraction. Unlike hanging scales, there is no stress to the child, there are no trousers to wash and no calibration is required. It is expected that the provision of UNISCALES will contribute to improvements in quality and efficiency of child weighing; in addition, it will reduce the problems of the actual measurement process, allowing time and energy to be concentrated on the promotion aspects of GMP.

We will also ensure that baby scales for infants are provided to all sentinel maternity wards which are ill-equipped.

Calculators may be required for health workers in sentinel facilities to calculate underweight prevalence – and thus minimize errors - (to be plotted on the underweight trend chart at the end of every month).

As noted above, the lack of transport significantly hinders the implementation of outreach services. At this stage, UNICEF funds for nutrition surveillance are insufficient to cover the procurement of vehicles for outreach. The nutrition surveillance project will thus try and piggy back on the RED approach. Indeed, the proposal submitted to the Spanish government for the implementation of RED includes provisions for the purchase of about 15 vehicles to be dispatched to districts with low immunization coverage.

## 9. Linking Information with Action

The Triple A Framework is a widely utilized program tool that emphasizes a cyclical approach to address constantly changing contextual factors that may or may not be affecting nutritional status. It involves the initiation and continuation of three steps; Assessment, Analysis and Action. A nutrition surveillance system is, in essence, the Triple A process itself; assessments are carried out and data is collected, this data is then analyzed to determine the situation, the data is transformed into usable information and based on the findings, actions/interventions that may or may not be needed can be carried out. This process can (and should) be utilized at all levels, i.e., local, district and national level.

At facility level, this approach should be adopted not only in sentinel facilities but also in all health centers and clinics. Indeed, if notable improvements in service delivery were only made in sentinel sites we would run the risk of monitoring trends that are different in sentinel sites compared to other sites (i.e. improvements due to improved service delivery and education). To facilitate analysis at facility level, a chart template has been developed, which will allow health workers to monitor trends in underweight and diarrhea in their facility (see annex 11).

Information-based action at facility-level may include the following measures:

- Emphasize growth **promotion** in GMP;
- Understand underlying causes of growth failure and try to act upon them;
- Follow-up on malnourished children (for instance by strengthening the use of registers);
- Establish linkages with various support services (social services, EMU for food aid, counseling support, referral to district hospital); and
- Establishing linkages with community health workers and volunteers.

In addition, immediate feedback mechanisms need to be put in place so that when a problem is picked up by the nutrition surveillance system, immediate action is taken at the appropriate level (e.g. national, regional).

## 10. Progress So Far

### 10.1 Implementation Tools

This project proposal is the core document for the implementation of nutrition surveillance in Namibia. Because it is very detailed, it can be used as implementation guidelines. In addition, most tools necessary for the implementation of nutrition surveillance have been developed; these include:

1. **List of Sentinel Sites** (including relevant information for each site). Note that the list is not yet final as we are still waiting for feedback from a few regions to finalize it (annex 2).
2. **Monthly Data Capturing Form** for recording quantitative and qualitative data at national level (i.e. when transmitted on the phone) (annex 5);
3. **Nutrition Surveillance Semi-Automated Database for data entry, analysis and reporting** (in MS Excel). The database includes automated analysis and reporting routines (i.e. charts and tables to be included in Nutrition Surveillance Bulletins) (the database is available on request; MOHSS and UNICEF have a copy).
4. **Guidelines on Creating Quarterly Nutrition Surveillance Bulletins Using a Semi-Automated Excel Database** (annex 6).
5. **Training Manual on Nutrition Surveillance Data Analysis and Reporting using MS Excel** (annex 7).
6. **Report templates for Quarterly Nutrition Surveillance Bulletins and Internal Nutrition Surveillance Reports** (annex 8).
7. **Guidelines on Interpreting Selected Nutrition Surveillance Indicators** (annex 9).
8. **Templates for underweight and diarrhea trends charts to be used at health facility level (paper-based)** (annex 11).

An outline for the Nutrition Surveillance Training Manual for Health Workers in Sentinel Facilities has been prepared; however, the manual is yet to be developed.

It is important to note that the proposed nutrition surveillance system and related tools are works in progress and none of the above mentioned guidelines and tools should be considered as final and set in stone. Indeed, as the nutrition surveillance project is implemented and as the system evolves, adjustments and improvements will need to be made. This is taken into account in the workplan proposed by the authors for 2006/2007.

Two persons from the Food and Nutrition sub-division at MOHSS (i.e. Marjorie Van Wyk and Joyce Shatilwe) have been trained (by the authors) in nutrition surveillance data analysis and reporting using the Excel programme developed for this purpose.

UNICEF has submitted an order for scales to be provided to sentinel facilities. Thirty electronic scales (UNISCALES), i.e. 2 per region – one for sentinel facility and one for outreach team plus

a buffer stock - and twenty baby scales (for sentinel maternity wards) have been ordered and should be delivered in Windhoek by the end of December.

Therefore, the next step for the implementation of the nutrition surveillance project will be to develop and pre-test the Nutrition Surveillance Training Manual - and material - for Health Workers in Sentinel Facilities. A workplan has been prepared that describes all the necessary actions to be taken over the next 12 months for the successful implementation of the Nutrition Surveillance project (annex 12).

## **10.2 Protocol**

The proposal on nutrition surveillance and other (complementary) nutrition data collection systems (i.e. Revamped HIS, Health Facility Supervisory Visits and National Surveys) has been presented to various audiences with the objective of getting approval for implementation.

On 6 October 2006, the proposal was presented by Sophie Chotard and Joel Conkle to Dr. N. Forster, the Under-Secretary for Health and Social Welfare Policy. Also present at the meeting were Ms. H. Auala, Head of the Family Health Division within the PHC Directorate, Ms. M. Van Wyk, Head of the Food and Nutrition sub-division within the Family Health Division, Ms J. Shatilwe, Micro-Nutrient Officer within the sub-division, and Dr. A. Munyiri, Project Officer for Early Childhood at UNICEF. Dr. Forster and MOHSS colleagues indicated that they were satisfied with the proposal. Minor comments were made (and subsequently incorporated) and all parties agreed to pursue efforts towards the implementation of the proposed systems as soon as possible.

On 12 October 2006, the proposal was presented to the PHC Directorate (under which falls the Food and Nutrition sub-division, within the Family Health Division). Persons in attendance included the Ms. M Nghatanga, Director of PHC Services, and most of the division heads in the directorate, i.e. Ms. H Auala, Head of the Family Health Division within the PHC Directorate, Ms. E. Matroos, Senior Health Programme Administrator, Mr. B. Maloboka, Head of IEC Division, Ms M. Hamana, Administration Support, Ms. E. Anaseb, Head of Public and Environmental Health Division. Ms. M. Van Wyk, Head of the Food and Nutrition sub-division within the Family Health Division also participated. Sophie Chotard presented the proposal. The authors were praised for their efforts and all parties indicated that they were satisfied with the proposed systems, especially as it builds on existing systems (HIS). Minor comments were made (and subsequently incorporated into the proposal) and it was agreed that the proposed project would be presented at the next Managerial Ministry meeting for final approval by the highest levels in the MOHSS.

On 13 October 2006, the sentinel site nutrition surveillance proposal was presented to the Acting Director of the Emergency Management Directorate in the Office of the Prime Minister, Mr. Kangowa. Other participants included Mr. Losper from the NEWFIU at the MAWF, Ms. M. Van Wyk, Head of the Food and Nutrition sub-division at MOHSS, Ms. Joyce Shatilwe, also from the Food and Nutrition sub-division, and Sophie Chotard from UNICEF. Mr. Kangowa welcomed

the proposal and discussions were held on the role of the VAC with regard to nutrition surveillance and food security. The outcomes of the meeting are reflected in this proposal (see sections 6 and 7 on the role of the VAC and NEMC regarding reporting and decision-making).

### **10.3 Nutrition Surveillance in the Long Run**

Although improvements in growth monitoring/data collection methods and reporting timeliness will be limited to sentinel facilities in the short to medium run, it is hoped that, eventually, these improvements can be expanded to all health facilities across the country. This is one of the reasons why we decided to involve all regions in nutrition surveillance from the start (i.e. by having one site per region); i.e. so that they can see the benefits of these improvements. In addition, given the MOHSS's plans to revamp the HIS database and software application within the next few years, we expect improvements in HIS data flow and reporting timeliness, as well as much improved and user-friendly analysis and reporting functions available from the software. It is hoped that, in the long run, these developments will make sentinel site surveillance obsolete and eventually lead to the integration of nutrition surveillance within HIS.

## **V. Suggestions for Revamped HIS**

Discussions with colleagues at the Ministry of Health have revealed the urgent need to revamp HIS, and in particular, develop a more efficient and user-friendly software application, in order to enhance the use/usability of HIS information at all levels (from health facility to national level). This can be done by (i) incorporating new information needs, (ii) facilitating data flow and ensuring reporting timeliness and (iii) providing user friendly data analysis and reporting features tailored to specific information needs at facility/district/regional/national level.

Revamping HIS is not part of our mission, however, we will provide suggestions on how the system can be modified in order to better meet the needs of health workers and decision-makers, and more specifically within the Food and Nutrition sub-division.

### **1. Objectives of Revamped HIS**

HIS is expected to provide information for programme management and monitoring (at all levels), and for policy formulation and programme planning.

### **2. Proposed Modifications**

## **2.1 Data collected**

Based on the identification of information gaps regarding healthcare activities related to nutrition, a series of indicators have been identified by the Food and Nutrition sub-division and should be incorporated into the revised version of HIS. New information needs include data on vitamin A supplementation, breastfeeding counseling and practices etc. (see annex 18). In addition, it is suggested that the way low birth weight data is recorded be modified. Indeed, because birth weights in Namibia tend to be relatively high, and the actual prevalence of low birth weight – based on the 2.5 Kg threshold - is relatively low (i.e. around 8% according to NDHS 2000), it would be preferable to record exact birth weights, which would enable us to monitor mean birth weight or compile birth weight data according to various thresholds or bands (e.g. <2.5 Kg; 2.5 – 3 Kg).

## **2.2 Data Quality**

As HIS is revamped, efforts should be made to expand quality improvements for growth monitoring to all health facilities through training (in standardized weighing methods) and provision of adequate equipment (scales). This should eventually provide accurate trend data on malnutrition rates everywhere and make sentinel sites nutrition surveillance obsolete.

## **2.3 Data Analysis and Reporting Formats**

As seen in section III (sub-section 2), currently, HIS data on nutrition is put to very limited use, whether at facility, district, regional or national level. Improving data analysis and reporting functions in the software application so as to obtain data in a format that is easy to use is expected to a) significantly enhance the use of HIS data for programme management and planning, b) strengthen the link between information and action at all levels and c) decentralize decision-making.

# **VI. Suggestions for Future National Surveys**

National cross-sectional surveys will continue to provide in-depth information for policy formulation and programme planning, and for programme management/monitoring.

Suggestions have been made on how the NDHS questionnaire could be modified to fill specific nutrition information gaps, in particular with regard to vitamin A supplementation (see annex 18).

In addition, efforts should be made to ensure that NDHS are designed in a way that helps build/improve sentinel sites nutrition surveillance. By surveying populations located in catchment areas of sentinel sites, national surveys can help assess coverage and selection bias in sentinel sites' samples. This could be done by collecting data on frequency of children's visits to



health facilities, in particular for growth monitoring and immunization, household socio-economic characteristics etc. The following questions could be added to the questionnaire to determine for each child weighed in the survey (a) Is the child in a catchment area of a sentinel facility for nutrition surveillance? (b) Does the child have a growth chart from that health facility? (c) When was the child last weighed? or record the last several weighings.

Efforts should also be made to incorporate more micro-nutrient indicators as well as HIV testing in the NDHS questionnaire.

## **VII. Suggestions for Annual Health Facility Supervisory Visits**

### **1. Rationale**

Nutrition related activities have received little attention at facility level. By contrast, HIV, and to a certain extent immunization programmes tend to account for a large part of health workers' workload, including for reporting. District, Regional and National Health Programmes Administrators conduct supervisory visits to health facilities periodically; but there again, little attention is given to the supervision of nutrition-related services. As a result, the Food and Nutrition sub-division has expressed the need for regular information on programme performance and quality of service delivery with regard to nutrition-related activities (growth monitoring, feeding counseling etc.).

### **2. Objectives**

The objectives of the proposed annual health facility supervisory visits are to:

- Institutionalize regular supervision and monitoring of nutrition-related activities.
- Use the information generated to manage and monitor programmes.

Eventually, it is hoped that this initiative will contribute to greater efficiency of service delivery. Furthermore, the quality of growth monitoring practices and nutrition data is expected to improve; this will hopefully bring us closer towards our ultimate goal of integrating nutrition surveillance within HIS.

### **3. Survey Design and Implementation**

To obtain an accurate picture of healthcare performance and service quality, it is preferable not to rely on health workers' responses (high risk of biased answer); an alternative is to conduct supervisory visits on a regular basis. We understand that this is already being done – although not for nutrition-related activities. The idea is to build on existing practice and institutionalize regular supervision and monitoring of nutrition-related activities.

It is suggested that Health Facility Supervisory visits be carried out once a year by district Health Programme Administrators for PHC, supported by regional Health Programme Administrators for PHC. The visits will be conducted in a (random) sample of health facilities in every district every year (e.g. 3-8 facilities per district and round/year – depending on the number of facilities per district - so that all district facilities are covered every 3 years).

Data collection instruments will include a supervisory checklist - based on observations of healthcare activities – and, possibly, a short questionnaire to be administered to mothers present at health facilities on the day of the visit. The data collection instruments are currently being developed. These tools will enable monitoring of performance with regard to PHC and nutrition-related activities (e.g. accuracy of weighing practices and equipment at growth monitoring stations, assessment of feeding/breastfeeding counseling, quality of treatment for severe malnutrition etc.).

The proposed system establishes a direct link between information and action by involving district and regional PHC Programme Administrators (supervisors), thereby enabling on-the-job training and immediate corrective measures when a problem is identified.

Data collected from the visits will be channeled to - and analyzed at - national level. The use of close-ended questions in the survey instruments should allow for easy data consolidation and analysis (in simple Excel spreadsheets). Based on the analysis findings, the Food and Nutrition sub-division will produce (internal) reports, which will provide the basis for decision-making for overall programme (e.g. organize nutrition/growth monitoring training, provide logistical support etc.). The reports will be disseminated among all regional health directorates, districts and health facilities as/for feedback.

#### **4. Implementation Requirements**

The main requirement for the implementation of the supervisory visits will be training. Training for regional and district health programme administrators should be conducted prior to each survey round (once a year). The training should focus on the use of data collection tools (observation checklist and mother's interviews), data interpretation and, more importantly related action/decision-making.

### **VIII. Conclusions and the Way Forward**

In a context of recurring natural disasters, widespread HIV/AIDS and poverty, malnutrition among vulnerable groups needs to be monitored closely. While currently there is no reliable information system that generates valid and regular data on nutrition trends, we found that HIS and the GMP provide a good opportunity to monitor the nutrition situation. With improvements in weighing procedures, data collection methods, quality control and timely transfer of data, sentinel sites (facility-based) nutrition surveillance based on HIS can provide much needed

nutrition information for timely warning, programme planning and programme management purposes; at a relatively low cost. In addition, in a context of growing concerns regarding the performance and efficiency of nutrition related healthcare services in health facilities, the establishment of yearly health facility visits - to institutionalize regular supervision and monitoring of nutrition-related activities - is expected to generate useful information for programme management. We hope that this will in turn contribute to quality improvements in nutrition-related healthcare.

In the medium to long run, the MOHSS, UNICEF (and other agencies) will continue to rely on national surveys, such as NDHS and NHIES to inform policy making, programme planning and to monitor programme outcomes. Furthermore, it is very important that MOHSS take the necessary measures to revamp HIS. This implies finding out as soon as possible whether the consultants originally contracted for the development of the new software application are committed to this project. If that is the case, MOHSS should demand that the system be developed within a short period (say, to be operational by the end of 2007). Otherwise, MOHSS should identify another person or institution (e.g. CDC) to develop the new software application. In doing that, the system's sustainability and flexibility must be kept in mind; this implies that the software selected should rely on a standard application, such as MS Access or internet-based applications. This should provide more flexibility and the possibility to modify the system without having to resort to external assistance in the long-term.

It is hoped that the proposed nutrition information systems will contribute to improvements in policy-making, programme planning (including emergency response) and programme management related to nutrition. While we have attempted to minimize extra capacity requirements and costs, implementing the above-mentioned schemes will still require notable efforts. Although most of the tools have been developed for the implementation of sentinel sites nutrition surveillance (e.g. reporting formats, database for data entry and analysis etc.), more work needs to be done before the system can be operational. This includes, developing the training manual and material for nutrition surveillance training for health workers (at facility level), fine-tuning the tools already developed and planning training. These activities should be completed by the end of this year (2006), so that training of health workers can take place in January 2007 and the system be up and running by 01 February 2007 (see workplan in annex 12). MOHSS and UNICEF should commit to taking the actions outlined in the workplan; and Tulane University should also commit to continued technical guidance. We realize that staff shortages - especially at national level within both the Food and Nutrition Sub-division and UNICEF - will be a major constraint to progress towards the implementation of the proposed systems, and in particular the launching phase. MOHSS and UNICEF should therefore ensure that their capacity is beefed up on a temporary basis if that is required.

The implementation of health facility supervisory visits can be planned for a later stage, sometimes over the course of 2007, once the sentinel sites nutrition surveillance system is operational. UNICEF and Tulane University should continue to provide technical guidance and support for the development of the health facility supervisory visits' tools (i.e. checklist, mother's questionnaire, database and analysis/reporting tools).

The collaboration between Tulane University, UNICEF and the MOHSS has been very fruitful so far; it is hoped that in the months and years to come this collaboration will be pursued, with the ultimate goal of improving the health and nutritional well-being of the Namibian people.

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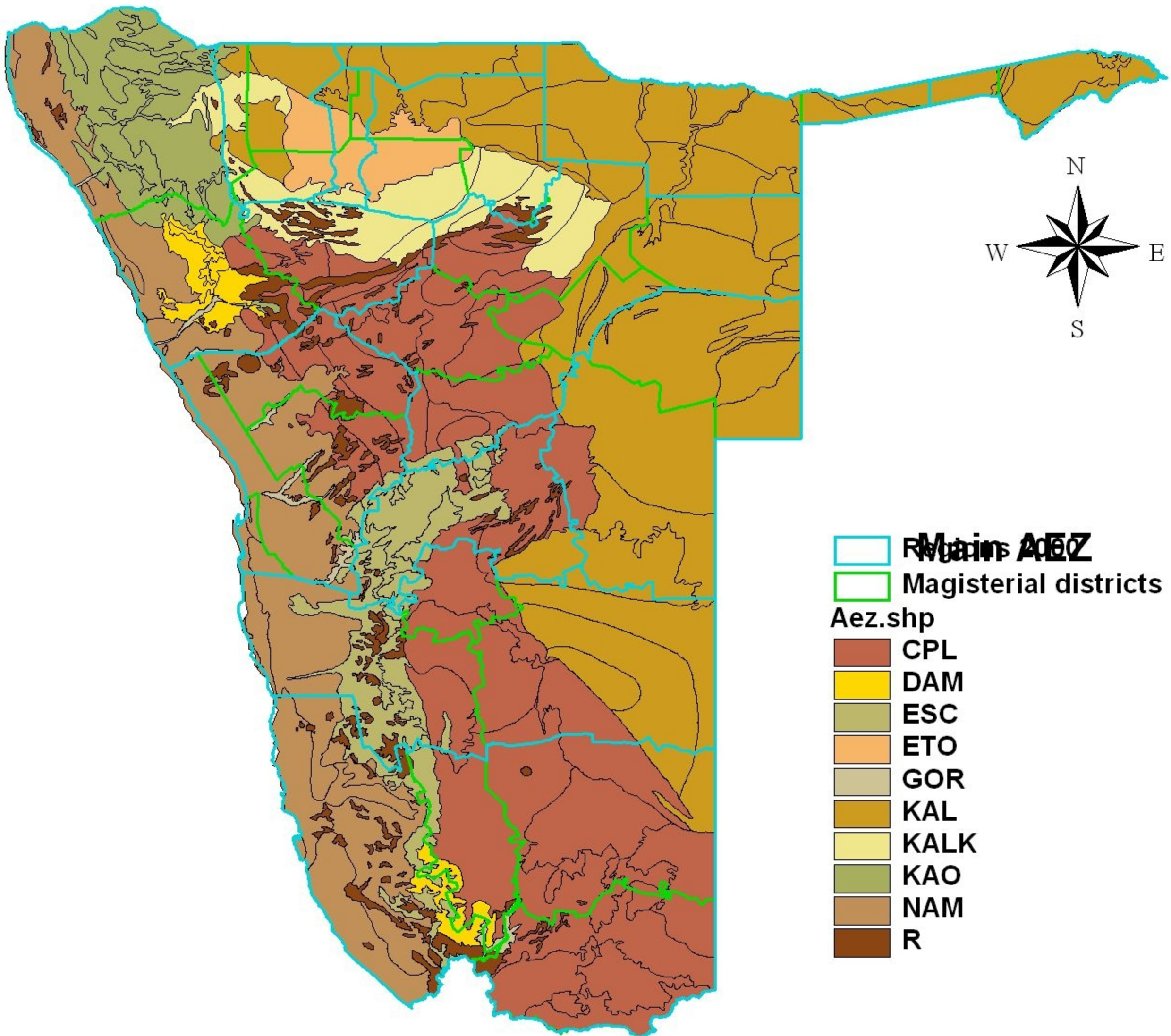
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## **ANNEXES**







**Annex 2**

17 October 2006

**Nutrition Surveillance Sentinel Sites**

<b>Region</b>	<b>Health District (measles Immun. Coverage)</b>	<b>Constituency</b>	<b>Health Facility Name</b>	<b>Urban or Rural</b>	<b>Agro-Eco Zone</b>	<b>Av. # of 6-11 Weighed Per Month</b>	<b>Other Reasons for Selection</b>	<b>HIV Sentinel Site</b>	<b>Recurring natural disaster/ disease outbreaks</b>	<b>Price data collected in area</b>	<b>Outreach functional (yes/no?)</b>
1. Caprivi (72% rural)	Katima Mulilo (76%)	Linyanti	Katima Mulilo Clinic	Urban	KAL	59	Linyanti has poor literacy (67%) and low socio-economic status (85% thatch roof, 98% bush toilet)	Yes	Yes (Flood/ drought)	Yes	
2. Erongo (20% rural)	Walvis Bay (69%)	Walvis Bay Rural	Coastal Health Clinic	Rural	NAM	117		Yes		Yes/near (Swakopmund)	
3. Hardap (54% rural)	Mariental (82%)	Mariental Urban	Mariental Clinic/Region also suggests Aranos but there are low number of children weighed there (max. is 20)	Urban	CPL	61		Yes	Yes (flood)	Yes	Yes

Region	Health District (measles Immun. Coverage)	Constituency	Health Facility Name	Urban or Rural	Agro-Eco Zone	Av. # of 6-11 Weighed Per Month	Other Reasons for Selection	HIV Sentinel Site	Recurring natural disaster/ disease outbreaks	Price data collected in area	Outreach functional (yes/no?)
4. Karas (46% rural)	Keetmanshoo p (73%)	Keetmanshoo p Urban	Keetmans hoop Clinic	Urban	CPL	43		Yes		Yes	
5. Kavango (82% rural)	Rundu (78%)	Kapako	Bunya Health Centre	Rural	KAL	64		No	Yes (drought/ flood)	No	No (no transport and no outreach in the whole region).
6. Khomas (95% rural)	Windhoek (60%)	Katutura Central?	Okuryan gara Clinic	Urban	ESC	43	Catchment area includes informal settlements (poor living conditions)	Yes, near (HIV site is Katutura ANC).		Yes (Windhoek)	Yes
Region	Health District (measles Immun. Coverage)	Constituency	Health Facility Name	Urban or Rural	Agro-Eco Zone	Av. # of 6-11 Weighed Per Month	Other Reasons for Selection	HIV Sentinel Site	Recurring natural disaster/ disease outbreaks	Price data collected in area	Outreach functional (yes/no?)
7. Kunene (75% rural)	Opuwo (66%)	Opuwo	Opuwo Clinic	Rural	KAO/ KALK	33		Yes		No	Outreach is not functioning regularly.

											Transport capacity is limited.
8. Ohangwena (90% rural)	Engela (62%)	Endola	Endola Clinic (Region says capacity is an issue; this clinic is under-staffed)	Rural	KAL	55	Unemployment at 79% + repeated disease outbreaks	No	Recurring malaria outbreaks	No	
9. Omaheke (72% rural)	Gobabis (65%)	Gobabis	Epako Clinic	Urban	CPL/KAL	39		Yes		Yes	
<b>10. Omusati (99% rural)</b>	<b>Oshikuku (72%)</b>	<b>Okalongo</b>	<b>Okalongo Health Centre. Region is happy with this choice.</b>	<b>Rural</b>	<b>KAL</b>	<b>80</b>		<b>No</b>	<b>Recurring malaria outbreaks</b>	<b>No</b>	<b>Yes</b>
<b>Region</b>	<b>Health District (measles Immun. Coverage)</b>	<b>Constituency</b>	<b>Health Facility Name</b>	<b>Urban or Rural</b>	<b>Agro-Eco Zone</b>	<b>Av. # of 6-11 Weighed Per Month</b>	<b>Other Reasons for Selection</b>	<b>HIV Sentinel Site</b>	<b>Recurring natural disaster/ disease outbreaks</b>	<b>Price data collected in area</b>	<b>Outreach functional (yes/no?)</b>
11. Oshana (69% rural)	Oshakati (61%)	Oshakati East	Oshakati Health Center	Urban	KAL	181		Yes	Recurring malaria outbreaks	Yes	Yes (currently 29 points and soon 31 points).

<b>12. Oshikoto (91% rural)</b>	<b>Onandjokwe (64%)</b>	<b>Omuthiyagwi ipundi</b>	<b>Omuthiya Clinic. Region is ok with selection.</b>	<b>Rural</b>	<b>ETO</b>	<b>55</b>	<b>Selection made to incorporate agro-eco zones</b>	<b>No</b>	<b>Recurring malaria outbreaks</b>	<b>No</b>	<b>No outreach since August 2005 due to lack of transport.</b>
13. Otjozondjupa (59% rural)	Otjiwarongo (74%)	Otjiwarongo Region suggests Okahandja district and hospital: problem is hospital only get 9 children 6-11 per month on average. AEZ would be CPL/ESC (border line, which is fine); urban?	Orwetoveni Clinic	Rural	CPL	59		No		Yes	

NB: Rows in bold means that selection is final and has been approved by region.

### 1. Methodology for Selection of Sentinel Sites

One health district per region was selected based on ranking of NHIS data consisting of number of diarrhea cases, underweight prevalence, low birth weight prevalence, and malaria incidence, i.e. to identify “worst” districts. Most health facilities were chosen to ensure sufficient sample size among children 6-11 months (minimum threshold was set at 30). In health districts with more than one possible facility, one constituency was selected based on % unemployment, prevalence of low socio-economic status, and % access to sanitation. Facilities were also selected to represent the main agro-eco zones in the country as well as both rural and urban areas.

### 2. Comments on Selection

- 8 sites have price data collected by NPC for calculation of national CPI/FPI.

- 6 (+ maybe 2 to check) sites are also sentinel sites for HIV surveillance.
- 7 Sites are in rural areas and 6 sites are in urban areas.
- All agro-ecozones except, Damaraland (DAM), River Canyons (GOR), and Rock (R) are represented. These zones represent very small areas and are predominantly inhabitable.

## Annex 3

### Using the 6-11 Month Age Group as a Proxy

The selection of the six to eleven month age group for clinic-based monitoring of underweight prevalence is the result of high clinic-based immunization coverage. Children being immunized at six, ten, and fourteen weeks of age, as well as at nine months for measles, are available to be weighed. After that, children are only brought to the clinic if they are sick and are not regularly participating in growth monitoring. In 2005, national measles coverage was at sixty-eight percent. Health workers from visited clinics report that those being immunized are representative of the target population with respect to socioeconomic status. This seems to be supported by DHS 2000, but the data can not be disaggregated into those receiving immunization at the clinic and those receiving immunization as part of an Immunization Day, in which case the child would not have been weighed. Although the total amount of children weighed dropped by nearly fifty percent from 2004 to 2005, the number of six to eleven month olds weighed only went from 76,215 to 74,232. The number of children weighed in this age group is consistently high because of immunization. Comparing the number of children weighed in the six to eleven month age group with the number of children immunized shows that at least fifty-four percent of children weighed are coming for immunization (Table 1.) This number is likely deflated due to the repeated weighing and recording of severely underweight children. Regardless of the extent of deflation, with over half of the children weighed coming from a group spanning sixty-eight percent of the population, it is reasonable to assume that with accurate measurements we will get a reliable estimate of underweight prevalence for the age group. Regional and district variation in immunization coverage must be taken into account. According to NHIS statistics, from 2002-2005 the regional variation in measles coverage ranges from 56% (Karasa 2004/5) to 96% (Caprivi (2003/4). District coverage ranges from 46% (2003/4 Windhoek) to 123% (2002/3 Eenhana). Regions and districts with the lowest coverage may give biased prevalence estimates due to a small sample consisting of a higher percentage of sick children.

Prevalence in the six to eleven month age group can serve as a proxy for the rest of the under-five population, but the exact corresponding levels are not known. Comparisons with six to fifty-nine months and the under-five year age groups in NDHS 2000 show that regional variations in underweight prevalence significantly correspond (Figures 1 and 2). It is believed that the prevalence in the six to eleven month age group is slightly lower than the under-five year average and much lower than the twelve to twenty-three month age group, which can also be seen from DHS 2000 (Figure 3). More research is needed to determine exactly how the various age groups correspond. While most factors influencing nutrition will affect all age groups past six months, it is possible that changes in other age groups will not be reflected by the six to eleven month age group. For this reason, it is important to also monitor new cases of underweight in all age groups. Using incidence to determine nutritional status of a population is not generally used, but practically and logically if there is a sudden increase in the incidence of underweight, causality should be explored.

## Analysis of the Utility of NHIS Underweight Data

NHIS underestimates underweight prevalence both regionally and nationally. From visiting various clinics we have seen that children are weighed with all of their clothes on and scales are not calibrated. The national prevalence of NHIS is less than half of the estimate given by NDHS 2000. The accuracy of NHIS varies regionally, with NDHS 4.75 times higher on average (Table 2 and Figure 4). Regional variations of NDHS do not correspond to those of NHIS (Figure 5). There does seem to be some improvement when comparing NHIS 2005 figures, but the relationship remains insignificant (Figure 6). Selection bias is not likely as immunization coverage is high. The lack of validity is believed to be a result of inaccurate measurements and reporting. Clinics are inconsistent month to month, both overestimating and underestimating prevalence (Figure 7). Estimates are also not consistent between clinics (Figures 8 and 9). In a random selection of clinics in the Caprivi Region in 2004 it can be seen that most of the clinics are reporting zero prevalence (Figure 10). Missing values and zero percent prevalence show that either children are not weighed or not recorded. NHIS statistics on number of children weighed in 2004 show that the majority of clinics are weighing very few children per month, and some are reporting to have not weighed one child for a whole month. The clinics that are weighing more than 20 children per month are inconsistent in how many are weighed each month (Figure 11). This can partly be explained by mothers only bringing in sick children, but there should be a steady stream of nine month olds coming in for immunization. We would expect the number of children weighed to have a consistent monthly minimum with peaks occurring during the lean and diarrhea seasons. The gross underestimation of underweight prevalence from NHIS appears to be caused by inaccurate measurements and poor reporting. This makes NHIS data unreliable and must be fixed for nutritional surveillance to work.

Despite all of its problems, NHIS can currently reflect changes in nutrition status. A look at the number of cases in Caprivi shows a sharp increase in 2004 (Figure 12). A retrospective look at NHIS nutrition data, coupled with information on disasters, food production, and diarrhea shows the potential of routine data (Figure 12). There are two seasonal patterns of rising underweight, one from August to October and another from February to March. August to October sees the height of diarrhea cases in Caprivi (Figure 13). The other period of elevated underweight prevalence is the lean season. The 2002 and 2003 droughts and floods led to increased underweight in the lean season of 2004. Going into the large flood of 2004, children may have been more susceptible to diarrhea because of lowered immune systems from malnutrition. An interaction between nutrition, diarrhea and disaster could have caused the large spike we see in August/September of 2004. The 2004 flood reduced the 2004/5 cereal harvest by 80% from the five year average, which resulted in future underweight in the vulnerable lean season of 2005 and could have contributed to elevated susceptibility to diarrhea in the 2005 diarrhea season (Figure 14). The problem continued into 2006 because of the poor harvest and this is reflected in repeated high prevalence in the lean season.

While current and past NHIS can show the affect of large events on nutrition, in order to have complete confidence in the data received we must ensure accurate measurements and reporting with the establishment of sentinel sites. When this is

accomplished the six to eleven month age group can serve as a proxy for the rest of the children under five years of age, but the relationship between the various age groups must be explored further to make accurate extrapolations. Monitoring other age groups for number of children underweight is also necessary because there is the possibility that changes in one age group will not be reflected by the underweight prevalence of the 6-11 month old age group. Continued national improvement in growth monitoring and timely reporting will eventually allow sentinel site surveillance to be phased out. NHIS should be further evaluated with the upcoming NDHS to determine changes in validity.

Table 1. Number of Children Weighed and Immunized in Namibia 2004-2005

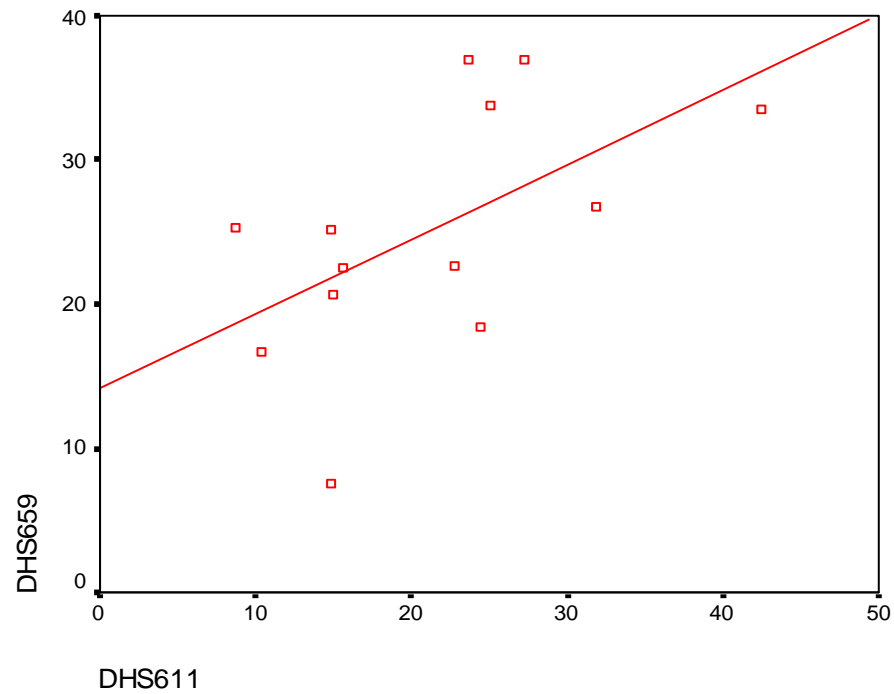
	# weighed 6-11 months old	# immunized	Immunized as % of total weighed	Immunization target
2004	76,215	41,331(72%)	54	57802
2005	74,232	40,127(68%)	54	59305

Table 2. 2000 NHIS/NDHS Underweight Prevalence  
(months Sep.-Dec., 6-11 months old)

	HIS 6-11 months	DHS 6-11 months	DHS/HIS	Absolute value of (DHS- HIS/DHS)*100
National	9.8	20.8	2.12	52.8
Caprivi	3.8	15	3.95	74.7
Erongo	6.4	14.8	2.31	56.8
Hardap	3.1	14.8	4.77	79.1
Karas	7.3	10.3	1.41	29.1
Khomas	3.5	22.7	6.49	84.6
Kunene	3.9	24.4	6.26	84.0
Ohangwena	6.8	27.3	4.01	75.1
Kavango	6.5	42.4	6.52	84.7
Omaheke	2.2	23.7	10.77	90.7
Omusati	5.1	25	4.9	79.6
Oshana	10.2	8.7	.85	17.2
Oshikoto	5.8	31.8	5.48	81.8
Otjozondjupa	3.9	15.6	4	75.0
Regional average			4.75	74.2

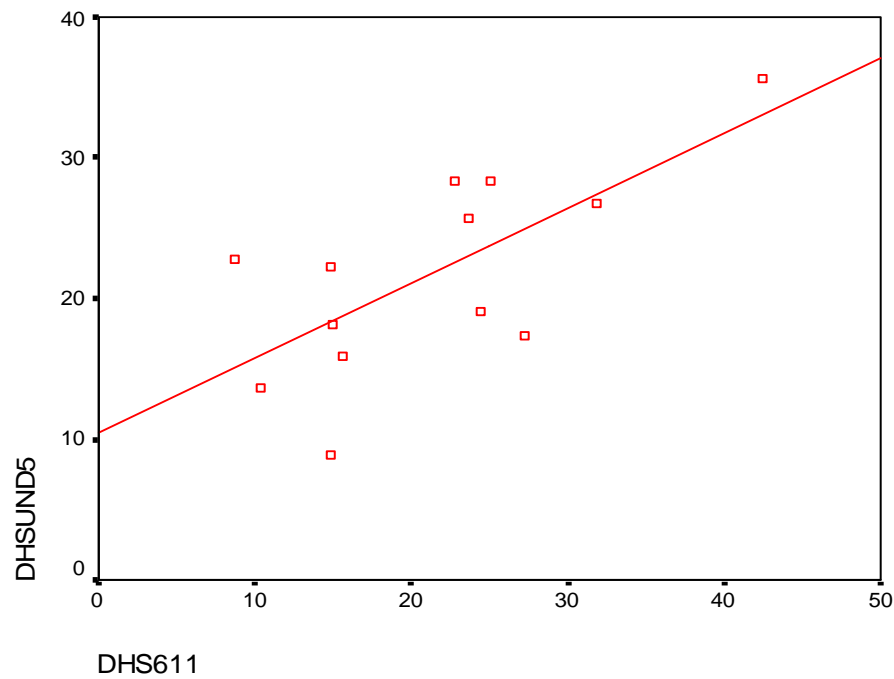


Figure 1. NDHS 2000 Regional Correspondence of Underweight Prevalence between 6-11 Months and 6-59 Months.



\* Correlation is significant at the 0.05 level (2-tailed).

Figure 2. NDHS 2000 Regional Correspondence of Underweight Prevalence between 6-11 Months and Under-Five Years.



\*\* Correlation is significant at the 0.01 level (2-tailed).

Figure 3.

**Figure 10.2 Percentage of Children with Low Height-for-Age, Low Weight-for-Height, and Low Weight-for-Age, by Age of Child**

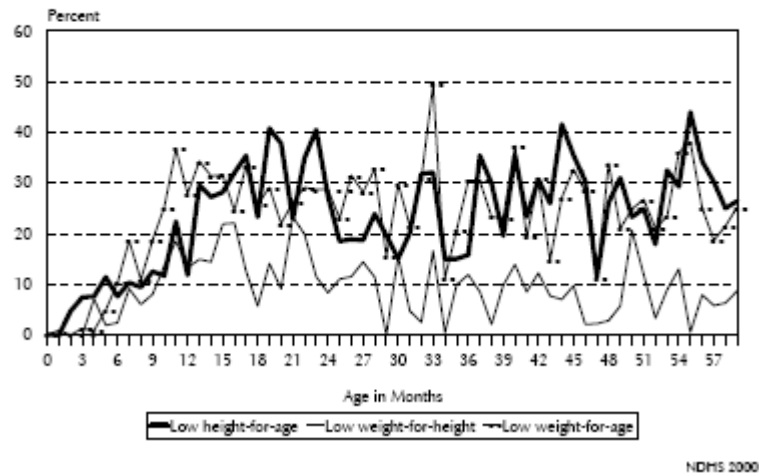


Figure 4. NDHS and NHIS 2000 Underweight Prevalence of Children 6-11 Months Old

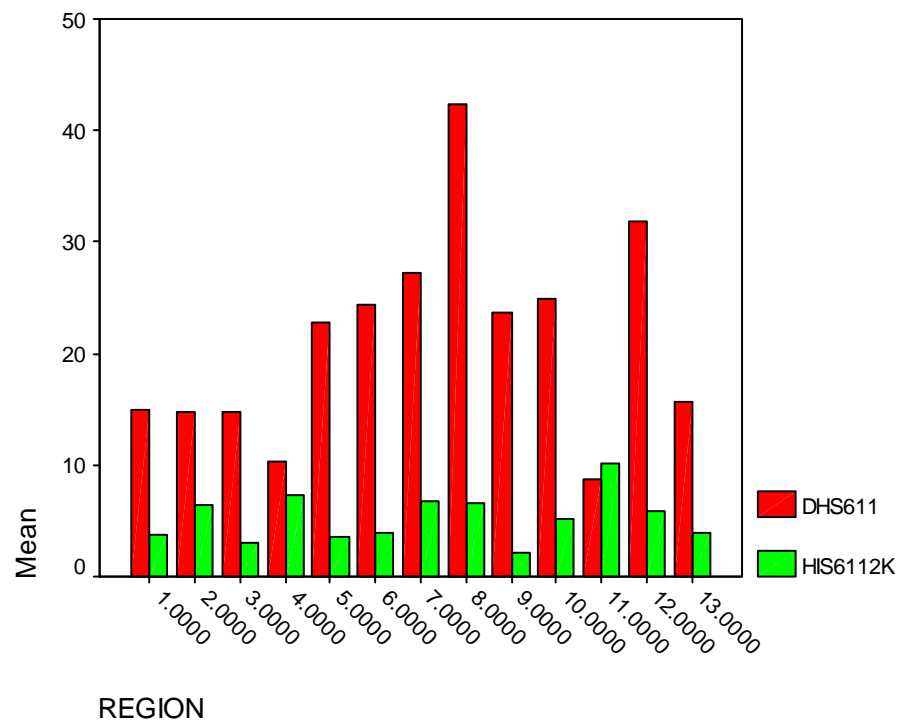
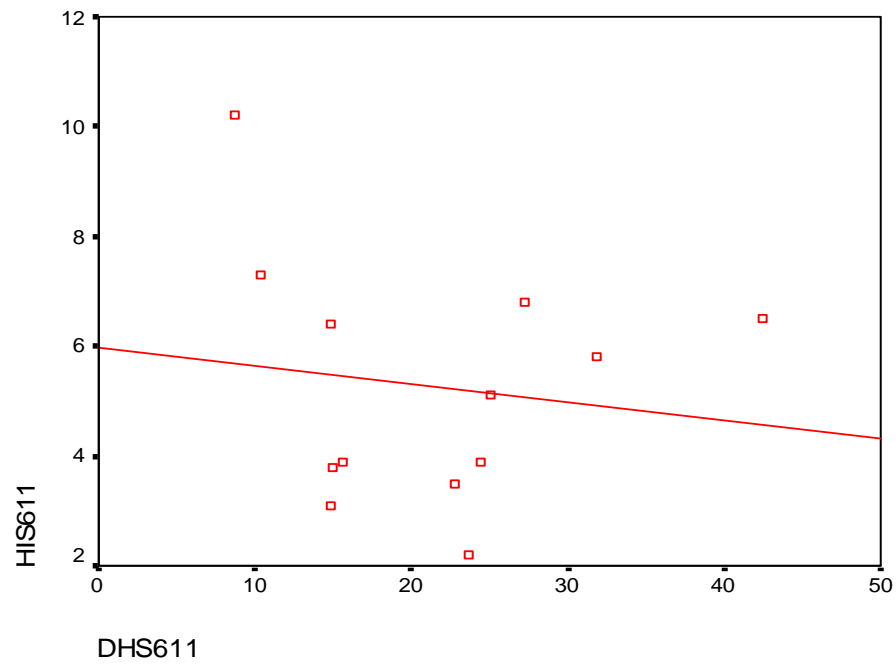
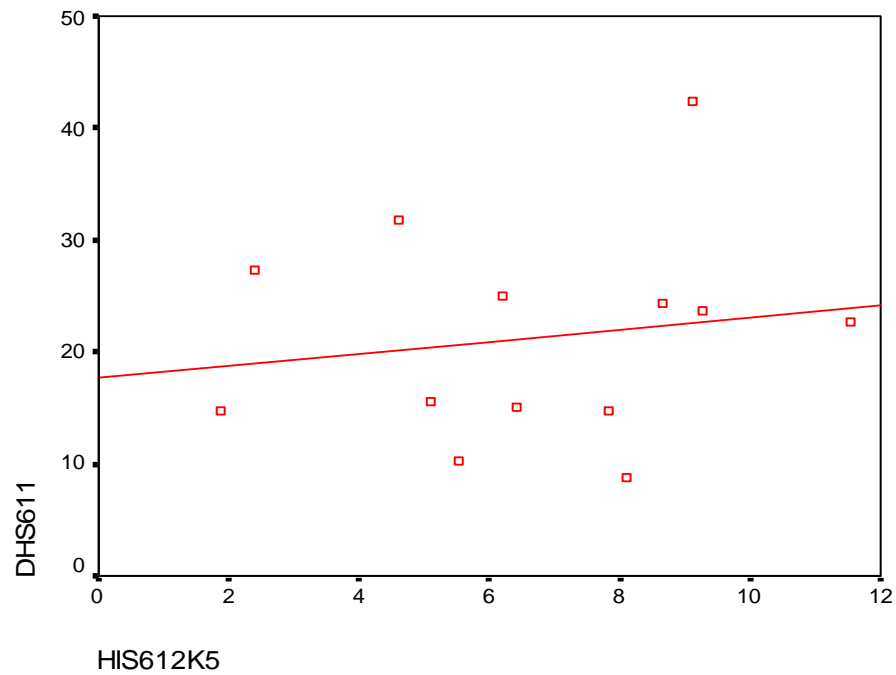


Figure 5. NDHS and NHIS 2000 Regional Correspondence of Underweight Prevalence in 6-11 Month Age Group



\*\*correlation is not significant

Figure 6. NDHS 2000 and NHIS 2005 Regional Correspondence of Underweight Prevalence in the 6-11 Month Age Group.



\*\*correlation is not significant

Figure 7.

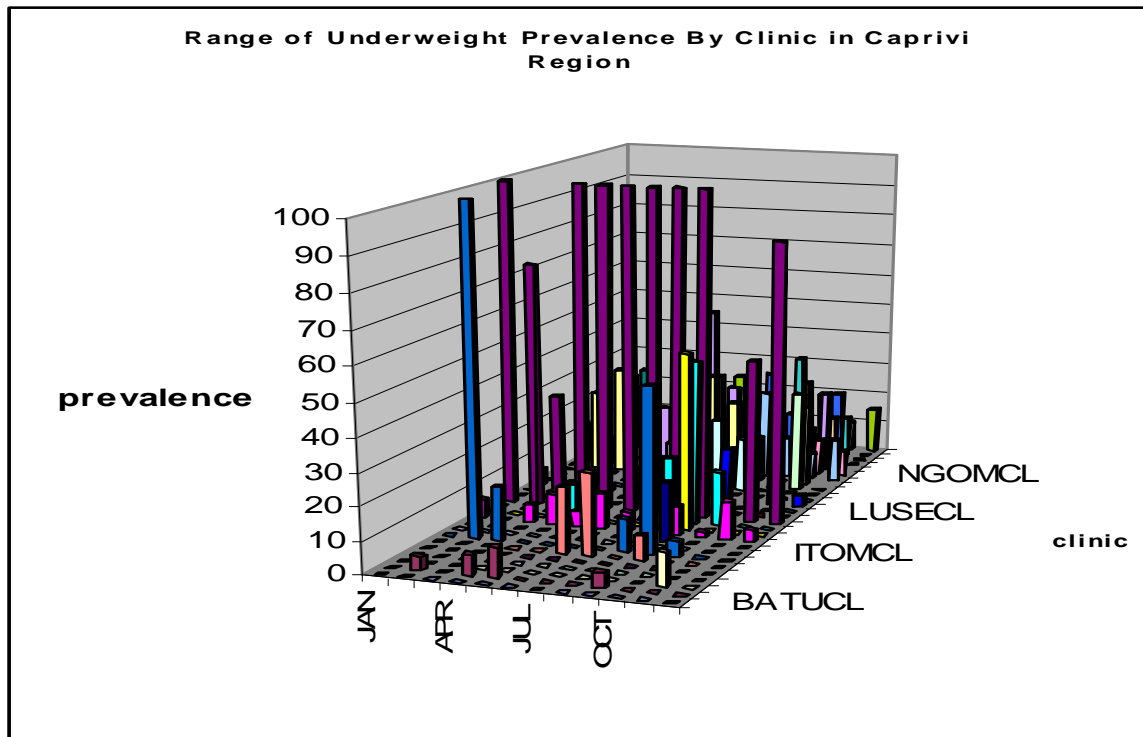


Figure 8.

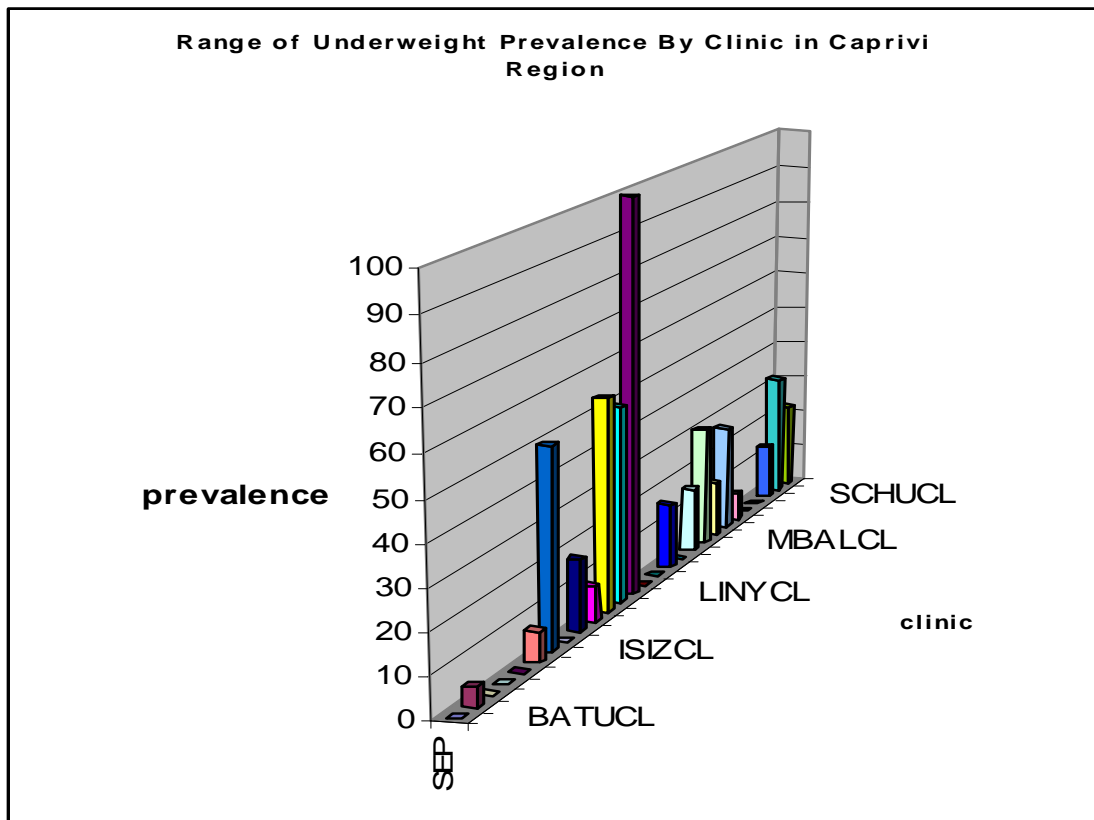


Figure 9.

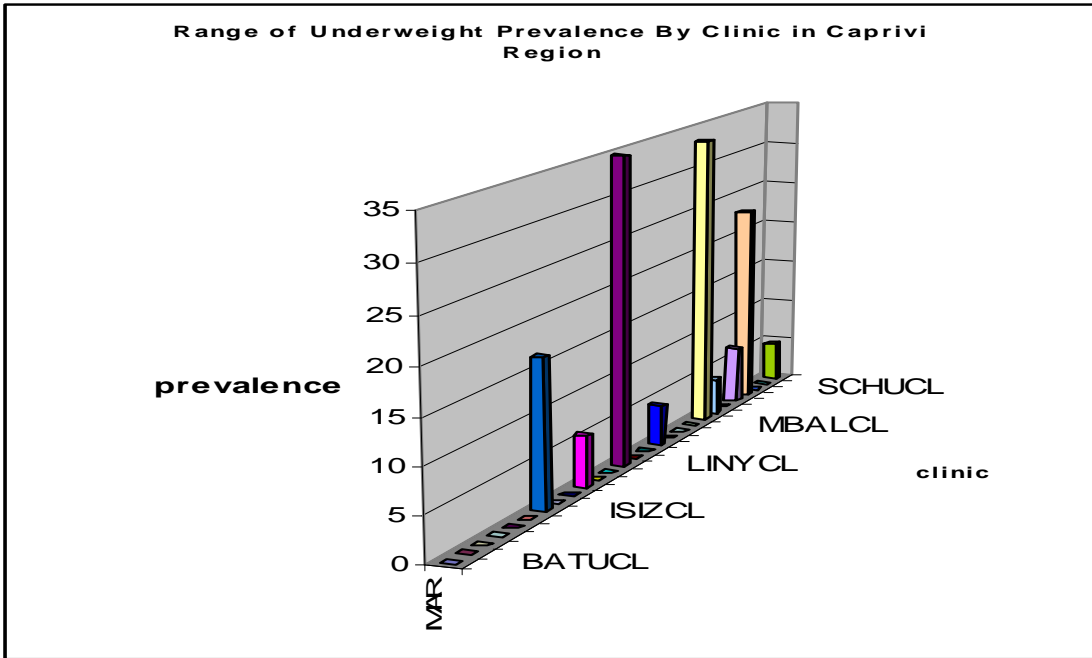


Figure 10

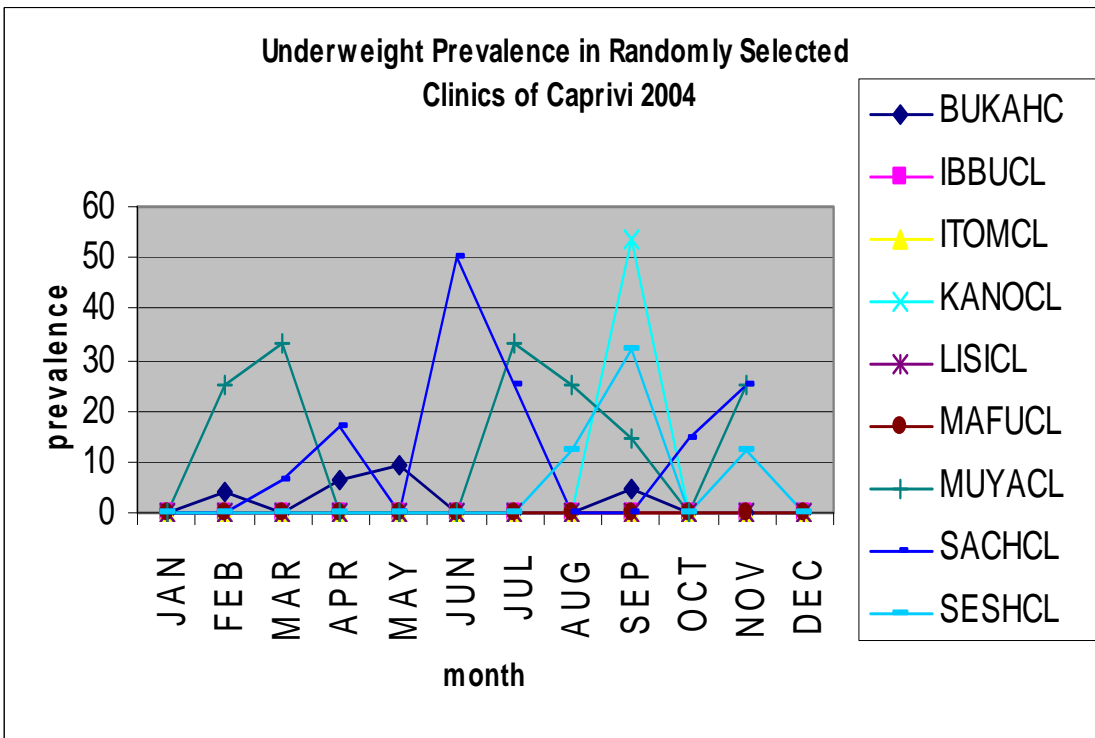


Figure 11

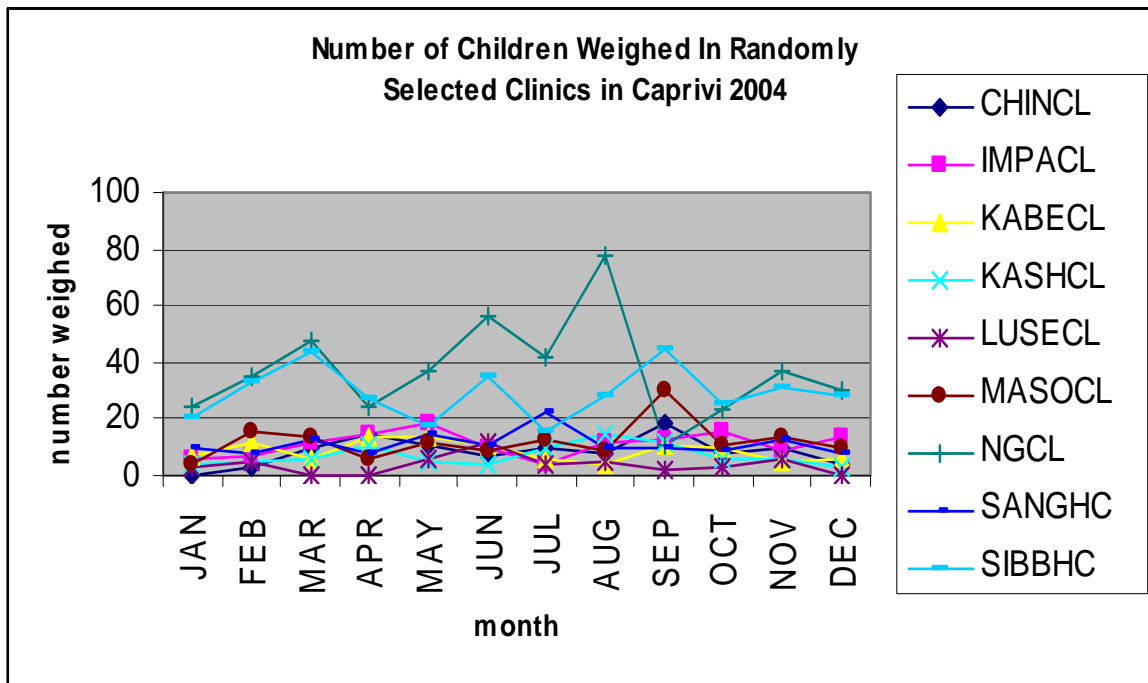


Figure 12

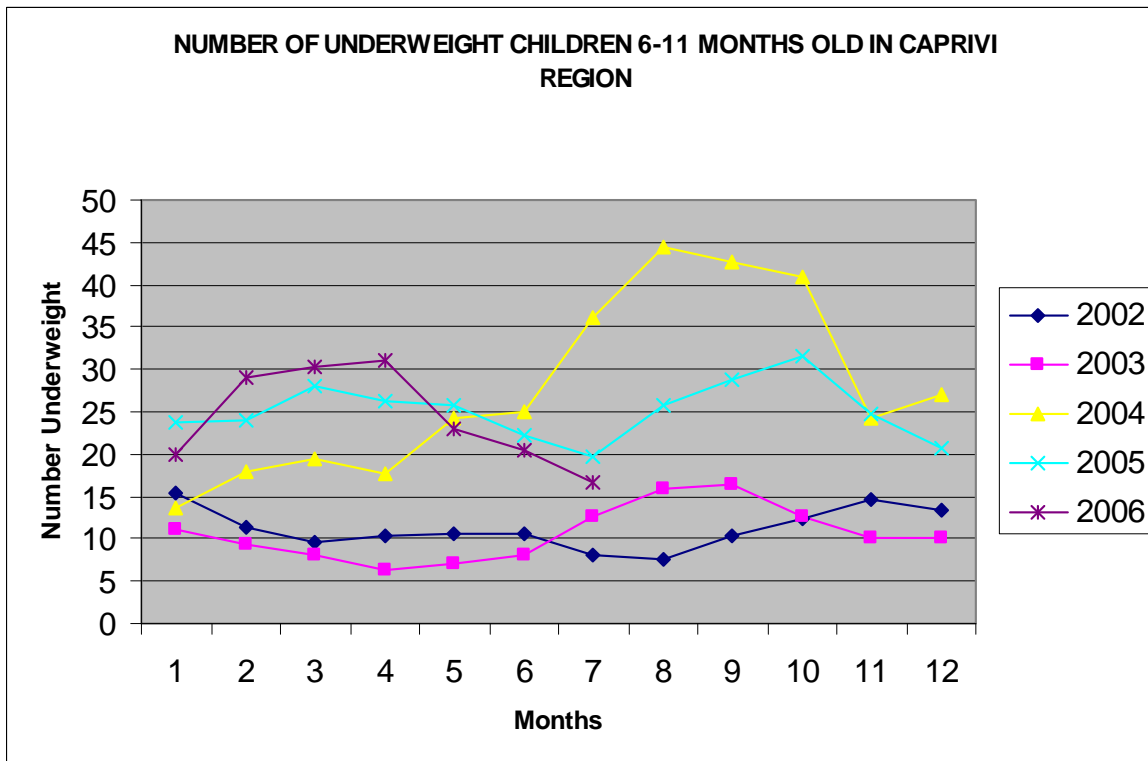


Figure 13

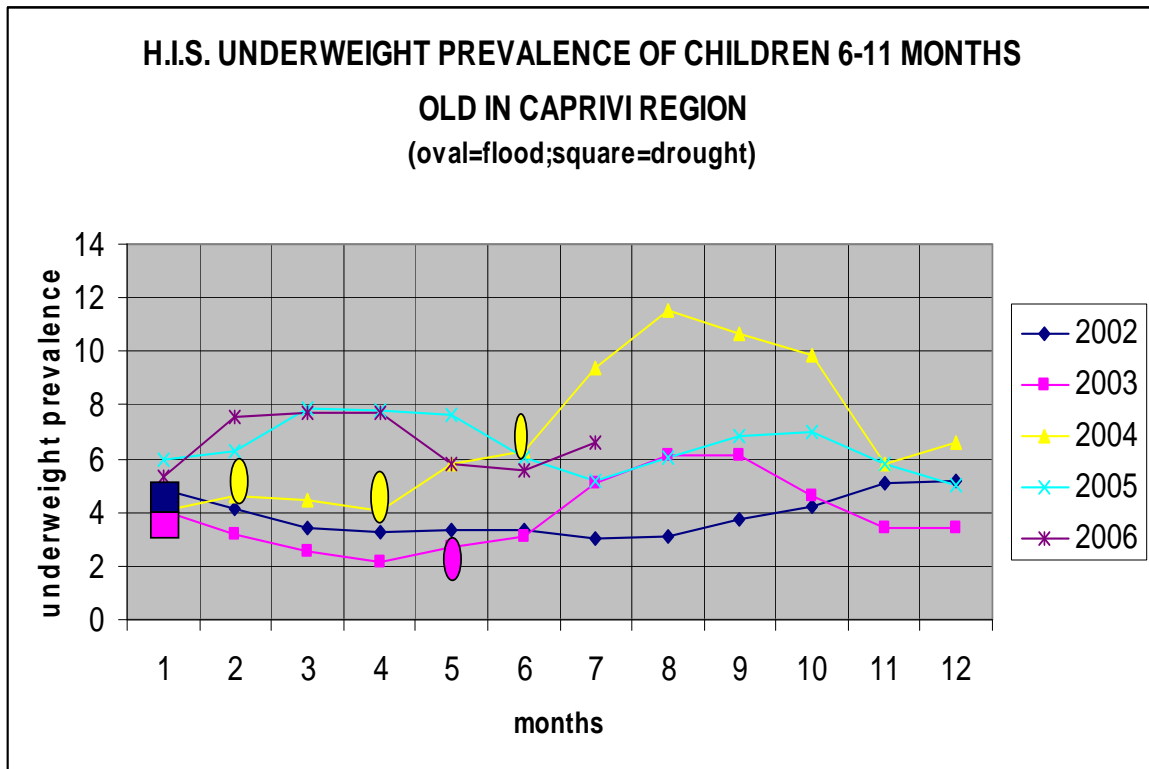


Figure 14. Caprivi Region 2002-2006

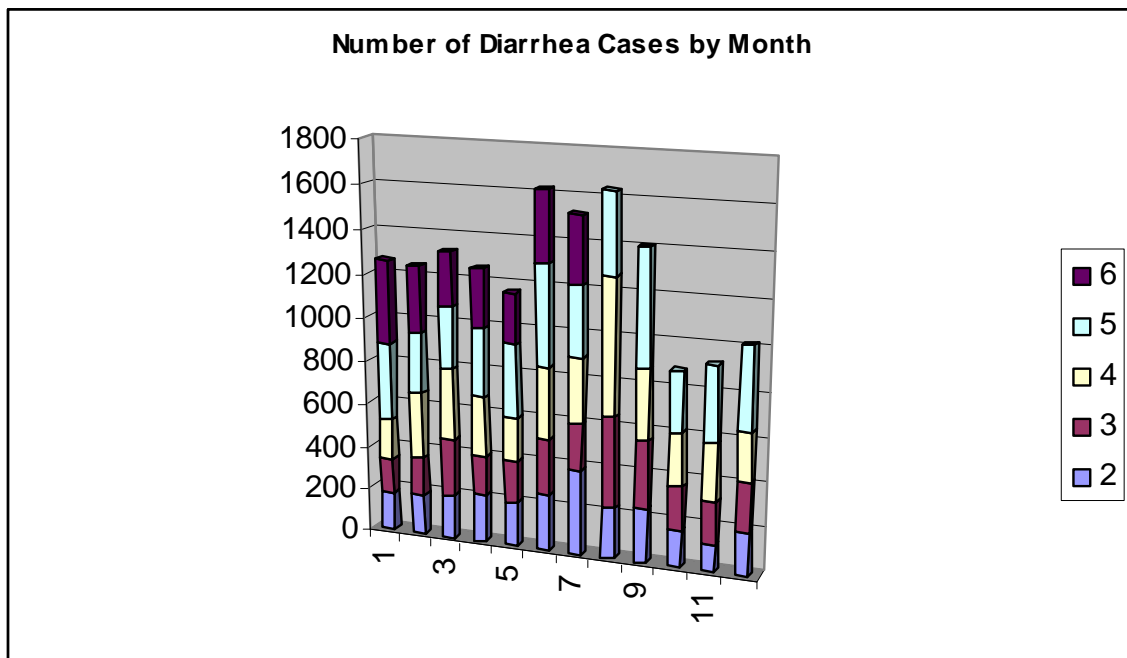
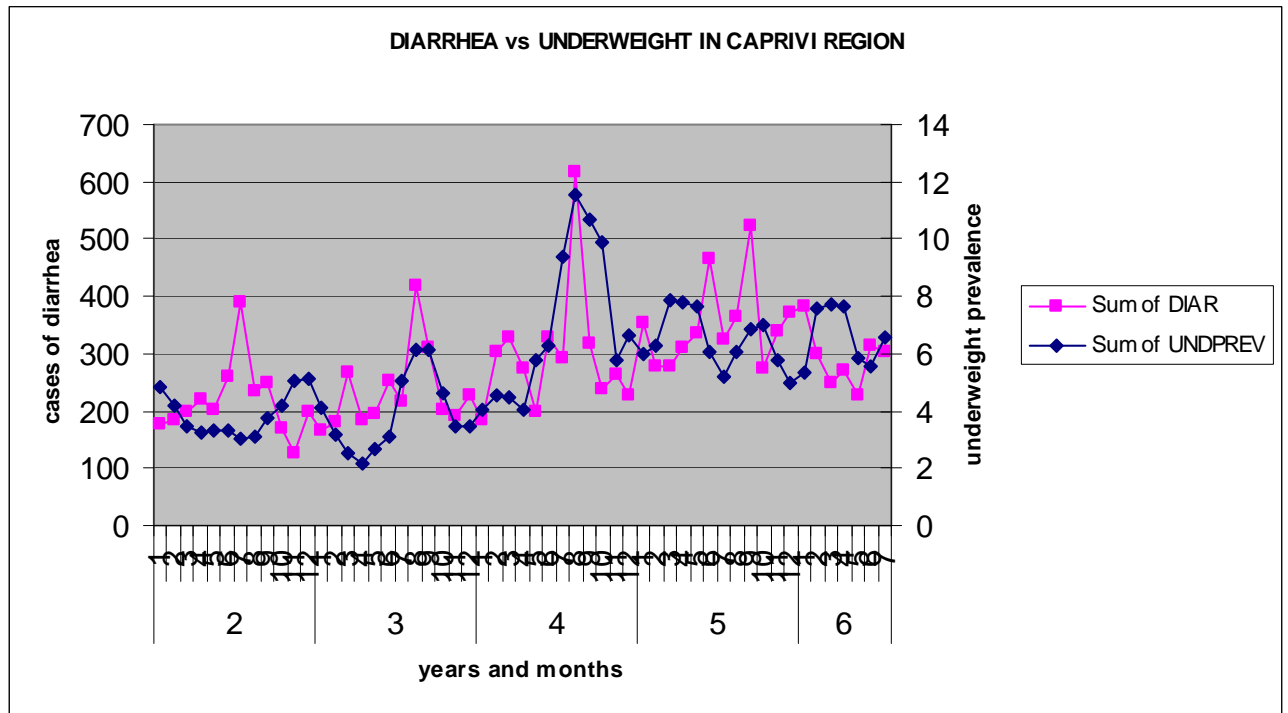


Figure 15







**NAMIBIA EARLY WARNING  
AND  
FOOD INFORMATION UNIT  
NAMIBIA  
FOOD SECURITY BULLETIN**

NO.2

JUNE 2006

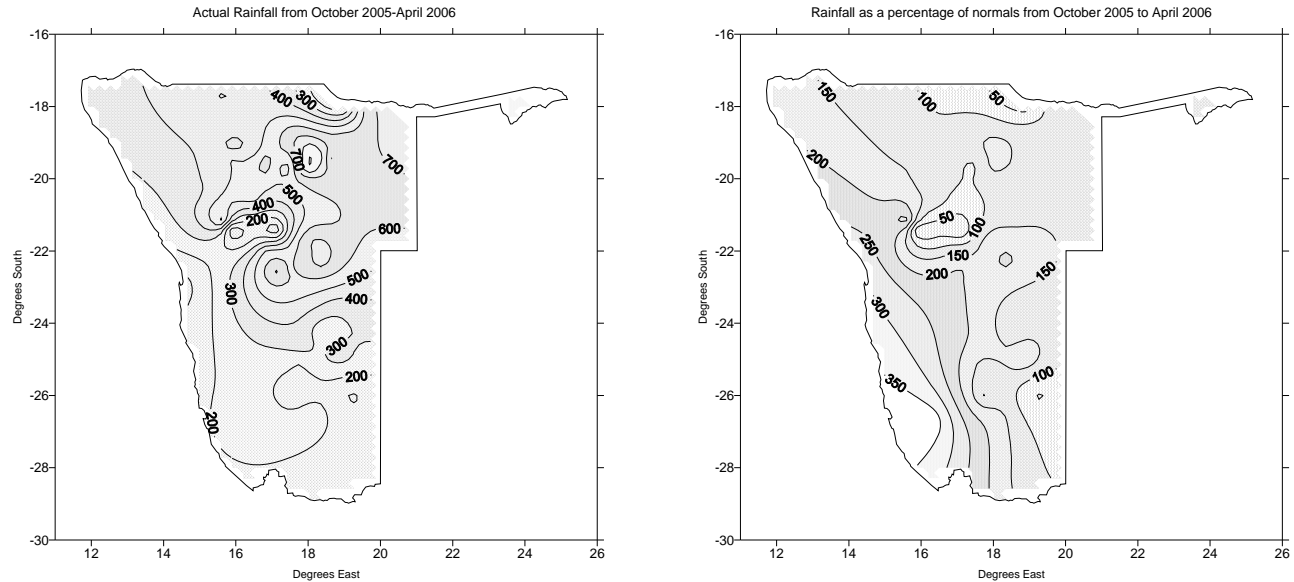
**SUMMARY**

The 2005/06 season has been generally very wet, with most parts of Namibia receiving above average rainfall. With the substantial rainfall experienced during the past season in many parts of the country, cereal production forecast at the end of May 2006 indicates an improvement in harvest this season. As a result of above-normal rains this season, Caprivi region which faced production shortfalls last season due to poor rainfall performance, is expecting a cereal production levels above last seasons'. Though there are some areas that were negatively affected by periods of excessive rains that led to flooding, water logging, and nutrient leaching, and discouraged weeding. Oshikoto, Ohangwena and Kavango regions are expecting a cereal harvests that is below last years' due to a significant reduction in areas planted as well as other factors caused by excessive rains.

The food security situation during the current marketing year (2006/07) improved significantly as a result of the availability of the new season crops, which are generally favourable, compared to the previous season. The 2005/06 harvest is now finally forecasted to have improved 10 percent compared to last season. With domestic availability of cereal projected to be insufficient to cover domestic demands (utilization), a cereal deficit of about 162,500 tonnes is assessed for the current marketing year. Livestock producer prices at the beginning of the 2006/07 marketing year were above their levels a year ago. They are expected to remain pleased for prolonged periods reflecting higher demand from South Africa as well as the impact of export ban on the Brazilian beef.

## RAINFALL PERFORMANCE REVIEW: October 2005 – April 2006

According to an assessment of the rainfall performance by the Namibia Meteorological Services (NMS), most parts of the country received substantial rainfall amounts during the 2005/06 season. In particular, the second half of the season (January to April) has been characterized by above-normal rains.



## AVAILABILITY OF WATER

Regarding water availability for both consumption and for agricultural production, estimates for surface water levels are provided below. According to the Namibia Water Corporation Ltd (NAMWATER), the current water levels measured encouragingly when compared to the similar period last year, reflecting above-average rains received during the past season.

Name of Reservoir	Present Water Content (Mm <sup>3</sup> )	Present % of full capacity	% Last season
Swakoppoort Dam	61.4	96.6	40.1
Von Bach Dam	43.1	88.8	48.1
Omatoko Dam	39.2	90.2	13.7
Tilda Viljoen Dam	0.9	75.7	37.0
Goreangab Dam	3.5	98.0	89.9
Otjivero Main Dam	7.2	73.1	53.2
Daan Viljoen Dam	0.4	83.0	6.7
Hardap Dam	207.3	70.4	55.1
Naute Dam	78.7	94.1	104.1
Oanob Dam	33.1	96.0	52.0

## FOOD PRODUCTION: 2005/2006 Agricultural Season

The average area planted by smallholders and commercial farmers is estimated at 274,100 hectares on one or more plots that are generally intercropped. Below are the estimated planted areas ('000 hectares) to the major cereal crops during the 2005/06 agricultural season.

Region	Millet	Sorghum	Maize	Total Area (2005/06)	Total Area (2004/05)	Percent deviation
Caprivi	1,4	1,4	5,2	8,1	7,6	+6
Kavango	12,0	1,0	1,8	14,9	11,2	+25
Omusati	65,4	3,4	-	68,9	75,8	-10
Oshana	27,7	1,5	-	29,3	24,4	+16
Ohangwena	60,5	6,7	-	67,3	83,4	-24
Oshikoto	47,0	2,5	-	49,5	59,6	-20
Commercial areas	0,2	-	13,7	15,4	12,1	+21
Total (ha)				253,3	274,1	-8

A comparative production forecasts for the 2005/06 cropping season with those for 2004/05 are provided below. The table reveals a general increase in production for all the regions except Ohangwena, Oshikoto and Kavango reflecting the dramatic effect of the excessive rains. Plantings of other food crops such as beans, groundnuts, bambaranuts and other non-cereal food crops were however reduced due to excessive rains.

Region	Millet	Sorghum	Maize	Total production (2005/06)	Total production (2004/05)	Percent deviation
Caprivi	0,7	1,1	2,4	4,2	2,1	+50
Kavango	1,9	0,3	0,1	2,5	2,5	-0,7
Omusati	20,9	0,7	-	21,6	16,6	+23
Oshana	4,1	0,4	-	4,5	3,9	+12
Ohangwena	11,1	1,2	-	12,4	18,7	-51
Oshikoto	9,5	0,6	-	10,1	11,5	-13
Commercial areas	0,2	-	49,0	49,2	39,1	+20
Total (ha)				104,5	94,4	+10

## CROP SITUATION BY REGION

In **Caprivi** region, the total production of cereal in the region is expected to reach 4,200 tonnes, which is 50 percent higher than last season and will mostly result from a very favourable weather conditions. Both Linyanti and Sibbinda constituencies recorded the lowest area planted mostly as a result of fear of damage to wild animals.

In **Kavango** region, a rapid assessment indicates a fair to poor production for the 2005/06 agricultural season. This year's production has been compromised as a result of reduced plantings as well as other adverse factors like the heavy rains received after January 2006, which in some parts have destroyed crops through water logging.

In **Omusati** region, crop growing conditions have been favourable in the region as result of above normal rains received since January 2006, leading to expectations of better harvest this season. Crop conditions have been satisfactory despite excessive rains in parts leading to water logging, nutrient leaching and minor outbreaks of army worms.

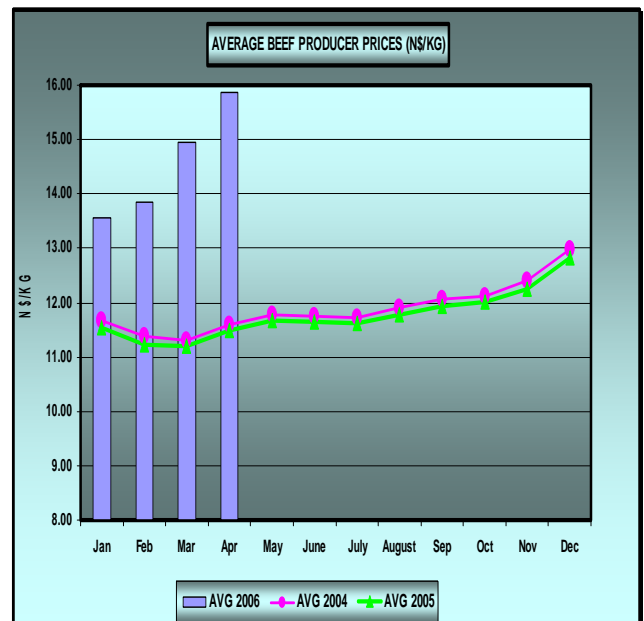
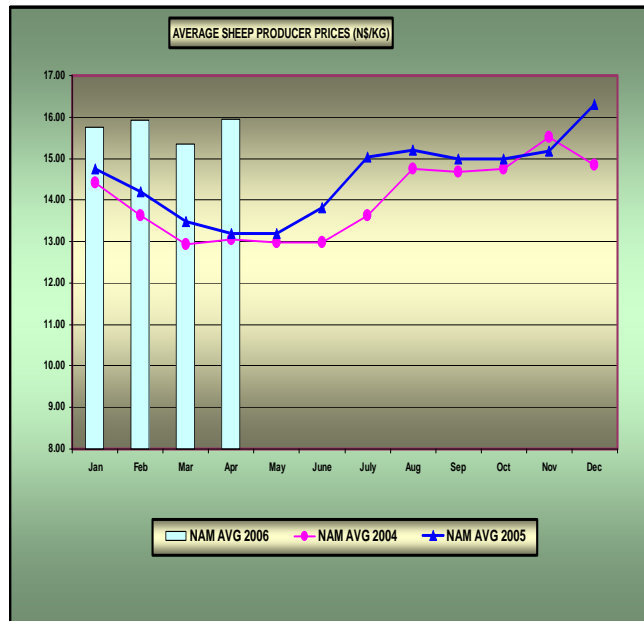
In **Oshana** region, rainfall received this season has been adequate for crop development in most constituencies. Total production of cereals in the region is expected to reach 4,500 tonnes, 12 percent increase over last season because of an increase in the area planted and above-average yields from favourable rainfall.

In **Ohangwena** region, rainfall performance in the first half of the season was not favourable for crop production, although rains improved from the first dekad of January 2006, allowing for late planting and revival of some of the late planted crops. Crop production has been reduced significantly owing to heavy rains as fields were water logged thus preventing weeding. Heavy rains also resulted in leaching of nutrients in the already degraded soils.

In **Oshikoto** region, Despite the normal to above normal rains over many constituencies of the region, total production of cereals in the region is expected to be 13 percent lower than last season, mainly due to very low yields. Yield reduction has been attributed to water logging of crop fields that delayed of farm activities such as weeding to take place.

## LIVESTOCK MARKETING

Livestock (cattle, sheep and goats) producer price strength since 2005 has intensified so far in 2006. The Meat Board of Namibia market statistics indicates optimistic prices for all livestock producers in Namibia. According to the figures below, producer prices for sheep and cattle are likely to retain the current momentum in the long term, especially with high demand from South Africa as well as the impact of export ban on Brazilian beef on international market price.

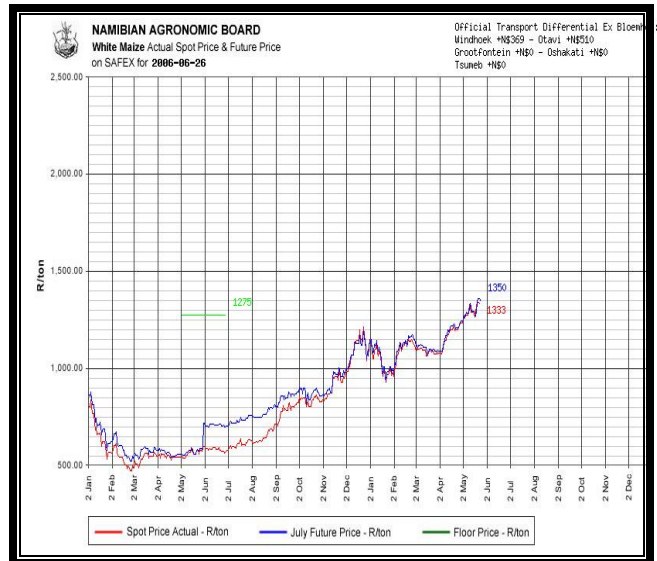
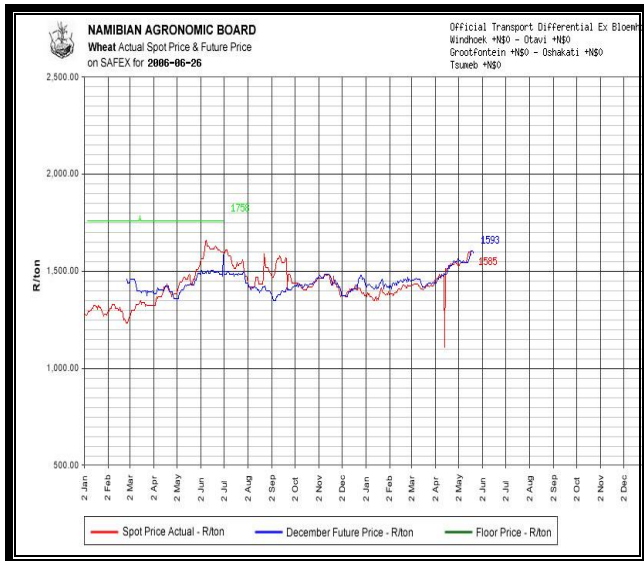


## COMMODITY PRICES

### Wheat and White Maize Producer Price

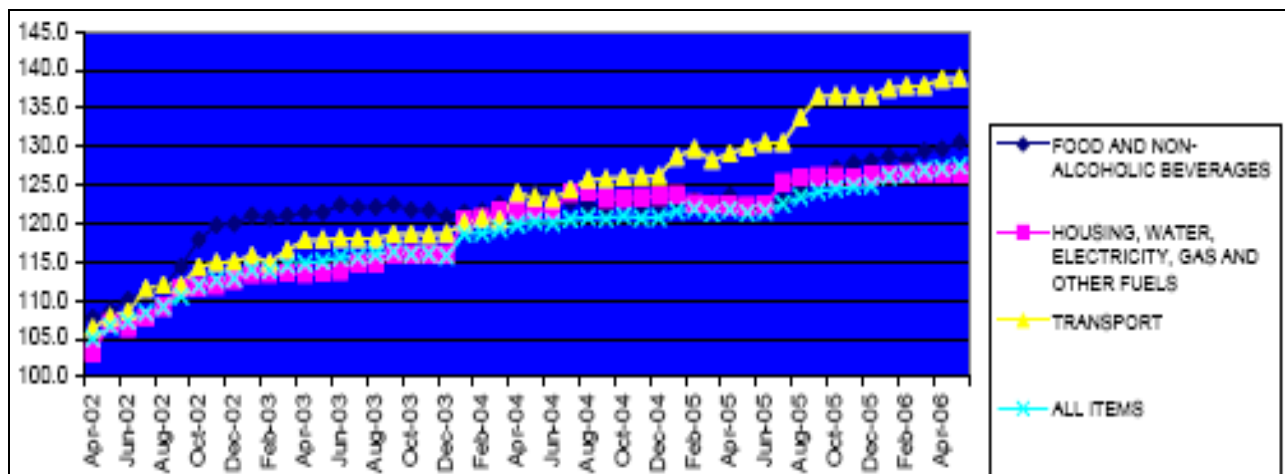
**SAFEX wheat producer price movements:** Wheat producer price on SAFEX picked up since April 2006, after remaining stagnant for some time. At the moment, wheat prices strengthened, but remained below the Namibia Agronomic Board floor price of R1, 758.00 for wheat.

**SAFEX white maize price movements:** White maize producer price in South Africa has been climbing steadily during the cropping season, where prices increased from R1, 100.00/ton in January 2006 to R1,330.00/ton in June 2006. The July futures price for white maize is favourably forecasted at R1, 350.00/ton, which is about 6 percent above the Namibia Agronomic Board floor price (R1, 275.00) for white maize.



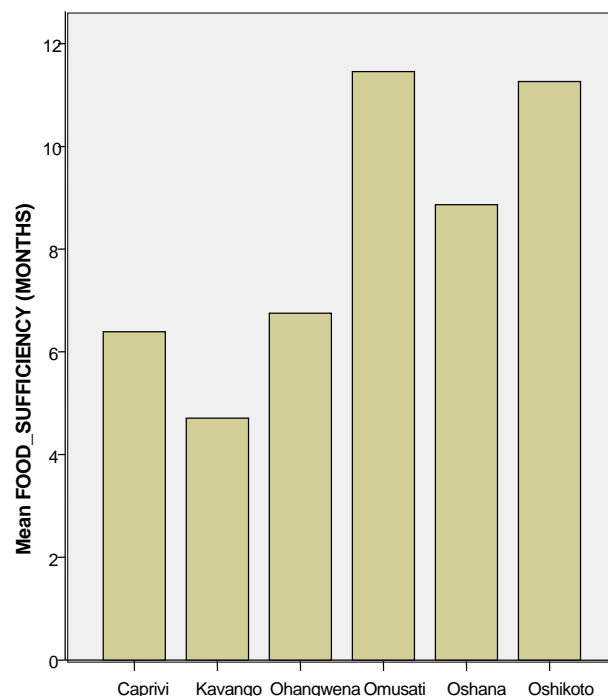
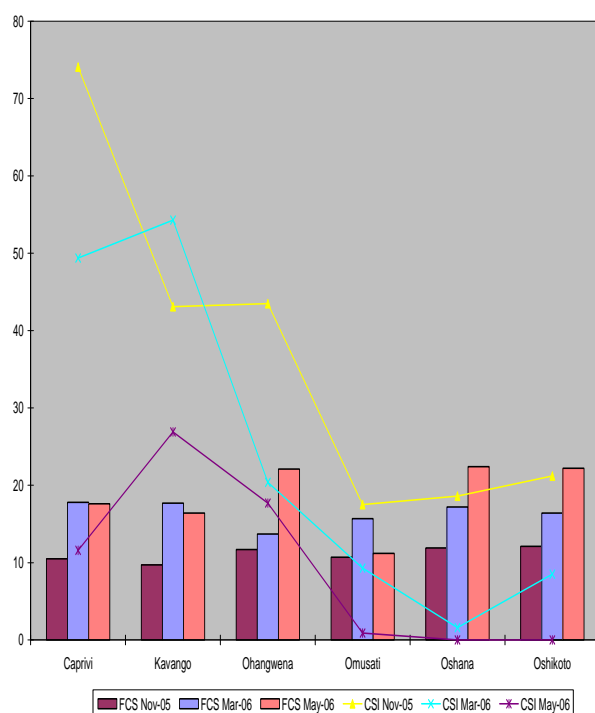
### Consumer Price Index (CPI)

The Consumer price index for May 2006 by main groups and sub-groups is given in the figure below (National Planning Commission). Prices of all items (food and non-alcoholic beverages; housing, water, electricity, gas and other fuels; transport) has increased in all major markets over the past four years. Despite the overall improvement in the national food situation, food prices are likely to follow the behaviour of SAFEX maize future prices in South Africa, from which the majority of grain is sought.

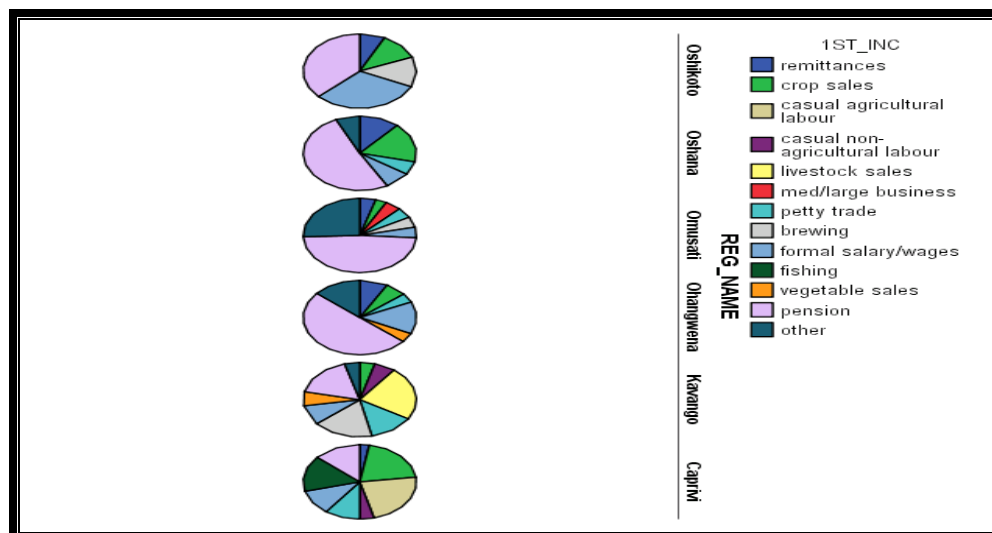


## HOUSEHOLD'S ACCESS TO FOOD AND COPING MECHANISMS

Natural resources exploited to offset adverse situations are becoming scarce, as they have been used intensively for many years as a means of survival. With a lack of other income options, forest resources, including wood, food, fish and wild animals are being extracted beyond sustainable levels following consecutive crop production failures. Consumption patterns have changed dramatically. The quantities and qualities of food consumed have intensified. Family members reported to be consuming two or three meals per day. The composition of food includes cereal, vegetables (mostly wild spinach), fish and meat in most cases with cereal dominating the meals.



In the above figures, household data analysis allows for the comparison of regional situations on the basis of measures computed from the household questionnaire. **The Coping Strategies Index (CSI)** measures the frequency and severity of actions taken by households in response to the presence or threat of a food shortage. Trend analysis on the graph above shows that the average CSI score of households during May 2006 was lower than that of the previous assessments, indicating the positive effects of the new season crops on the households' ability to cope. **Food Consumption Score (FCS)** analysis allows comparison of households' dietary quality and diversity over time. Based on the analysis above, mean FCS of households has been improving (except Omusati and Kavango) owing to improved harvest this season. Household **Food Sufficiency** is an indication of a number of months (from harvest in June) the cereal harvest will sustain an average household in each region. According to this analysis, the certainty of cereal grain lasting until the next harvest (in June 2007) exists only in the Omusati and Oshikoto regions, while cereal harvest in Capri, Ohangwena and Oshana regions will sustain the households halfway. The concern is in the Kavango region where the 2006 cereal harvest might only lasts on average for about 5 months (July to November 2006).



**Livelihood sources:** Social grants (pension), formal salaries, brewing, crop sales and petty trade account for nearly 80% of the livelihood activities of households in the north central regions (Omusati, Oshana, Ohangwena, and Oshikoto). In the Kavango region, livestock sales, social grants, brewing and petty trade are the main livelihood sources, while in the Caprivi region crop sales, casual labour, social grants and fishing activities account for about 80% of the livelihood sources.

## FOOD SUPPLY AT NATIONAL LEVEL

### Cereal supply/demand balance for 2005/06 marketing year (May/April)

Table below indicates the progress made at the end of 2005/06 marketing year (1 May 2005 to 30 April 2006) in completing commercial imports and export plans. At the end of the 2005/06 marketing year, the level of planned imports was sufficient to cover assessed national food gap during that period. Though the marketing year came to an end, the successful shipping of commercial imports was essential for ensuring national cereal availability.

Namibia Cereal Supply/Demand Forecast for 2005/06 Marketing Year (May/April)				
in tonnes				
	Wheat	Maize	Millet/Sorghum	Total Cereals
<b>A. Domestic Supply</b>	<b>15.3</b>	<b>50.6</b>	<b>83.9</b>	<b>149.8</b>
A.1 Opening Stocks 1 May 2005*	10.0	10.0	30.0	50.0
A.2 Forecasted Production**	5.3	40.6	53.9	99.8
<b>B. Domestic Utilization</b>	<b>65.7</b>	<b>147.5</b>	<b>81.6</b>	<b>294.8</b>
B.1 Food Use***	60.6	141.4	48.5	250.5
B.2 Non-food Uses****	0.3	2.2	8.1	10.6
B.3 Closing Stocks 30 April 2006	4.8	3.9	25.0	33.7
<b>C. Shortfall to be covered by imports</b>	<b>50.4</b>	<b>96.9</b>	<b>-2.3</b>	<b>145.0</b>
<b>D. Planned imports</b>	<b>58.2</b>	<b>71.6</b>	<b>0.0</b>	<b>129.8</b>
Imports received	58.2	71.6	0.0	129.8
Imports expected	0.0	0.0	0.0	0.0
<b>E. Exports already shipped</b>	<b>0.0</b>	<b>37.0</b>	<b>0.0</b>	<b>37.0</b>
<b>F. After Trade Surplus/Deficit</b>	<b>7.8</b>	<b>-62.3</b>	<b>2.3</b>	<b>-52.2</b>

Notes: \* Includes commercial, food aid and on-farm stocks

\*\* Excludes cereal production for animal feed

\*\*\* an average of 2.02 million people, each consuming 124 kg of cereals per annum

\*\*\*\* Includes seed use and waste; excludes commercial livestock feed

After Trade Surplus/Deficit = Planned Imports - (Shortfall + Exports)

Source: Namibia Early Warning and Food Information Unit

## Cereal supply/demand balance for 2006/07 marketing year (May/April)

The food supply/demand balance is calculated on the basis of an estimated total population of 2 070 000 for the 2006/07 marketing year. Overall, food security situation during the current marketing year (2006/07) has improved as a result of the availability of the new season crops, which is generally favourable over last season.

### Domestic supply

Opening stocks of cereal at the beginning of marketing year 2006/07 (May/April) are estimated at 33,700 tonnes, comprising of 25,000 tonnes of millet/sorghum, 4,800 tonnes of wheat and 3,900 tonnes of white maize. The cereal harvest for 2006 is finally forecasted to be 109,500 tonnes, comprising 52,700 tonnes of millet/sorghum, some 51,500 tonnes of white maize and 5,300 tonnes of wheat. The forecasted cereal production together with opening stocks add up to a domestic supply of 143,200 tonnes for 2006/07 marketing year.

### Domestic demand (utilization)

Assuming a national population figure of 2,07 million and an average per capita consumption of 124kg, the national cereal food use is calculated to be 254,600 tonnes. This, together with non-food use of 11,100 tonnes and closing stocks of 40,000 tonnes give a domestic cereal demand of 305,700 tonnes.

### Commercial imports

Given a domestic cereal supply of 143,200 tonnes and a domestic demand of 305,700 tonnes, the national import requirement in cereal supply for 2006/07 marketing year is calculated to be 162,500 tonnes (62,300 tonnes of wheat and 100,300 tonnes of white maize). The cover this shortfall the commercial millers planned to import 82,000 tonnes of cereal, leaving an after trade deficit of about 80,500 tonnes.

Namibia Cereal Supply/Demand Forecast for 2006/07 Marketing Year (May/April)				
in tonnes				
	Wheat	Maize	Millet/Sorghum	Total Cereals
<b>A. Domestic Supply</b>	<b>10.1</b>	<b>55.4</b>	<b>77.7</b>	<b>143.2</b>
A.1 Opening Stocks 1 May 2005*	4.8	3.9	25.0	33.7
A.2 Forecasted Production**	5.3	51.5	52.7	109.5
<b>B. Domestic Utilization</b>	<b>72.4</b>	<b>155.7</b>	<b>77.6</b>	<b>305.7</b>
B.1 Food Use***	62.1	142.8	49.7	254.6
B.2 Non-food Uses****	0.3	2.9	7.9	11.1
B.3 Closing Stocks 30 April 2006	10.0	10.0	20.0	40.0
<b>C. Shortfall to be covered by imports</b>	<b>-62.3</b>	<b>-100.3</b>	<b>0.1</b>	<b>-162.5</b>
<b>D. Planned imports</b>	<b>44.0</b>	<b>38.0</b>	<b>0.0</b>	<b>82.0</b>
Imports received	0.0	0.0	0.0	0.0
Imports expected	44.0	38.0	0.0	82.0
<b>E. Exports already shipped</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>F. After Trade Surplus/Deficit</b>	<b>-18.3</b>	<b>-62.3</b>	<b>0.1</b>	<b>-80.5</b>

Notes: \* Includes commercial, food aid and on-farm stocks  
 \*\* Excludes cereal production for animal feed  
 \*\*\* an average of 2.07 million people, each consuming 124 kg of cereals per annum  
 \*\*\*\* Includes seed use and waste; excludes commercial livestock feed  
 After Trade Surplus/Deficit = Planned Imports - (Shortfall + Exports)  
 Source: Namibia Early Warning and Food Information Unit



## TERMINOLOGY

**Dekad:** The period of ten days. A month has 3 dekad.  
 Dekad 1: first ten days of the month  
 Dekad 2: 11<sup>th</sup> – 20<sup>th</sup>  
 Dekad 3: 21<sup>st</sup> up to the end of month

**Current Production Season:** Crop production season that started at the beginning of October 2003 and ends at the end of April 2004 (or in some cases on the first dekad of May).

**Marketing Year:** The period from one main crop harvest up to, but not including the next. In the Namibian context, that period is from 1<sup>st</sup> of May up to the 30<sup>th</sup> April of the following year. The year during which the production of any given cropping year would be marketed and consumed. For example, mahangu harvest from the current cropping season (2003/2004) would be entered as production variable in the annual food balance sheet for the 2004/2005 marketing year.

**Millet:** Refers to Pearl millet also known as mahangu locally.

**Food Balance Sheet:** The tool that is basically used to analyse and compare the requirements and availability to obtain an estimate of food deficit or surplus. See **Table 2** for details of the annual food balance sheet.

**Total Availability:** Opening stocks plus forecasted cereal production.

**Opening Stocks:** The quantity of stocks held by the commercial millers at the beginning of the marketing year.

**Forecasted Cereal Production:** The quantity of cereals that was domestically produced. It remains a forecast since the final figure of the output especially for irrigated crops such as wheat whose harvest starts in December is yet to be determined.

**Domestic Utilisation:** Food use plus non-food uses plus closing stocks.

### Floor Price: Grain

**Food Use:** The quantity required to meet the direct consumption needs of the population.

**Non-food Uses:** This includes seed, waste and other uses but excludes animal feed.

**Closing Stock:** The forecasted end-of- marketing year stock held by commercial millers.

**SAFEX:** South African Futures Exchange

**Shortfall:** Total Availability less Domestic Utilisation. The shortfall is always covered by commercial imports.

**Planned Imports:** The quantity of imports delivered/expected into the country during the marketing year.

**After Trade Surplus/Deficit:** Planned Imports – (Shortfall + Exports). The balance of shortfall remaining after imports and exports.

**Current stocks:** Stocks currently held by the commercial millers.

### The Food Security Bulletin is prepared based on information provided by the:

Directorate of Extension and Engineering Services, Ministry of Agriculture, Water and Rural Development  
 Directorate of Veterinary Services, Ministry of Agriculture, Water and Rural Development  
 Department of Water Affairs, Ministry of Agriculture, Water and Rural Development  
 Namibia Meteorological Service, Ministry of Works, Transport and Communication  
 Emergency Management Unit, Office of the Prime Minister  
 Central Bureau of Statistics, National Planning Commission Secretariat  
 Namibia Development Corporation  
 Namibian Agronomic Board  
 Hardap Co-operative Ltd  
 Meat Board of Namibia  
 Namib Mills  
 Various NGOs and international donors

## Annex 5. Monthly Data Capturing Form for Nutrition Surveillance

Site Name \_\_\_\_\_ Reporting Month \_\_\_\_\_  
 Reported By (name) \_\_\_\_\_ Today's Date \_\_\_\_\_  
 Year \_\_\_\_\_ Recorded By \_\_\_\_\_  
 Quarter \_\_\_\_\_ (name) \_\_\_\_\_

### Data from the Immunization & GMP Monthly Summary Form

# severe underweight (all age groups)	# moderate underweight (all age groups)	Total weighed (all age groups)	# severe underweight (6-11 month age group)	# moderate underweight (6-11 month age group)	Total weighed (6-11 month age group)	# of measles immunizations (<1 year old)

### Data from the Outpatient Form

### Data from the Maternity Inpatient Form

# of Diarrhoea with no Blood (<5 years)	# of Diarrhoea with Blood (<5 years)		# of Low Birth Weight	# of Live Births

### Questions & Comments from Clinic Staff

Implementation Constraints (problems with scales, staffing constraints etc.)-

\_\_\_\_\_

Explanation of Trends-

\_\_\_\_\_

Additional Comments-

\_\_\_\_\_

### Comments by Staff Capturing Data

Timely Reporting-

\_\_\_\_\_

Data Accuracy-

\_\_\_\_\_

Additional Comments-

\_\_\_\_\_

\_\_\_\_\_

## Annex 6

### Creating Quarterly Nutrition Surveillance Bulletins Using a Semi-Automated Excel Database

This manual is meant to follow the Nutrition Surveillance Analysis and Reporting Manual and should be used in conjunction with bulletinexample.doc. All tables and charts copied into word should be compared to the bulletin example.

The master database in emptydatabase.xls is where data from the sentinel sites will be entered. This data will be transferred from a clinic health worker by phone to the national level, where it will first be written into a reporting form (monthlycaptureform.doc) and later entered into the database.

After the data is entered, all pivot tables and charts must be refreshed to create current tables and charts. These can then be pasted into Word to create the report.

**Don't forget to back-up the data every time data is entered (i.e. every month).** This can be done by saving the database to a CD and labeling it with the month and year. This also enables to save charts and tables for each quarter.

### Making the Bulletin

Having opened emptydatabase.xls and entered the data follow these steps:

#### Creating the Underweight Prevalence Change Table

*NB: You will not produce this table on the first quarter of nutrition surveillance implementation since you will not have any data for the previous quarter to compare to.*

1. In the workbook go to PIVOT UNDERWEIGHT TABLE (select the worksheet from the shaded bottom row). Right click on any cell within the table and select *Refresh Data*.
2. Copy data from the columns entitled QUARTER 1 and QUARTER 2 (i.e. columns B and C) – but don't copy the "Grand Total" row.
3. Paste the data in the UNDERWEIGHT TABLE worksheet, in columns C and D (i.e. entitled PREVALENCE LAST QUARTER and PREVALENCE THIS QUARTER). The program will automatically calculate figures for column E and F (i.e. CHANGE 1 and % CHANGE 1).
4. Copy and paste the Table to Word. Since the table format is ready in Word (see BULLETINEXAMPLE.doc, p. 4), just paste the figures into the appropriate columns in the word table, i.e. copy figures from column C, D, E and F (i.e. PREVALENCE LAST QUARTER, PREVALENCE THIS QUARTER, CHANGE1, % CHANGE1) in Excel into column 7, 5, 8 and 9 in the World table

- (i.e. “Prevalence last quarter”, “Prevalence this quarter”, “Change” and “% change”).
5. Now go to the Excel worksheet entitled PIVOT TOTAL WEIGHED TABLE. Right click on any cell within the table and select *Refresh Data*
  6. Copy data from the columns B and C (which give total number of children 6-11 months weighed for quarter 1 and 2 by site) - but don't copy the “Grand Total” row.
  7. Paste the data into the Word Table. Column B from the Excel table (i.e. total number of children 6-11 months weighed for quarter 1) should be pasted into column 6 (“Total Weighed Last Quarter”) in the Word table. Column C from the Excel table (i.e. total number of children 6-11 months weighed for quarter 2) should be pasted into column 4 in the Word table (i.e. “Total Weighed This Quarter”).
  8. During the second year of nutrition surveillance implementation you will be able to compare underweight prevalence to the same quarter last year and complete column 10 to 12 (i.e. “Prevalence same quarter lat year”, “Change” and % change”) in the Word table. To complete the table, copy data from last year's, same quarter UNDERWEIGHT TABLE in Excel (column D “PREVALENCE THIS QUARTER) and paste it into the UNDERWEIGHT TABLE worksheet, column G (i.e. PREVALENCE SAME QUARTER OF LAST YEAR). The program will automatically compute figures for column H and I (i.e. CHANGE 2 and % CHANGE 2). Then you can simply copy the data from columns G, H and I in Excel (i.e. PREVALENCE SAME QUARTER OF LAST YEAR, CHANGE2 and % CHANGE 2) into the Word table, columns 10, 11 and 12 (i.e. Prevalence same quarter last year, Change and % Change).

## Creating Underweight Indicators Charts

***Creating the Chart: “Cases of Severe and Moderate Underweight among Children under five”.***

1. In the workbook go to PIVOT MOD & SEV UNDERWEIGHT BAR (worksheet). Right click on any cell within the table and select *Refresh Data*.
2. Make sure N (for North) is selected in the Area Pivot Field Button (top left corner).
3. Copy the Chart and Paste into Word to display statistics for the Northern areas. To copy the Excel chart, click on the white area in the chart, then right click and select *Copy*. Go to Word and click where you want to copy the chart. Right click and select *Paste*.
4. Go back to Excel PIVOT MOD & SEV UNDERWEIGHT BAR. Select CS (for Central & South) in the Area Pivot Field Button (drop down menu in the top left corner).
5. Copy the Chart and Paste into Word to display statistics for the Central Southern areas. To copy the Excel chart, click on the white area in the chart, then right click and select *Copy*. Go to Word and click where you want to copy the chart. Right click and select *Paste*.

### ***Creating the Chart: “Underweight (Moderate + Severe) Prevalence Trends”.***

6. In the workbook go to PIVOT UNDERWEIGHT LINE worksheet. Right click on any cell within the table and select *Refresh Data*.
7. Make sure N (North) is selected in the Area Pivot Field Button (drop down menu in the top left corner).
8. Copy the Chart and Paste into Word to display statistics for the Northern areas. To copy the Excel chart, click on the white area in the chart, then right click and select *Copy*. Go to Word and click where you want to copy the chart. Right click and select *Paste*.
9. Go back to Excel PIVOT UNDERWEIGHT LINE, select CS (for Central and South) in the Area Pivot Field Button (drop down menu in the top left corner).
10. Copy the Chart and Paste into Word to display statistics for Central and Southern areas. To copy the Excel chart, click on the white area in the chart, then right click and select *Copy*. Go to Word and click where you want to copy the chart. Right click and select *Paste*.

### **Creating Low Birth Weight Indicators Charts**

1. In the workbook go to worksheet named PIVOT LOW BW LINE. Right click on any cell in the table and select *Refresh Data*
2. Make sure N (north) is selected in the Area Pivot Field Button (drop down menu in the top left corner).
3. Copy the Chart and Paste into Word to display statistics for Northern areas. To copy the Excel chart, click on the white area in the chart, then right click and select *Copy*. Go to Word and click where you want to copy the chart. Right click and select *Paste*.
4. Go back to Excel worksheet PIVOT LOW BW LINE. Select CS (for Central and South) in the Area Pivot Field Button (drop down menu in the top left corner).
5. Copy the Chart and Paste into Word to display statistics for Central and Southern areas. To copy the Excel chart, click on the white area in the chart, then right click and select *Copy*. Go to Word and click where you want to copy the chart. Right click and select *Paste*.

### **Creating Diarrhea Indicators Charts**

1. In the workbook go to PIVOT DIARRHEA BAR. Right click on any cell in the table and select *Refresh Data*
2. Make sure N (North) is selected in the Area Pivot Field Button (drop down menu in the top left corner).
3. Copy the Chart and Paste into Word to display statistics for Northern areas. To copy the Excel chart, click on the white area in the chart, then right click and select *Copy*. Go to Word and click where you want to copy the chart. Right click and select *Paste*.

4. Go back to the Excel worksheet PIVOT DIARRHEA BAR. Select CS (for Central and South) in the Area Pivot Field Button (drop down menu in the top left corner).
5. Copy the Chart and Paste into Word. To copy the Excel chart, click on the white area in the chart, then right click and select *Copy*. Go to Word and click where you want to copy the chart. Right click and select *Paste*.

### Creating Consumer and Food Price Index

*Note that this is national-level data therefore the data will not be displayed by site.*

1. Enter the monthly CPI and FPI values in the NAT'L FPI-CPI DATABAE worksheet, column D & E. The program will then automatically compute FPI/CPI (column F) and FPI/CPI ration (column G).
2. Go to Pivot FPI-CPI LINE worksheet.
3. Right click on any cell within the table and select *Refresh Data*.
4. Copy the chart to Word. To copy the Excel chart, click on the white area in the chart, then right click and select *Copy*. Go to Word and click where you want to copy the chart. Right click and select *Paste*.

## **Annex 7**

# **Nutrition Surveillance Analysis & Reporting Training Manual**

## **Using Microsoft Excel Pivot Tables For Analysis & Reporting**

This manual is to be used in conjunction with four files: bulletinexample.doc, emptydatabase.xls, exampledatabase.xls, and bulletinmanual.doc. All of which are available from the resources section of the International Nutrition Website hosted by Tulane University ([www.tulane.edu/~internut](http://www.tulane.edu/~internut))

The manual will also be incorporated into Excel Tutorials in the Practical Analysis of Nutritional Data, which can be requested from the International Nutrition Website.

Data used in all files is hypothetical

The purpose of emptydatabase.xls is to provide semi-automated, easy reporting for a nutrition surveillance bulletin. All of the following procedures for indicator calculations, table construction, and chart creation are embedded in both emptydatabase.xls and exampledatabase.xls. As data is entered and refreshed, most of the indicators and charts will automatically be created. The data must still be manipulated to produce the final bulletin and the software alone is by no means a complete reporting system in itself. The purpose of this manual is to build capacity for nutrition surveillance reporting, software troubleshooting, and conducting secondary analysis.

## Open Excel

### Some Basic Excel Tasks:

It is important to first get comfortable moving around in Excel. Now that you have a blank excel page in front of you, use the mouse to click on any cell. Use the arrows on the keyboard to move around. If you hold down the arrow, the cursor will move quickly. Try this. We will now look at a few basic Excel tasks.

**Naming a worksheet:** You can name every new worksheet that you create. Right click on “sheet 1” in the shaded row at the bottom of your screen; select “rename” and type the name you want.

**Copy & Paste from one cell to others:** Type a number anywhere on the screen. Move out of the cell with the number by using the keyboard arrows or single-clicking on another cell with the mouse. Select the cell with the number again. Select **Control + C (this is the COPY function)** (you have to hold down control and then type C). You have just copied the number in this cell. Move to another cell and paste the number by selecting **Control + V (this is the PASTE function)**. You can paste into as many cells as you want. Imagine you want this number to fill up the entire column. Select a cell with the number. Copy this cell. **Select Control + Shift** (hold them both down) and hit the down arrow (the entire column below the cell with the number should be selected). Release all buttons. Now paste the number (every cell in the column should have the same number). Imagine that was a mistake and you want to get rid of it. From the menu bar at the top of the screen select *Edit*, and then **Undo Paste**.

Let's move on to some more advanced Excel features.

**Troubleshooting** *this should be referred to as you come across problems with the exercises and will be updated as more questions are asked from trainees. There is also troubleshooting under the help menu in Excel. That should be used when you come across problems in the future.*

**It's not allowing me to select Pivot Table and Pivot Chart Report from the data menu.** You have to select a cell with data in order to create a pivot table.

**I've put an indicator into the wrong field in the pivot table/pivot chart.** You can move indicators inside the pivot table/report by dragging the pivot field button.

**The table is showing/not showing decimals and I want to show/hide them.** You can define the number of decimals figures should have for any variable (e.g. prevalence of underweight): Click on the cell where you want to change the number of decimals, go to the Menu bar at the top of your screen; select *Format*, then select *Cells*, then select *number* in the *category* list and select the desired number of decimals from the drop down menu on the right-hand side.



Open *exampledatabase.xls*

<b>Lingo</b> <i>examples in this table are found in exampledatabase.xls</i>
<b>Worksheet-</b> In Excel any page where data can be shown or entered is a sheet (i.e. UNDERWEIGHT CHANGE TABLE SHEET).
<b>Database-</b> Pages where raw data is entered (i.e. MASTER DATABASE).
<b>Pivot Table-</b> A pivot table is a page that facilitates the manipulation of data. Indicators can be placed as rows or columns (i.e. PIVOT TOTAL WEIGHED TABLE).
<b>Pivot Chart-</b> A pivot chart is the visual expression of a Pivot Table. It can be made directly, in which case the corresponding Pivot Table is automatically created (i.e. PIVOT LOW BW LINE).
<b>Workbook-</b> The workbook is the combination of all of the above. Both emptydatabase.xls and exampledatabase.xls are workbooks.

## I. DATA ENTRY AND INDICATOR CALCULATION

There are two databases in each workbook. The primary database is called MASTER DATABASE, and this is where all data will be entered, except for the food and consumer price indexes. Those will be entered into the NAT'L FPI-CPI DATABASE because the data is not based on the sentinel sites.

### MASTER DATABASE

1. The first seven variables (see below) will stay the same. They are already embedded in both the example and empty database. Find them in emptydatabase.xls (in the Master database worksheet).

AREA	REGION	DISTRICT	CONSTITUENCY	SITE	URBAN/RURAL	AGRO-ECO
------	--------	----------	--------------	------	-------------	----------

2. The three variables below can be entered before receiving data from the sites. Find them in emptydatabase.xls (in the Master database worksheet).

YEAR	QUARTER	MONTH
------	---------	-------

3. Data for these variables below will be entered once obtained from selected sentinel site clinics every month. Find them in emptydatabase.xls (in the Master database worksheet).

# SEVERE UNDERWEIGHT (ALL AGE GROUPS)	# MODERATE UNDERWEIGHT (ALL AGE GROUPS)	# SEVERE UNDERWEIGHT 6-11 MONTH AGE GROUP	# MODERATE UNDERWEIGHT 6-11 MONTH AGE GROUP	TOTAL UNDERWEIGHT 6-11 MONTH AGE GROUP	TOTAL WEIGHED 6-11 MONTH AGE GROUP
DIARRHEA CASES (<5 years)	# LOW BIRTH WEIGHT	# LIVE BIRTHS	# OF MEASLES IMMUNIZATIONS (<1 year)	HIV PREVALENCE	

--	--	--	--	--	--

4. These variables below will be calculated by using excel functions embedded in the empty database. As the data from Table 3 is entered into the database, these variables are automatically calculated by Microsoft Excel.

TOTAL UNDERWEIGHT 6-11 MONTH AGE GROUP	UNDERWEIGHT PREVALENCE 6-11 MONTH AGE GROUP
IMMUNIZATIONS AS PERCENT OF TOTAL WEIGHED	LOW BIRTH WEIGHT PREVALENCE

Let's set up these functions. Open the workbook *exampledatabase.xls* and select master database (from the shaded bottom row; you can move from one worksheet to the other by using the arrow on the bottom left corner of your screen).

### Total Underweight 6-11 Month Age Group

- 1) Find the column for Total Underweight 6-11 Month Age Group
- 2) Select the 2<sup>nd</sup> row of this column
- 3) Type =
- 4) Select the 2<sup>nd</sup> row in the Severe Underweight 6-11 Month Age Group Column
- 5) Type +
- 6) Select the 2<sup>nd</sup> row in the Moderate Underweight 6-11 Month Age Group Column
- 7) Hit Enter (37 should appear in 2<sup>nd</sup> row of the Total Underweight 6-11 Month Age Group)
- 8) Copy this cell. Select the entire column and paste. (Values should appear all the way down the column)

### Underweight Prevalence 6-11 Month Age Group

- 1) Find the column for Underweight Prevalence 6-11 Month Age Group
- 2) Select the 2<sup>nd</sup> row of this column
- 3) Type =
- 4) Select the 2<sup>nd</sup> row in Total Underweight 6-11 Month Age Group
- 5) Type /
- 6) Select the 2<sup>nd</sup> row in Total Weighed 6-11 Month Age Group
- 7) Type \*100
- 8) Hit Enter (24.67 should appear in the 2<sup>nd</sup> row of the Underweight Prevalence 6-11 Month Age Group column)
- 9) Copy this cell. Select the entire column and paste (values should appear all the way down the column)

### Immunizations as Percent of Total Weighed

- 1) Find the column for Immunizations as Percent of Total Weighed
- 2) Select the 2<sup>nd</sup> row of this column

- 3) Type =
- 4) Select the 2<sup>nd</sup> row in # of Measles Immunizations
- 5) Type /
- 6) Select the 2<sup>nd</sup> row in Total Weighed 6-11 Month Age Group
- 7) Type \*100
- 8) Hit Enter (58 should appear in the 2<sup>nd</sup> row of the Underweight Prevalence 6-11 Month Age Group column)
- 9) Copy this cell. Select the entire column and paste (values should appear all the way down the column)

## Low Birth Weight Prevalence

- 10) Find the column for Low Birth Weight Prevalence
- 11) Select the 2<sup>nd</sup> row of this column
- 12) Type =
- 13) Select the 2<sup>nd</sup> row in the # Low Birth Weight column
- 14) Type /
- 15) Select the 2<sup>nd</sup> row in the # Live Birth column
- 16) Type \*100
- 17) Hit Enter (10.64 should appear in the 2<sup>nd</sup> row of the Low Birth Weight Prevalence column)
- 18) Copy this cell. Select the entire column and paste (values should appear all the way down the column)

## NAT'L FPI-CPI DATABASE

1. The NAT'L FPI-CPI DATABASE contains three variables that can be entered before data is received:

YEAR	QUARTER	MONTH
------	---------	-------

2. The next two variables will be entered based on price data obtained every month from National Planning Commission or Early Warning Unit at MoA:

FPI	CPI
-----	-----

3. The final variables are calculated using functions.

FPI/CPI	FPI/CPI RATIO
---------	------------------

## Go to Nat'l FPI-CPI Database

**To enter the function of calculation of FPI/CPI, follow step 1 to 9 below.**

- 1) The equation used for FPI/CPI is FPI / CPI.
- 2) Find the column for FPI/CPI (column F).
- 3) Select the 2<sup>nd</sup> row of this column (cell F2)
- 4) Type =


- 5) Select the 2<sup>nd</sup> row in the FPI column (cell D2)
- 6) Type /
- 7) Select the 2<sup>nd</sup> row in CPI column (cell E2)
- 8) Hit Enter
- 9) Copy this cell. Select the entire column and paste (values should appear all the way down the column)

**To enter the function of calculation of FPI/CPI Ratio, follow steps 1 to 10 below.**

To calculate FPI/CPI RATIO you must divide the current FPI/CPI by the 1<sup>st</sup> FPI/CPI. For example, if data entry begins in January and the FPI/CPI is 10, every month after will divide FPI/CPI by 10 to get the ratio. January, the 1<sup>st</sup> month, will have a ratio of 1.

- 1) Go to Nat'l FPI-CPI Database
- 2) Set up the function for FPI/CPI Ratio:
- 3) Click on the first row under FPI/CPI Ratio (cell G2).
- 4) Type =
- 5) Select the first row under FPI/CPI. (cell F2)
- 6) Type /
- 7) Type the value of the first row of FPI/CPI (cell F2).
- 8) Click Enter.
- 9) The 1<sup>st</sup> value of FPI/CPI Ratio should be 1. Select this cell and copy.
- 10) Hold shift+control and select entire column. Paste.

## II. Constructing Pivot Tables and Pivot Chart Reports

<b>Pivot Lingo</b> <i>examples of pivot table and pivot chart below</i>
<p><b>Row Fields-</b> Area for indicator positioned vertically (in a pivot table) i.e. for instance month or quarter in a trend graph.</p> <p><b>Category Fields/Axis-</b> Same as a row field, but under pivot chart. In a chart it will be the X axis (horizontal axis), i.e. for instance month or quarter in a trend graph.</p> <p><b>Column Fields-</b> Area for indicator positioned horizontally (pivot table) (e.g. the list of sentinel sites).</p> <p><b>Series Fields/Axis-</b> Same as a column field, but under pivot chart. In a chart it will determine separate bars and lines (e.g. trends by sentinel site).</p> <p><b>Data Fields-</b> Area to show data from desired indicator (e.g. underweight prevalence).</p> <p><b>Page Fields-</b> A page field is used to display only certain data. If you want to display data by geographic area, you can place area into the page field and select north, south, east, or west.</p> <p><b>Pivot Field Button-</b> The pivot field button allows you to select data from any indicator placed in a field. Here is an example of Pivot Field Buttons for year and month:</p>


Example of Empty Pivot Table

	A	B	C	D	E	F	G
1	Drop Page Fields Here						
2							
3		Drop Column Fields Here					
4	Drop Row Fields Here	Drop Data Items Here					
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

Example of Empty Pivot Chart



In the example database all of the tables and reports included in this manual are already made. Follow the steps to make the same tables and charts and then compare your charts to the existing ones.

## 1. Change in Underweight Prevalence Table

- 1) Open the file EXAMPLEDATABASE.xls
- 2) Create a Pivot Table: Select the “MASTER DATABASE” worksheet (from the shaded bottom row; you can move from one worksheet to the other by using the arrow on the bottom left corner of your screen).
- 3) In the menu bar at the very top of your screen, go to Data, Pivot Table and Pivot Chart Report. Make sure Pivot Table is selected and click Finish.
- 4) Add SITE to Row Area. This can be done by highlighting SITE from the pivot table field list on the right hand side of your screen, then selecting *Row Area* from the drop down menu at the bottom right corner of your screen and then clicking on the “*add to*” button. Another way to do this is to simply drag and drop SITE from the Pivot Table Field List into the Row Area, i.e. where it is written “*drop row field here*”).
- 5) Select YEAR from the pivot table field list on the right hand side of your screen, then select “*column area*” from the drop down menu at the bottom right corner of your screen and then click on the “*add to*” button. Then select QUARTER from the pivot table field list on the right hand side of your screen and click on the “*add to*” button.
- 6) Add UNDERWEIGHT PREVALENCE 6-11 MONTHS to data area. To do this, highlight UNDERWEIGHT PREVALENCE 6-11 MONTHS in the table field list on the right hand side of your screen, select “*data area*” from the drop down menu at the bottom right corner of your screen and then click on the “*add to*” button.
- 7) Double click on *Underweight Prevalence Field Button* (that is the shaded button at the top left corner of the pivot table). Select “*Average*” (in the “summarize by” list) and click OK.
- 8) Compare your table to the pivot table in the worksheet entitled “**Pivot Underweight Table**”.

Now, create another pivot table to look at total number of children weighed. Use the same steps from the previous table construction, but add TOTAL WEIGHED 6-11 MONTH AGE to the *Data Area* instead of Underweight Prevalence. In addition, double click on the TOTAL WEIGHED 6-11 MONTH AGE Field Button (that is the shaded button at the top left corner of the pivot table). Select “*Sum*” (in the “summarize by” list) and click OK.

Compare your pivot table to **Pivot Total Weighed Table**.

In order to calculate change in underweight prevalence (compared to prevalence in the previous quarter), we must copy the prevalence from the pivot table to an underweight table in a new worksheet with embedded functions.

- 1) Create a new worksheet: Go to the menu bar at the top of your screen and click on *Insert, Worksheet*.

- 2) You can name this new worksheet by right clicking on “sheet x” in the shaded row at the bottom of your screen and selecting “rename”. We will name this worksheet ‘UNDERWEIGHT CHANGE TABLE’.
- 3) In Row 1 create names for the following variables in separate columns: Region, District, Site, Total Weighed Last Quarter, Prevalence Last Quarter, Total Weighed This Quarter, Prevalence This Quarter, Change1, % Change1, Prevalence Same Quarter of Last Year, Change2, % Change2.
- 4) Copy Prevalence Quarter 1 and Quarter 2 from the recently created Underweight Prevalence table (i.e. second and third column in the Pivot table) and paste the data into the “UNDERWEIGHT CHANGE TABLE”. The data should be pasted in the columns “Prevalence Last Quarter” and “Prevalence This Quarter”.
- 5) To calculate Change1: Select Row 2 under Change1 Variable (i.e. cell H2).
- 6) In that cell (H2), type =
- 7) Click on row 2 under Prevalence Last Quarter (i.e. cell E2)
- 8) Type –
- 9) Click on Row 2 under Prevalence This Quarter Variable (i.e. cell G2)
- 10) Click Enter. A value should appear in Row 2 of column Change1 (cell H2).
- 11) Copy this cell to the entire column. To do this, click on the cell (H2) and press Ctrl + C. Then select all the cells below by pressing on shift (keep holding) and selecting the cells with the down arrow button on your keyboard. Once all the cells are selected press Ctrl+V. Values should appear in every row of the Change1 column (the function described above has been pasted).
- 12) To calculate % Change1 in column I: Select Row 2 under % Change1 variable (i.e. cell I2)
- 13) In that cell (I2), type =
- 14) Click on Row 2 under Change1 (cell H2)
- 15) Type /
- 16) Click on Row 2 under Prevalence Last Quarter (cell E2)
- 17) Type \*100
- 18) Hit Enter.
- 19) Compare the numbers obtained in your table to the worksheet with **Underweight Change Table**

Are there more decimal places shown in your table? If you want to limit the amount of decimal places shown, you can do the following:

- Select the column by moving to where the column letter is shown and clicking
- Right click and select format cells
- Under category select number
- Put whatever number you want in the decimal places box and select OK

The data can now be copied into a word table for reporting. To copy the table, select the whole table in Excel, right click on your mouse, select copy, go to your work document, right click on your mouse and select paste. You can also have a table in word already prepared and copy and paste only the cells with numbers in Excel into the word table cells. An example of Word table can be seen in bulletinexample.doc.

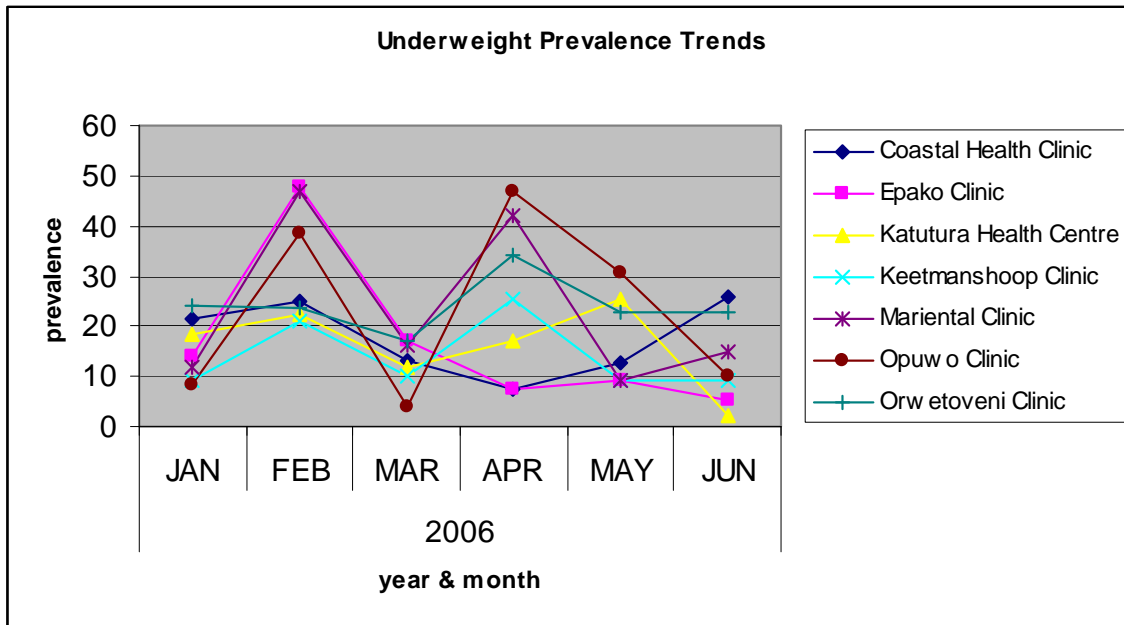
## 2. Underweight Prevalence Line Graph

When a pivot chart report is created a pivot table is also created. The table is called a sheet, and the chart is called a chart in Excel. As you change data in one, it is automatically changed in the other.

- 1) Create a pivot chart report: From the master database worksheet go to the Menu bar at the top of your screen and select *data* and *pivot table/pivot chart report*. Select *pivot chart report*. Click *Finish*.
- 2) Add YEAR and MONTH to the *Category Axis* (i.e. as seen in section 1 above, highlight YEAR in pivot table field list, select *category axis* from the drop down menu at the bottom of your screen and click on *add to*. Do the same for MONTH).
- 3) Add SITE to the *Series Axis* (follow same process as above and select *Series axis* instead of *Category Axis* in the drop down menu).
- 4) Add AREA and URBAN/RURAL to the *Page Area* (from the drop down menu).
- 5) Add UNDERWEIGHT PREVALENCE 6-11 MONTHS to the *Data Area* (from the drop down menu).
- 6) Double click on Underweight Prevalence Pivot Button (i.e. the shaded button at the top left corner of the chart) and select *Sum*, *OK*.
- 7) Right click on chart area (i.e. the background part of the chart that is colored in grey) and select *Chart Type*, *Line* (in chart type menu), click *OK*.
- 8) On the Area Pivot Button (i.e. the shaded button at the top left corner of the chart) select N from the drop down menu (N is for North, meaning you only want to show Northern regions on your graph).
- 9) To insert titles for the chart and the X (horizontal) and Y (vertical) axis, right click on the chart area (i.e. the background part of the chart that is colored in grey) and select *Chart Options*. For instance, you can type “Underweight Prevalence Trends” in the *chart title* box, “Year and Month” in the *Category (x) axis* box and “Prevalence” in the *Value (y) axis* box.
- 10) Right click on any field button (i.e. the shaded/brownish buttons on the top left corner on your chart) and select *Hide Pivot Chart Field Buttons*.
- 11) In order to copy the chart (and paste it into Word) it must first be moved. Right click on the chart and select location. Select *As Object In- Sheet 3*. You can then copy and paste the chart into a Word document by right clicking on the white part of the chart area, then going to edit in the menu bar and selecting *copy*, then going to Word and selecting *paste* in the *edit* function of the menu bar (at the top of the screen).
- 12) You can now compare your line graph with the one from **Pivot Underweight Line**.

If you want to change what data is displayed in the chart, you can change from the pivot field buttons of the pivot table. From the area pivot field button on the pivot table select CS. The chart should now look like this.





### 3. Food Price Index/Consumer Price Index Line Graph

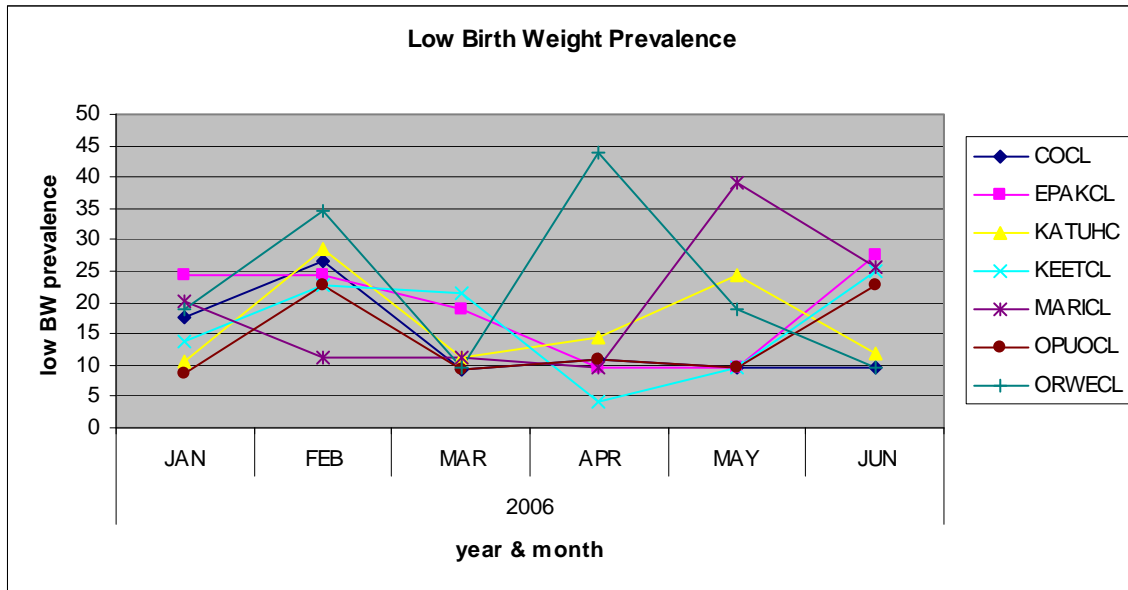
The FPI/CPI Line Graph will be constructed in the same manner as the Underweight Prevalence Line Graph, except for the following:

- The Pivot Chart should be created from **Nat'l FPI-CPI Database**
- FPI/CPI ratio will be inserted into the data area in place of underweight prevalence.
- Nothing should be placed in the series axis

Make the graph and compare it with **Pivot CPI-FPI Line**.

### 4. The Low Birth Weight Line Graph

The Low Birth Weight Line Graph in **Pivot Low BW Line** looks like this:



Try to recreate this chart with your own pivot chart report from the master database. If need be, look at the two previous exercises for guidance.

#### 4. Diarrhea Bar Graph

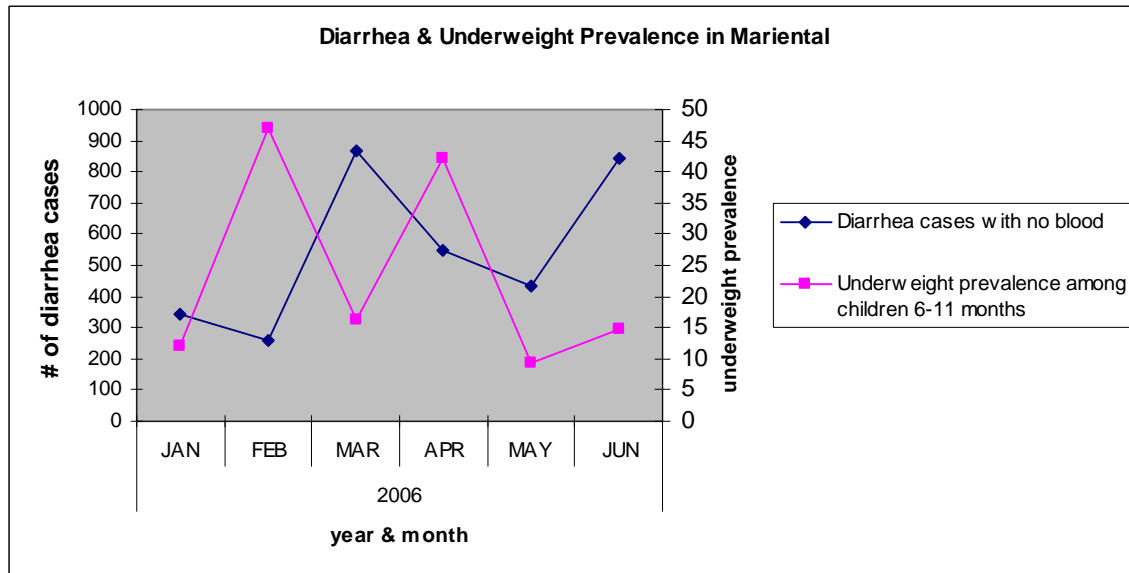
- 1) Create another pivot chart report from the Master database worksheet (as usual, go to *Data, Pivot Table and Chart pivot report* in the top menu bar; select *pivot chart report* and click *Finish*).
- 2) Add SITE, YEAR and QUARTER to the Category Axis.
- 3) Add AREA and URBAN/RURAL to the Page Area.
- 4) Add DIARRHEA CASES BLOOD and DIARRHEA CASES NO BLOOD to the *Data Area*.
- 5) Go to the pivot table corresponding to the diarrhea chart (located on another worksheet, Sheet 4) and right click on Diarrhea Cases Blood.
- 6) Select Field Settings. Select Sum, OK.
- 7) Do the same for Diarrhea Cases No Blood
- 8) Return to the chart, select N from area pivot field button
- 9) Move the data pivot field button from the category axis to the series axis
- 10) Add titles and hide the pivot field buttons.
- 11) Move the chart to sheet 4 and compare with **Pivot Diarrhea Bar**. To move the chart in order to copy and paste it into word, right click on the chart and select location (i.e. corresponding worksheet) Select *As Object In- Sheet x*. You can then copy and paste the chart into a Word document by right clicking on the white part of the chart area, then going to edit in the menu bar and selecting *copy*, then going to Word and selecting *paste* in the *edit* function of the menu bar (at the top of the screen).

#### 5. Severe and Moderate Underweight Bar Graph

This graph can be created in the same manner as the diarrhea bar graph. The only difference will be that instead of inserting diarrhea variables into the data area, # Severe Underweight and # Moderate Underweight are used. Try this and compare to **Pivot Sev & Mod Underweight Bar**.

## 6. Diarrhea and Underweight Prevalence

For secondary analysis it is important to be able to look at how different indicators interact. If you want to put two indicators on the same graph that are measured in different ranges (number of diarrhea cases for example will be measured in the hundreds, while prevalence will be below fifty), you must plot on two different Y (vertical) axes. This example illustrates the point.



In order to construct this graph we will again construct a pivot chart.

- 1) Create a pivot chart report: From the master database select *data* and *pivot table/pivot chart report*. Select *pivot chart report*. Click *Finish*.
- 2) Add YEAR and MONTH to the *Category Axis*.
- 3) Add SITE to the *Page Area*. Select only MARICL (here you can select whatever health facility health facility you want to show the data for) from the Site Pivot Field Button (i.e. the shaded button at the top left corner of the graph).
- 4) Add DIARRHEA CASES NO BLOOD and UNDERWEIGHT PREVALENCE 6-11 MONTH to the *Data Area*.
- 5) Drag the Data Pivot Field Button from the Category Axis (i.e. bottom of graph to the Series Field (i.e. right hand side of graph).
- 6) Go to the corresponding Pivot Table. Right click on Underweight Prevalence and select *Field Settings, Sum*. Right click on Diarrhea Cases No Blood and select *Field Settings, Sum*.

- 7) Return to the chart. Right click on the chart area (i.e. the background grey area in the chart) and select *Chart Type*. Go to *Custom Types* (i.e. the top right tab). Select *Lines on 2 Axes* in the *Chart Type* menu; then click OK.
- 8) Insert titles, hide field buttons (by right clicking on field buttons), and move the chart to the corresponding worksheet (by right clicking on the chart and select location. Select *As Object In- Sheet x.*). Compare to **Pivot Diarrhea and Underweight chart**.

You have now finished the training manual. You should be comfortable enough to change the nutrition surveillance database to fit future needs and construct charts for secondary analysis. Primary analysis charts for the quarterly timely warning bulletin are embedded in the emptydatabase.xls workbook and the bulletin manual gives directions on how to use these embedded charts.

Annex 8.

# Nutrition Surveillance Bulletin Second Quarter, 2006

*Based on Hypothetical Data*

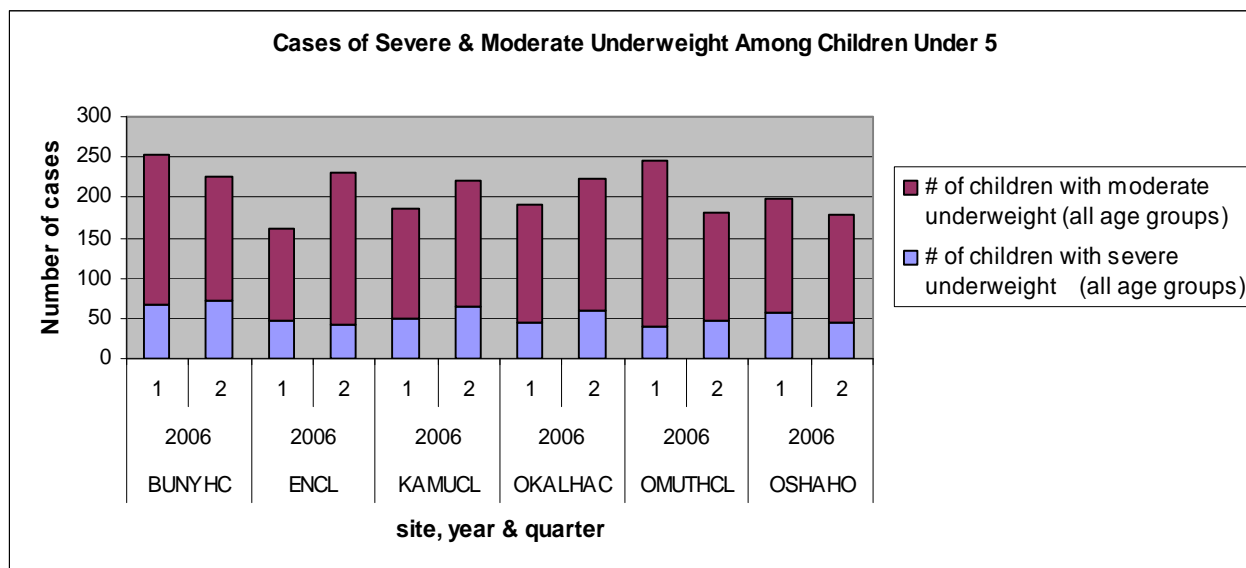
## SUMMARY

July 2006

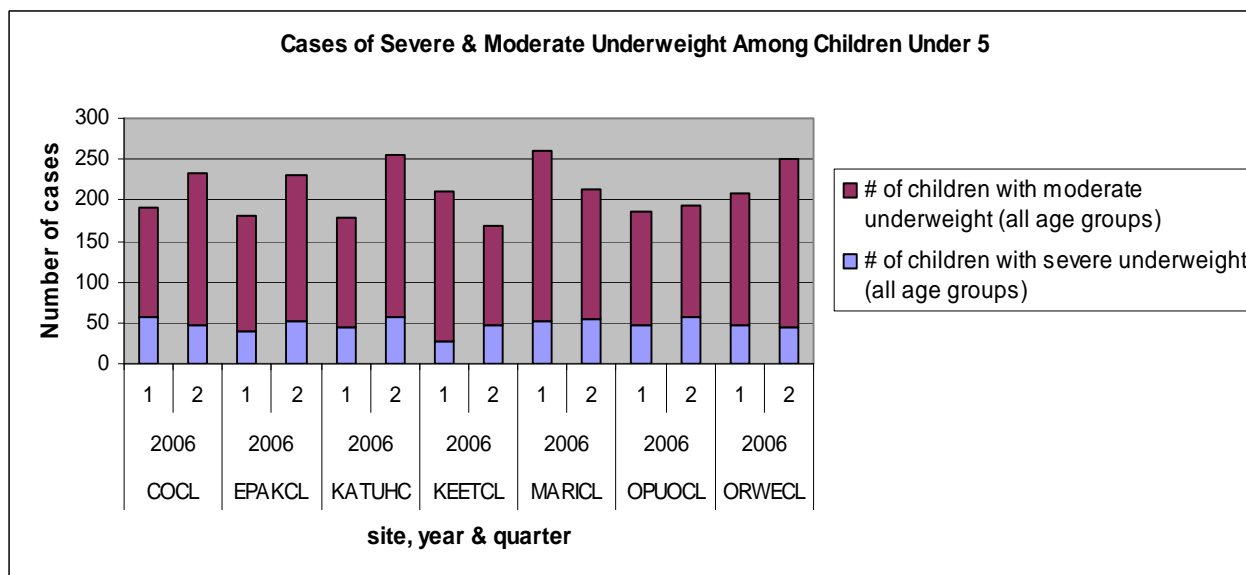
Produced by the Nutrition Subdivision of the  
Ministry of Health and Social Services

# Underweight Indicators

## North<sup>1</sup>



## Central & South<sup>2</sup>



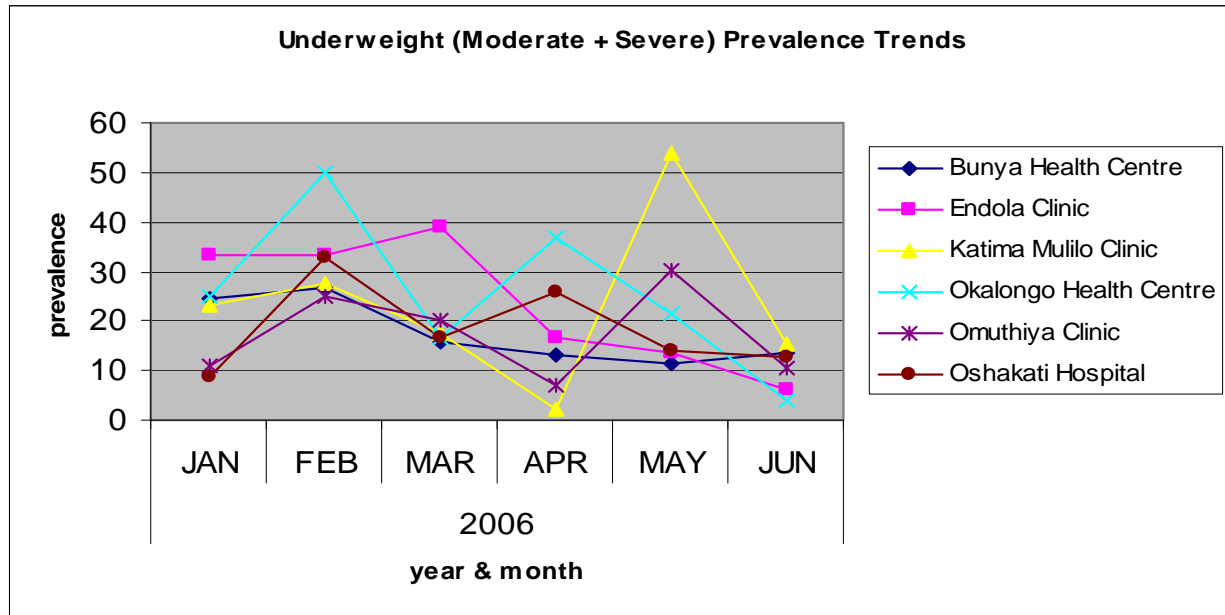
### Comments:

*Comments and implications for interventions will need to be defined as the system develops.*

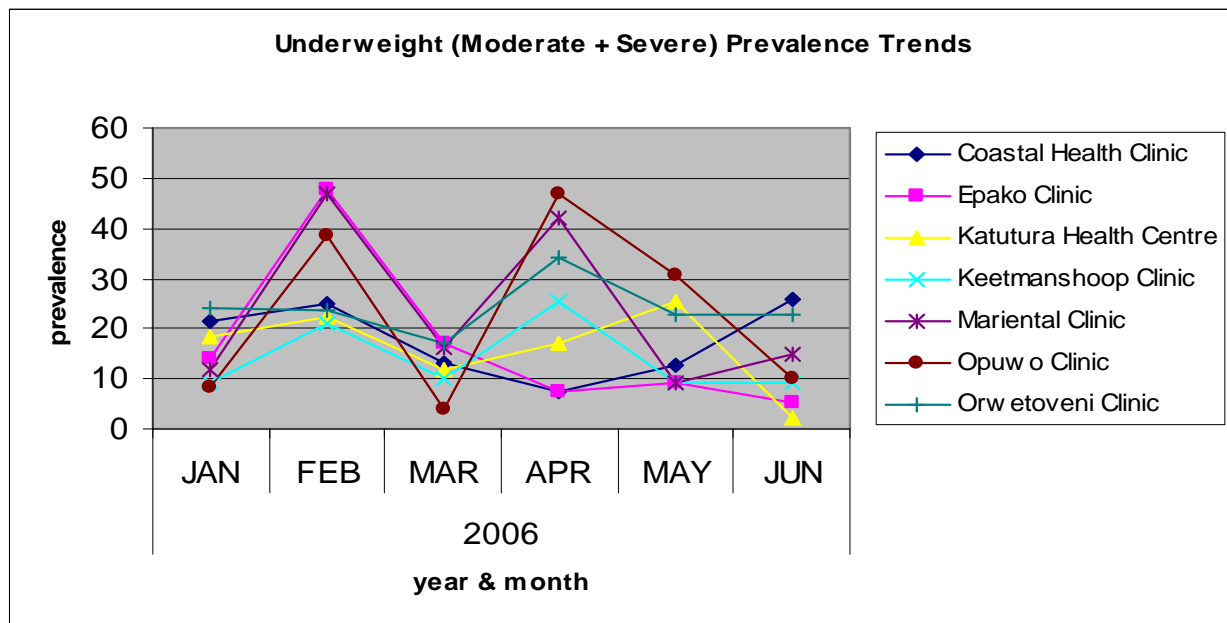
<sup>1</sup> North= Caprivi, Kavango, Ohangwena, Omusati, Oshana, and Oshikoto.

<sup>2</sup> South= Karas, Khomas, Kunene, Omaheke, Otjozondjupa, Erongo, and Hardap.

## Underweight among Children 6-11 Months - North



## Underweight among Children 6-11 Months - Central & South



Comments:

### Underweight Prevalence Change among Children 6-11 Months

Region	District	Site	Total Weighed This Quarter	Prevalence this Quarter	Total Weighed Last Quarter	Prevalence Last Quarter	Change	% Change	Prevalence Same Quarter of Last Year	Change	% Change
Caprivi	Katima Mulilo	KAMUCL	552	22.36	883	12.68	9.68	43.30	-	-	-
Erongo	Walvis Bay	COCL	557	19.78	793	15.34	4.44	22.46	-	-	-
Hardap	Mariental	MARICL	434	35.14	748	12.29	22.85	65.03	-	-	-
Karas	Keetmanshoop	KEETCL	462	26.30	753	7.30	19.00	72.24	-	-	-
Kavango	Rundu	BUNYHC	630	22.87	1199	23.85	-0.99	-4.31	-	-	-
Khomas	Windhoek	KATUHC	420	17.45	724	14.90	2.56	14.66	-	-	-
Kunene	Opuwo	OPUOCL	625	13.46	745	14.62	-1.16	-8.59	-	-	-
Ohangwena	Engela	ENCL	598	25.16	813	22.13	3.03	12.04	-	-	-
Omaheke	Gobabis	EPAKCL	625	30.45	765	20.77	9.69	31.81	-	-	-
Omusati	Oshikuku	OKALHAC	779	18.50	831	15.77	2.73	14.75	-	-	-
Oshana	Oshakati	OSHAHO	910	16.95	618	29.24	-12.29	-72.54	-	-	-
Oshikoto	Onandjokwe	OMUTHCL	683	21.63	743	26.61	-4.98	-23.04	-	-	-
Otjozondjupa	Otjiwarongo	ORWECL	538	19.45	951	17.50	1.95	10.01	-	-	-

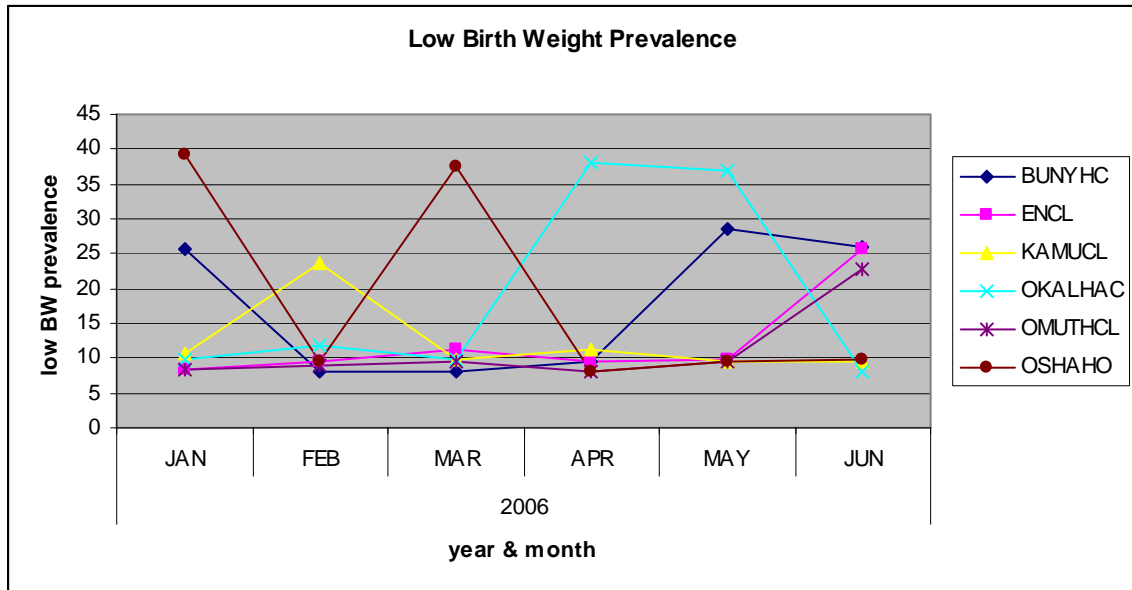
Change calculated by subtracting prevalence this quarter from prevalence last quarter. A positive number indicates an increase in underweight, or worsening nutrition status.

Comments & Conclusions on Underweight Trends:

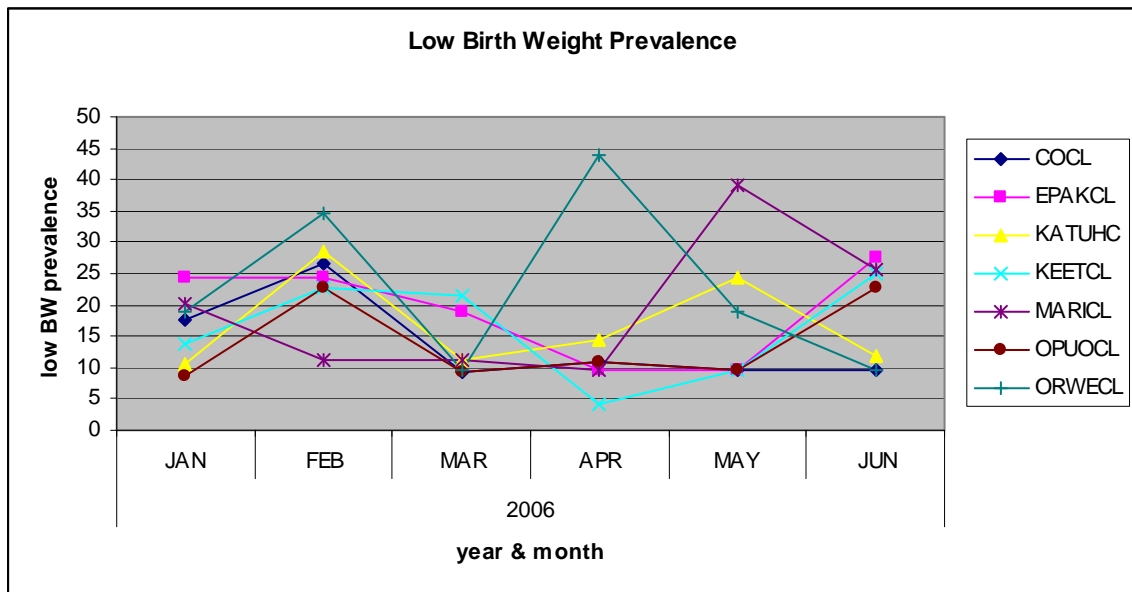


## Low Birth Weight Indicators

### North



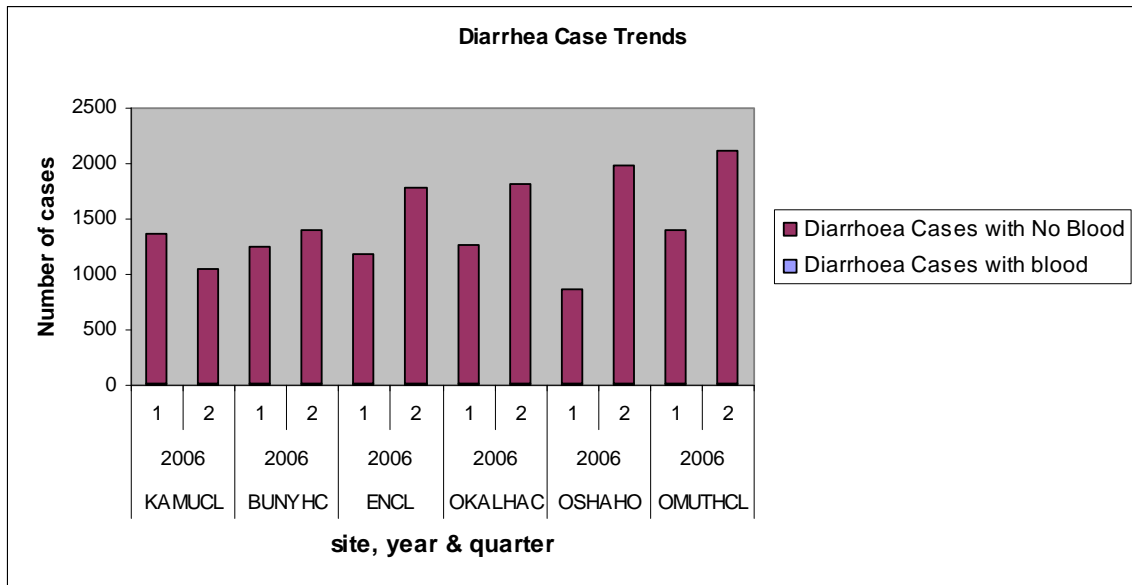
### Central and South



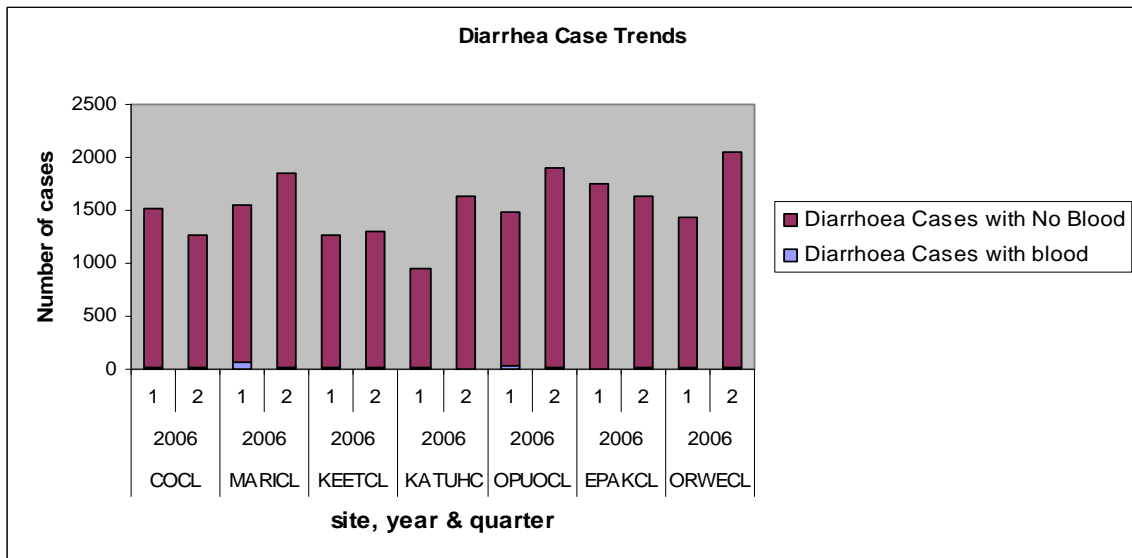
**Comments:**

## Diarrhea Indicators

### Diarrhoea among Children <5 - North

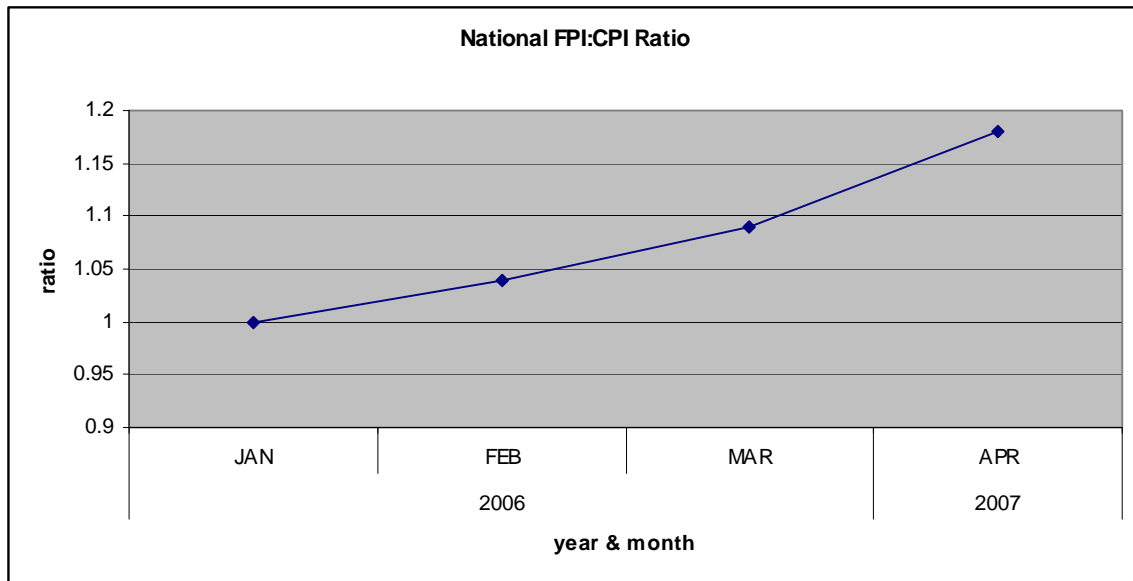


### Diarrhoea among Children <5 - South



**Comments:**

## Consumer & Food Price Index



### Comments:

### Overall Recommendations:

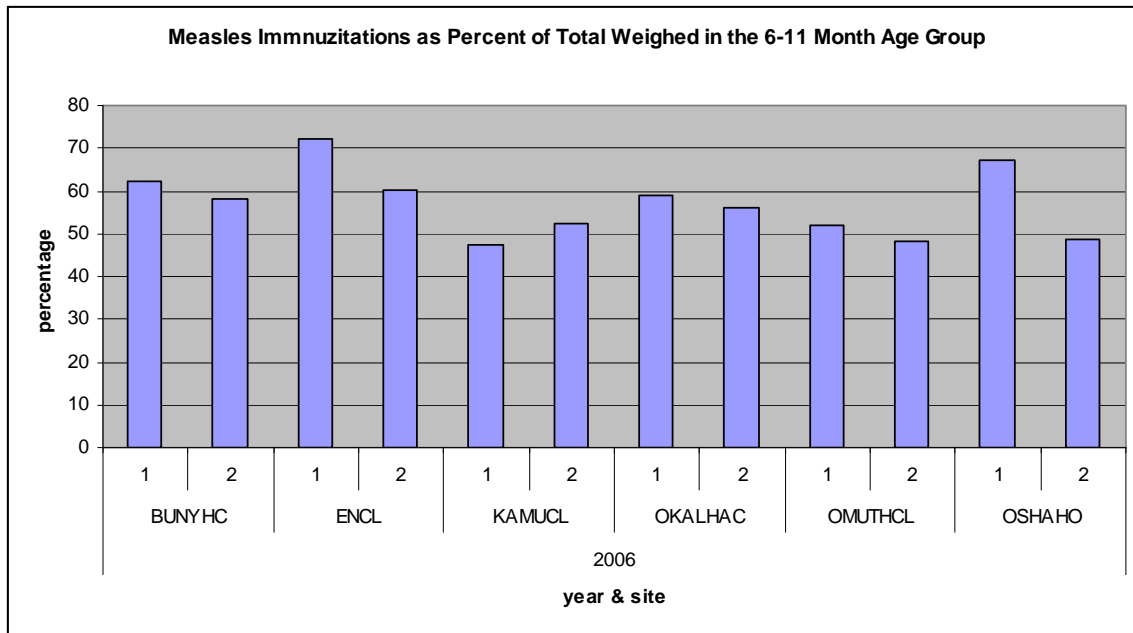
*This section should include recommendations for further investigation or action if a problem (e.g. peak in malnutrition) has been identified in a sentinel site.*

## Subsection for Internal Reporting

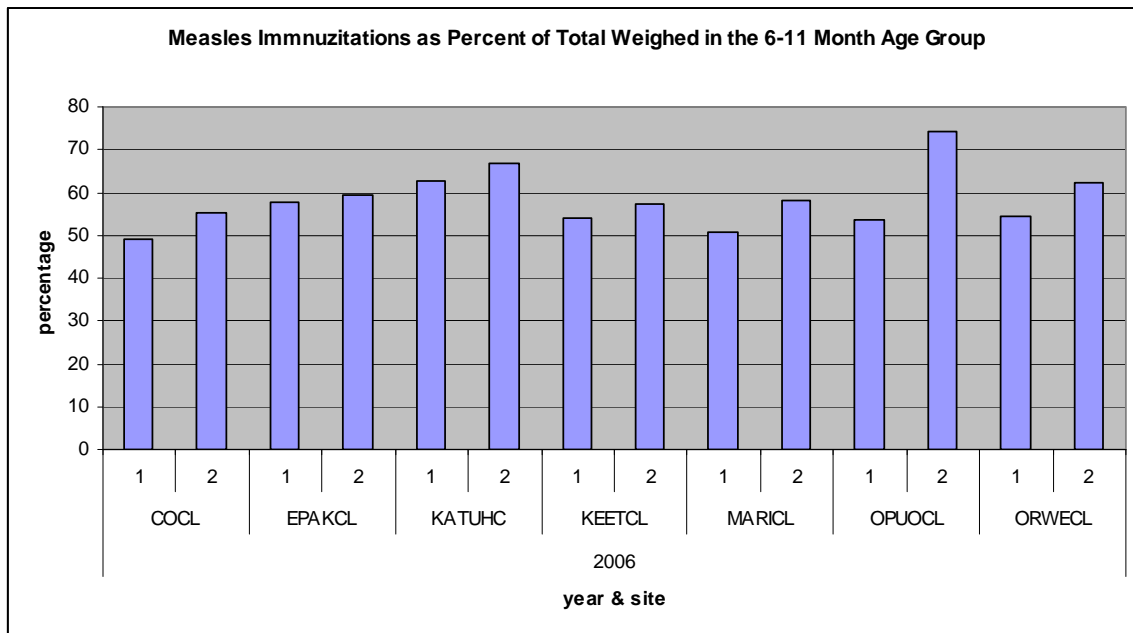
### Summary

# Monitoring Sample Bias

## North



## South



Comments:

### Immunization Coverage (to be included once a year)

Region	District	Site	Number of Children <1 immunized for measles	Target population <1 year in catchment area	Immunization Coverage (%)*
Caprivi	Katima Mulilo	KAMUCL			
Erongo	Walvis Bay	COCL			
Hardap	Mariental	MARICL			
Karas	Keetmanshoop	KEETCL			
Kavango	Rundu	BUNYHC			
Khomas	Windhoek	KATUHC			
Kunene	Opuwo	OPUOCL			
Ohangwena	Engela	ENCL			
Omaheke	Gobabis	EPAKCL			
Omusati	Oshikuku	OKALHAC			
Oshana	Oshakati	OSHAHO			
Oshikoto	Onandjokwe	OMUTHCL			
Otjozondjupa	Otjiwarongo	ORWECL			

\* = (number of children <1 immunized for measles for year x/target population under 1)\*100.

Comments:

## IMPLEMENTATION OF NUTRITION SURVEILLANCE AND GROWTH MONITORING

### Timely Reporting

*Based on information captured on the monthly Data Capturing Forms for Nutrition Surveillance and monitoring visits (by Food and Nutrition sub-division staff), please comment here on timeliness issues, i.e. is the data communicated on a timely basis (i.e. by the 5<sup>th</sup> of each month) from all sentinel facilities. If not, which sites are having difficulties reporting on time, why (what are the constraints?) and what can be done to overcome these constraints?*

### Data Accuracy

*In this section, based on the information captured on the monthly Data Capturing Forms for Nutrition Surveillance and monitoring visits (by Food and Nutrition sub-division staff), please comment on data quality/accuracy, i.e. do the figures provided by health workers in sentinel sites tally? Are there data recording mistakes or any other issue affecting the accuracy of the data? Please explain what should be done to overcome this problem.*

Nutrition Surveillance Implementation Constraints
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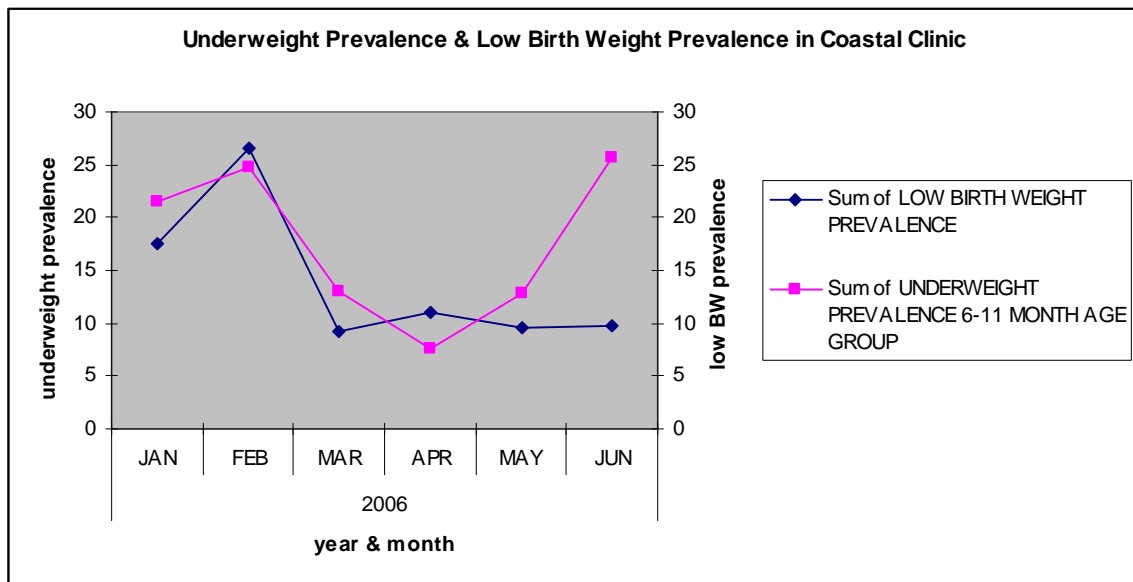
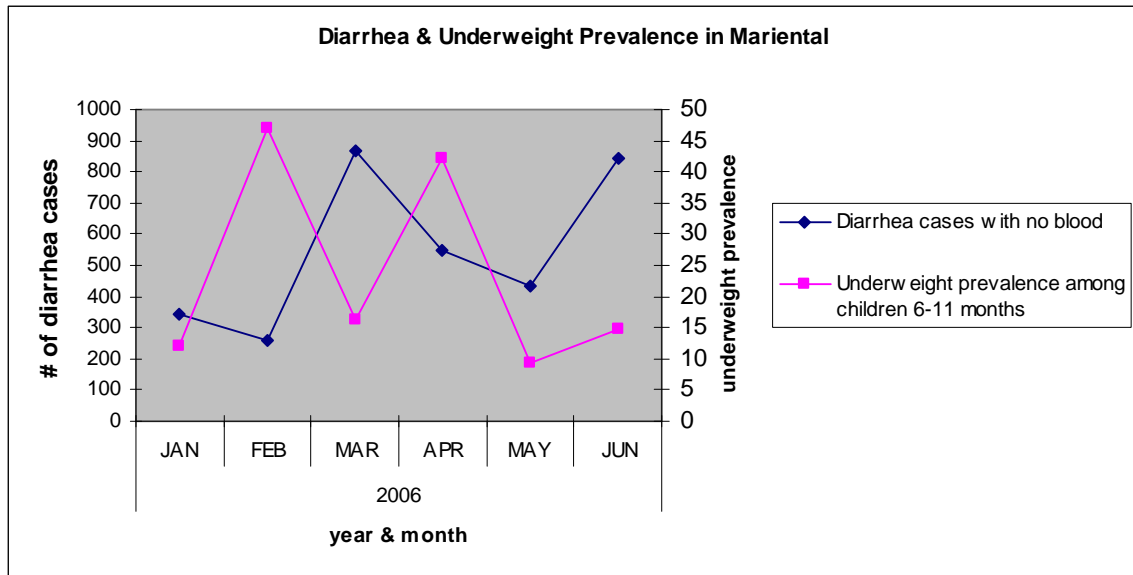
<p><i>Based on the information captured on the monthly Data Capturing Forms for Nutrition Surveillance and monitoring visits (by Food and Nutrition sub-division staff), please describe any constraint related to the implementation of nutrition surveillance (e.g. problems with scales, staffing constraints, poor attendance at growth monitoring etc.).</i></p>
---

Growth Monitoring Programme
-----------------------------

<p><i>Please insert here any information that you may want to share on the implementation of growth monitoring and its impact on child nutrition. Also comment on “information-based action”, i.e. follow-up of malnourished children, counseling and multi-sectoral assistance (e.g. social support, food supplement etc.) and identify related constraints and possible solutions. Please also mention best practice where it has been identified.</i></p>
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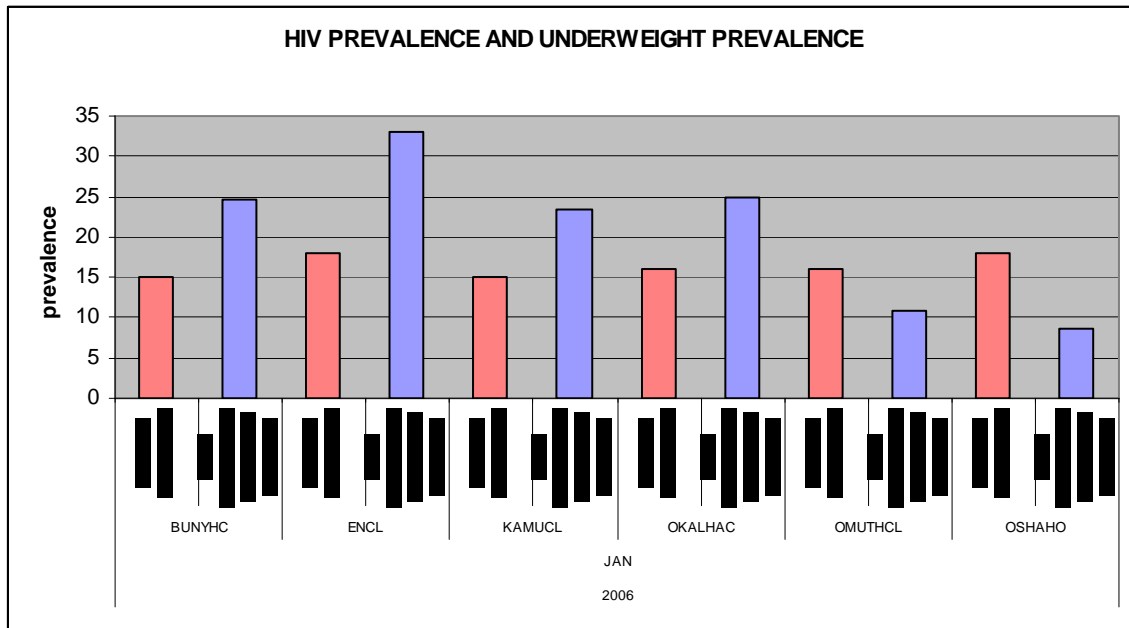


## Additional Analysis

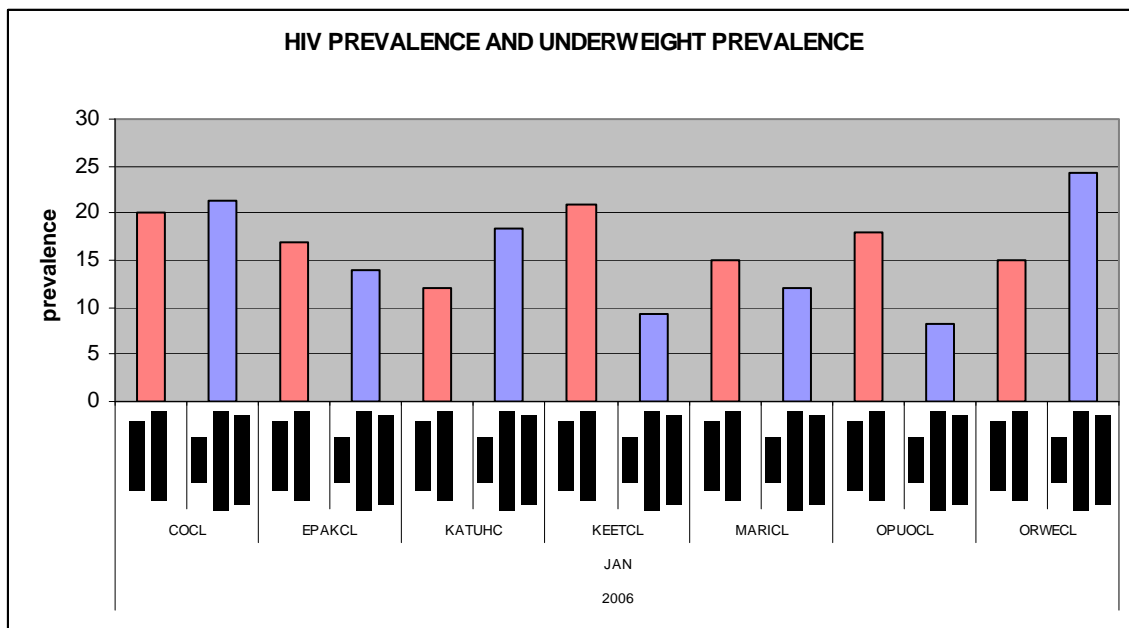


Comments:

## North



## Central & South



Comments:

## Recommendations

1. Nutrition Surveillance for Timely Warning

2. Programme Management

## **Terminology:**

- **Underweight:**
- **Moderate Underweight:**
- **Severe Underweight:**
- **Low birth weight:**
- **Consumer Price Index:**
- **Food Price Index:**
- **CPI/FPI ratio:**

## **Methodology:**

- **Sentinel sites selection:**
- **Data collection and reporting:**
- **Underweight trends: Using children 6-11 months as a proxy for all children under 5:**

## **Annex 9**

# **Interpreting Selected Nutrition Surveillance Indicators**

**Primary Analysis-** this analysis is meant to detect changes in nutrition status

### **1. Cases of Severe and Moderate Underweight**

Looking simply at the number of cases of severe and moderate underweight is not regularly used to evaluate nutrition status of a population. Without a denominator it is difficult to determine the extent of the problem in the population, but for clinic-based nutrition surveillance there is obvious value to this indicator. A sudden spike in the cases of severe and moderate underweight will signal possible change in the nutrition status of the community (that is, if more malnourished children come to health facilities, it is likely that there is more malnutrition).

### **2. Underweight Prevalence Trends and Change**

Underweight prevalence change, like a change in the number of cases of underweight, will signal a possible nutritional shift in the community. With prevalence we can determine the extent of this change in the catchment area population. Using only the 6-11 month age group will give a sample with wide coverage, but can not be considered completely representative of other age groups. The cause of changes in the 6-11 month age group may be different from those in other age groups, and changes in other age groups won't necessarily appear in the 6-11 month age group. For the most part, factors affecting childhood nutrition will affect all children not breastfeeding, but there are circumstances in which this is not the case and it is important to keep these in mind.

### **3. Low Birth Weight**

Low birth weight is an immediate indicator of the mother's nutritional status and can also serve as a forecast for future underweight children.

### **4. Diarrhea**

Diarrhea plays a large role in the malnutrition-infection cycle. Rising rates in diarrhea will many times be quickly followed by rising underweight prevalence and vice versa.

### **5. Food and Consumer Price Indexes**

Food and consumer price indexes represents households' purchasing power. It is especially important in vulnerable communities because any change in food prices will affect people's ability to buy food. Indeed, changes (increases) in food prices tend to result in reduced access to food. FPI/CPI is thus an indicator of the relative price of food and has shown to be related to malnutrition in previous studies. The FPI:CPI ratio tends

to be relatively stable; however, if the ratio goes beyond 1.05 or 1.1 it signals increasing food insecurity and usually precedes an increase in malnutrition by one or two months.

#### **6. Measles Immunization as % of total weighed in the 6-11 month age group (for internal report only).**

This indicator enables to monitor the representativeness of our sample for underweight (i.e. children 6-11 months). The larger the percentage of children immunized out of the total number of 6-11 months weighed, the more representative the sample (keep in mind the objective is to monitor children who come at 9 months for immunization). Therefore this indicator must stay high (above 50%) for the prevalence to be representative.

#### **7. Measles Immunization Coverage (table to be produced at least once a year)**

This indicator also enables to monitor the representativeness of our sample for underweight (children 6-11 months). The highest the immunization coverage, the highest the proportion of children who get weighed at 9 months and thus the more representative the sample. Therefore coverage must stay high for the prevalence to be representative.

**Additional Analysis-** this analysis is meant to explore the relationship between indicators in order to determine the cause of change.

#### **1. Diarrhea & Underweight**

To understand the malnutrition-infection cycle better these indicators can be plotted together.

#### **2. Low Birth Weight & Underweight**

The relationship between low birth weight and underweight can also be cyclical. If nutrition status falls and mothers give birth to low birth weight babies, those babies are more likely to be underweight in the future. Also, many external events, such as a food shortage are likely to have an effect on both mothers' and children's nutritional status; therefore you would expect trends in low birth weight and underweight to go in the same direction.

#### **3. HIV & Underweight**

HIV, a slow onset disaster in many places, is adversely affecting nutrition. The relationship may be different in different communities and should be monitored.

#### **4. Immunization Coverage & Underweight**

Immunization coverage is an important indicator to determine how representative the 6-11 month age group is of the general population. If children are only coming to the clinic

for immunizations and when they are sick, prevalence can only be determined by the 9 month olds coming in for immunization. Coverage must stay high for the prevalence to be representative. If coverage drops the sample will be dominated by the 0-5 month age group and prevalence will likely drop.

# NUTRITION SURVEY FOR UNDER 5 YEAR OLDS, NAMIBIA, 2004

*NB: Please refer to explanation guide before filling out questionnaire.*

**Region:**.....**Constituency:**.....**Village:**.....

Interviewer Name (clinic+name):.....

Date of Interview (dd/mm/yyyy):.....

**Name of Child:**.....

Name of Head of Household: .....Age:.....

Name of Mother/Guardian: .....Age:.....

Education level of Mother/Guardian: Highest Grade Completed (.....), Tertiary Level (.....)

Main Language spoken in the home: .....

## 1. NUTRITION AND ANTHROPOMETRICS: NB Children <85cm should be measured lying down

<b>Does child have a birth certificate?</b> Yes = 1 No = 2	<b>Sex</b> Male = 1 Female = 2	<b>Height/Length</b> Cm (to 0.1cm)	<b>MUAC</b> Cm (to 0.1 cm)	<b>Is the child's mother alive?</b> Yes = 1 No = 2
<b>Date of birth</b> (dd/mm/yyyy)	<b>Age</b> (in months)	<b>Weight</b> (Kg to 100g)	<b>Oedema</b> Yes = 1 No = 2	<b>Is the child's father alive?</b> Yes = 1 No = 2

## 2. MORBIDITY: "HAS THE CHILD BEEN ILL OVER THE PAST 2 WEEKS?"

<b>A. Diarrhoea</b>	<b>B. Fever/Difficulty Breathing</b>	<b>C. Fever &amp; Chills</b>
Yes = 1      No = 2	Yes = 1      No = 2	Yes = 1      No = 2

## 3. VACCINATION STATUS

## 4 a. VITAMIN A STATUS

*(Is the child fully immunized for their age group?) (Has child received Vitamin A in last 6 months)*

<b>A.</b>	Yes = 1	No = 2	3 = DK	Confirmed Yes=1 No=2	<b>B.</b>	Yes = 1	No = 2	3 = DK	No. of Vit A capsules ever received
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**4b. Does this child have difficulty seeing at night or in the evening when other people do not?**

Yes = 1	No = 2	3 = DK
---------	--------	--------

## 5. CARE PRACTICES:

<b>5 a.</b>	<b>"Is the child being measured currently being breastfed?"</b>	Yes = 1	No = 2
<b>5 b.</b>	<b>"How many times did the child receive solid food yesterday?"</b>	(.....)Times	

**5 c. "When the child was ill the last time, where was treatment sought?" (Circle all that apply)**

1.	No treatment outside the home was sought	5.	A traditional healer was consulted
2.	A health centre/clinic was visited	6.	A private physician was consulted
3.	A hospital was visited	7.	An outreach clinic was visited
4.	Medication was bought without the child being seen by anybody outside the home	8.	Other (specify): .....

**5 d. "How far is it and how long does it take to walk to the health clinic?".....kms.....minutes**



**LIST OF DATA COLLECTED IN NUTRITION SURVEY, NAMIBIA 2004*****IDENTIFYING INFORMATION:***

- A. Region**
- B. Constituency**
- C. Village**
- D. Interviewer name**
- E. Date of interview**
- F. Name of Child**
- G. Head of Household name and age** (*Note: 'Age' refers to 'age at last birthday'*)
- H. Mother/Guardian name and age** (*Note: 'Age' refers to 'age at last birthday'*)
- I. Education level of Mother/Guardian**
- J. Major language spoken in the home**

***NUTRITION AND ANTHROPOMETRICS:***

- K. Birth Certificate of Child**
- L. Date of birth**
- M. Age in Months**
- N. Sex**
- O. Length (<85cms) or height (>85cms)**
- P. Weight**
- Q. MUAC**
- R. Presence of Oedema**

***ORPHAN STATUS***

- S. Father alive**
- T. Mother alive**

***MORBIDITY: "HAS THE CHILD BEEN ILL OVER THE PAST 2 WEEKS?"***

- U. Diarrhoea in last 2 weeks**
- V. Fever/Difficulty breathing in last 2 weeks**
- W. Fever and Chills in last 2 weeks**

***VACCINATION STATUS***

- X. Vaccination status and whether confirmed**

***VITAMIN A STATUS***

- Y. Vitamin A Supplementation in last 6 months and total number of Vitamin A capsules received**
- Z. Night blindness**

***CARE PRACTICES***

- AA. Breast feeding**
- BB. Number of meals yesterday**
- CC. Where was medical treatment sought and how many minutes walk from home**

## EXPLANATION GUIDE

### PART I – DUTIES OF SURVEY TEAM MEMBERS

#### Interviewers

##### Duties

1. Introduce the survey to the people in each new household and obtain the necessary consent (refer to Part II).
2. Ask the questions, make measurements, and record the answers on the data collection form.
3. Be sure that all questions have been asked and that all answers have been recorded.

##### Points to remember

1. The questions about children less than 5 years of age being surveyed should be asked of the mother of that child or the person who takes care of that child most of the time.
2. If you arrive at the household and no one is home, write this on the form. You should stop at this household at least 2 more times before leaving the village. Record the number of visits on the form.
3. For questions where possible answers are listed on the data form, circle the one that matches the respondent's answer. For questions with a blank, write clearly the number or answer the respondent gives.
4. Be sure you understand the exact purpose of each question. This will help you to know if the responses you are receiving are good.
5. Ask the question exactly as it is written. Even small changes in wording can change the meaning of the question.
6. Ask the questions in the same order as they are written on the data collection form (except for the weight, height and MUAC, which are done at the end of the interview).
7. Ask all the questions even if the respondent has already answered one.
8. Give the respondent enough time to respond. It may take some people a few moments to remember answers.
9. Many respondents will have difficulty determining their ages, ages of children, and dates. Be sure to inquire carefully.
10. Be sure you do not suggest answers to any question.
11. Do not leave a question unanswered unless the instructions say to skip that question. Always fill something in each space on the data collection forms. If the respondent does not know the answer, circle the response "Unknown" or fill in the code for "Unknown." This way the supervisor will know that you have asked every question on the data collection form.
12. Write down the answers to each question immediately after the respondent has given the answer.
13. Check the entire form for completeness at the end of the interview part and at the end of data collection for each household. Be sure to do this before leaving the household.

#### Supervisors

##### Duties

1. Oversee all activities of the survey team members to be sure that all methods follow those demonstrated during the survey training.
2. Ensure the safety and working atmosphere for the survey team.
3. Inform the village leaders of the purpose and methods of the survey.

4. Clarify questions about methods from survey team members.
5. Review every data collection form for correctness and completeness after data collection is completed and before the team leaves the household.
6. Organize completed data collection forms.

### Points to remember

1. Data collection forms are often incompletely or unclearly completed, especially in the first few days of the survey before team members have practiced. Therefore, review of data collection forms before leaving the household is very important. Missing data can be collected or unclear answers can be clarified after the survey team has left the village. Be sure all writing is legible.
2. Be sure the households have been selected according to the methods described in the training and in the sampling instructions.
3. Be sure that every possible effort is made to locate children less than 5 years of age and women of reproductive age living in each selected household. If a child or woman is not at home, but nearby, send someone in the family to bring them for weighing and measuring. If a child or woman will not be home before the team must move to the next household, there is no need to wait a long time. You can return to the household after the remaining households in the village are completed.
4. Be sure that all procedures are being done in field as taught in the survey training. Supervisors should monitor:
  - a. Interviews – be sure interviewers are reading the questions as written on the data collection and accurately recording respondents' answers.
  - b. Anthropometric measurements – be sure all measurements are taken according to correct procedures and recorded clearly on the data collection form. For MUAC on women, be sure that examiners are accurately determining the midpoint of the upper arm for measurement. If it is not possible to completely remove children's clothing for height and weight measurements due to cold weather, be sure to remove as much clothing as possible and for every 10<sup>th</sup> child, remove and record the weight of the clothing.

## **PART II – CONSENT PROCEDURES**

Consent should be obtained from the mother/guardian for the Nutrition Survey and the head of the household or other adult member of the household before beginning data collection. Interviewers or other survey team members who obtain consent should cover the following points:

All participants will be requested for their consent to the study after the team's arrival at the household:

- We are studying the problem of malnutrition among young children in Namibia.
- We would like to ask you some questions about the health of children under 5 years of age in your household. Then we would like to weigh and measure the children.
- The Ministry of Health and Social Services and other organizations will use these results to help people in this area. Also, if we find something in your child, we will tell you and refer you to the nearest health center or hospital for your child to receive treatment.
- The participation of you, your household, and any member of your family is voluntary. You may refuse to participate in the whole survey or any part of it.

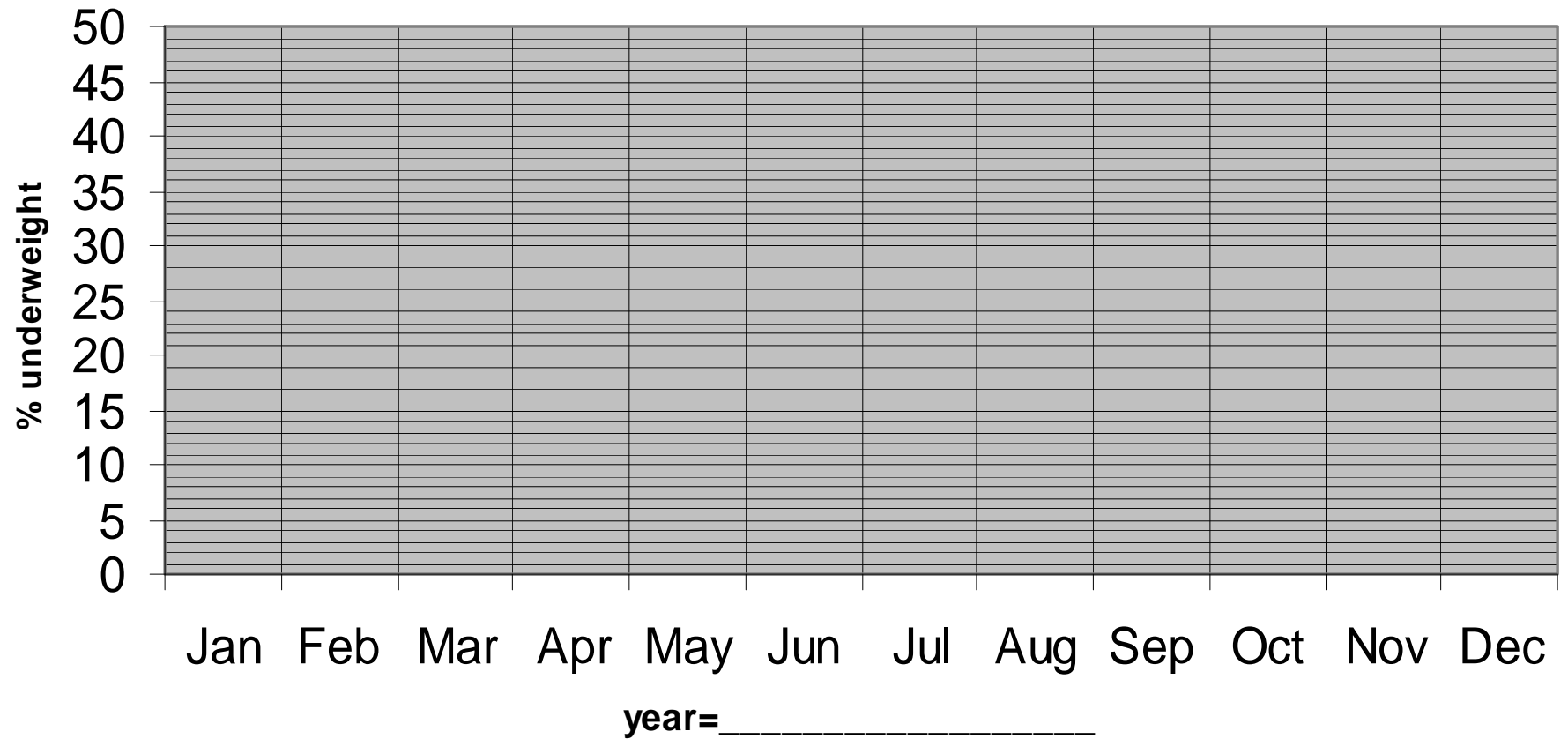
Do you agree to be in this study?

## Annex 11

### **Facility-Level Charts for Monitoring Trends in Underweight and Diarrhoea**

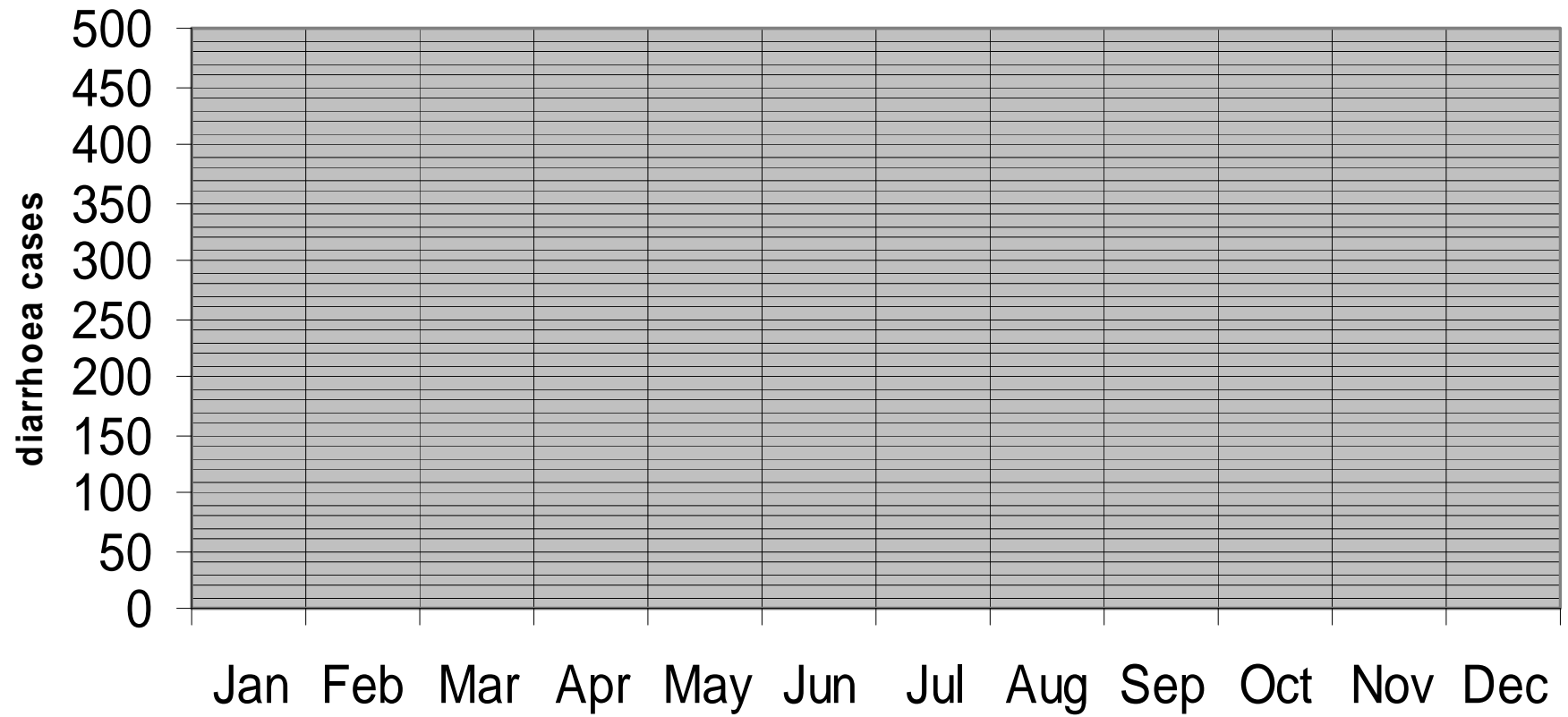
**Guidelines:** The charts below should be used in all health facilities as they enable to visualize trends in underweight and diarrhea at facility level. At the end of each month, health workers responsible for growth monitoring and nutrition surveillance should plot (manually) underweight prevalence among children 6-11 months and number of diarrhoea cases among children under 5. Note that there are three charts for diarrhea cases, each of which have a different scale (i.e. 0-500; 0-250; 0- 1000). Health facilities will choose to use only one chart; their choice will depend on the average number of diarrhea cases (among <5) and usual month-to-month variations. These charts should be used by health workers to monitor and understand underweight trends over time and identify patterns (e.g. significant peak in malnutrition) which require specific action.

### Underweight Prevalence of 6-11 Month Old Children



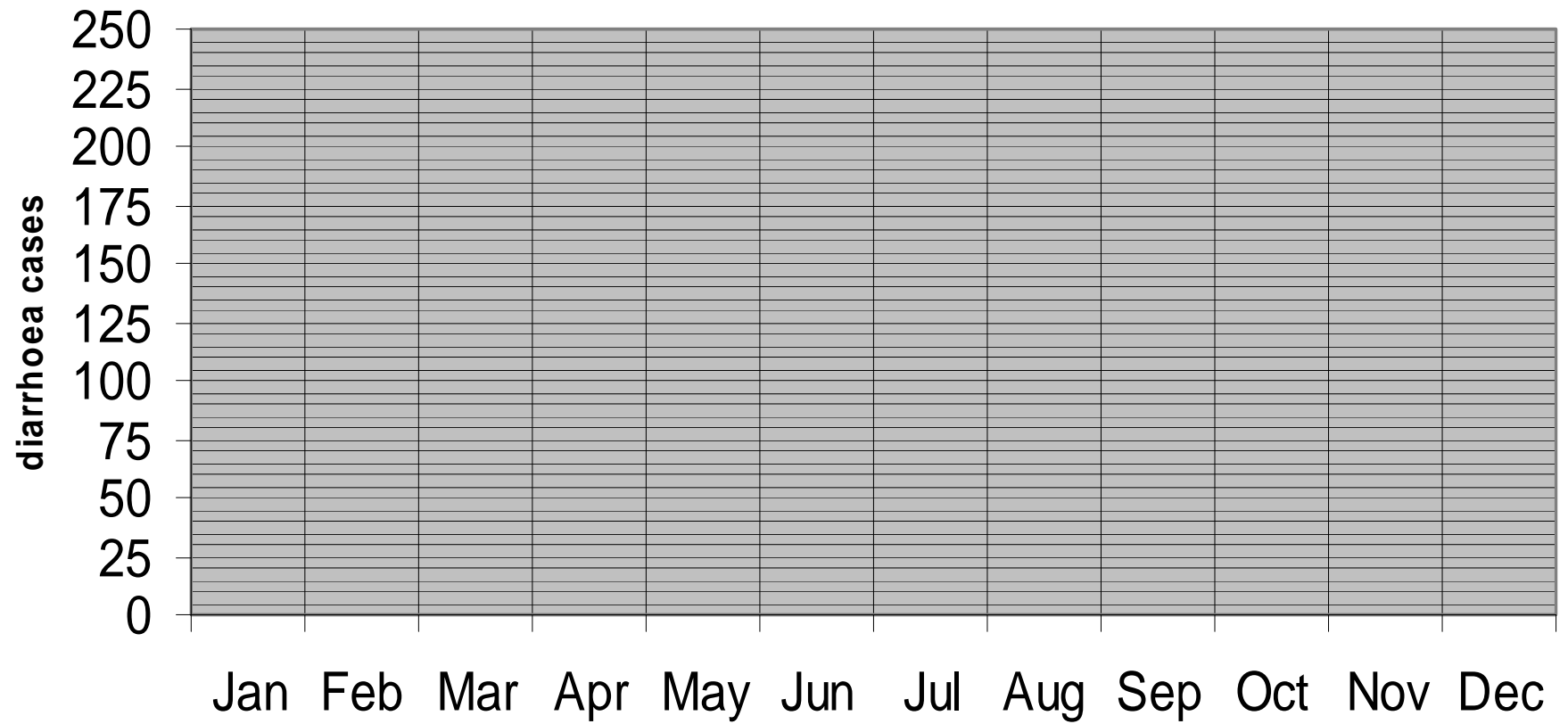
*Prevalence = Total Underweight (6-11 month age group) / Total Weighed (6-11 month age group) \* 100*

Diarrhoea Cases by Month



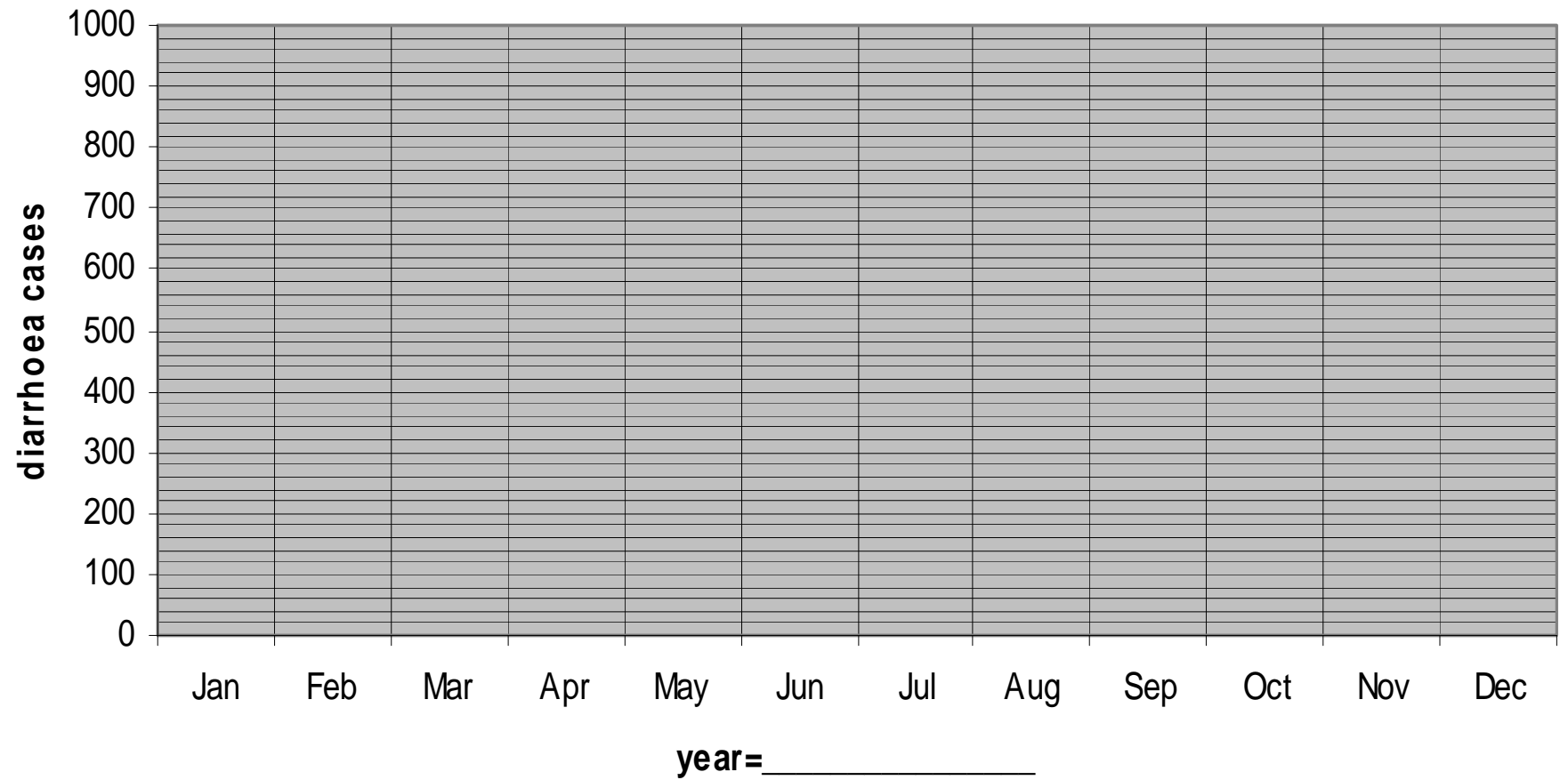
year=\_\_\_\_\_

Diarrhoea Cases by Month



year=\_\_\_\_\_

## Diarrhoea Cases by Month





## Annex 12

### Workplan for Nutrition Surveillance and Other Related Activities: for Action by MoHSS, UNICEF and Tulane.

#### I - Activities for the Implementation of Sentinel Sites Nutrition Surveillance

##### **1. Present Sentinel Sites Nutrition Surveillance (and other mission's suggestions) to various officials/audiences for endorsement.**

M. Van Wyk will have to present the Sentinel Sites Nutrition Surveillance project (and other mission's suggestions) to the following audiences for endorsement:

- a) Dr. Forster's Department
- b) Ministerial Management
- c) VAC

A Power Point presentation has been prepared by S.C and can be used for the above-mentioned purposes.

The above-mentioned meetings will need to take place in the course of November.

M. Van Wyk at MoHSS is responsible for this task (i.e. organizing meeting and presenting).

##### **2. Develop Nutrition Surveillance Implementation Manual and Training Material for Sentinel Sites Nutrition Surveillance.**

An implementation manual and material for training of health workers in sentinel facilities on the implementation of sentinel sites nutrition surveillance need to be developed asap.

It has been agreed with MoHSS and UNICEF that the training material should include the following modules:

- a) **Introduction to malnutrition** (types, causes and conceptual framework) and good nutrition/feeding practices for children under five.
- b) **Introduction to nutrition assessments** (review of anthropometric and other indicators, methodologies for collecting nutrition data, i.e. cross-sectional surveys, surveillance, growth monitoring etc.).
- c) **The Namibia Sentinel Sites Nutrition Surveillance System** (purpose and objectives, surveillance design, implementation modalities, expected output/reports, linkages with early warning, use of information for decision-making etc.).
- d) **Implementation of nutrition surveillance at facility level.**
- e) **Standardized weighing methods, determination of age and assessment of nutritional status** (this module should include one or more practical session(s), i.e. weighing children etc.)

- f) **Recording and compiling data, performing data quality control, calculating prevalence, conducting basic analysis** (plotting trends on line chart), **interpretation, and reporting** (NB: should include a session on estimation of target population for coverage).
- g) **Linking Information with Action:** The Triple A Cycle, growth promotion, follow-up of malnourished children, establish support services for children in difficulty etc.

It has been suggested that the training material be developed by Joel Conkle from New Orleans, in consultation with Marjorie Van Wyk and Joyce Shatilwe at MoHSS. Efforts should be made to use existing material from MoHSS when available (M. Van Wyk has guidelines/training material on basic nutrition, breastfeeding, nutrition and HIV). For this reason, close consultation with MoHSS for the development of the guidelines is essential. The training material should include presentations for various training sessions, material for exercises/activities carried out during sessions and hand-outs. All the material should be compiled into a booklet which can serve as the Manual for implementation of sentinel sites nutrition surveillance at facility level.

This task should be completed by 31 December 2006.

NB: Sophie Chotard wrote notes on training content and possible sources. These notes should be passed onto Joel Conkle.

### **3. Finalize List of Sentinel Sites and Contact List**

The pre-selection of sentinel facilities has been carried out. We are now waiting for feedback from the regions (health directorate staff). Three regions have given final feedback, i.e. Khomas, Omusati and Oshikoto. For these regions, the selection of sentinel facilities is considered final. For the other 10 regions, MoHSS should get in touch with regional health directors/administrators to finalize the selection of sentinel facilities. For this task, two main aspects need to be taken into account: 1) the average number of children 6-11 months weighed per month (the minimum was set at 30); 2) the agro-ecological zone in which the site suggested by the region is (if different from the one pre-selected). It would be preferable if the suggested sites are located in the same agro-eco zone as the sites pre-selected.

Once the list of sentinel facilities has been finalized, the contact list for health workers in sentinel facilities and sentinel districts (PHC programme administrators) should be established. This list will be used when contacting health workers in sentinel facilities on a monthly basis to obtain nutrition surveillance information.

M. Van Wyk and J. Shatilwe at MoHSS are responsible for this task. The selection of sites should be completed by 15 November 2006; the contact list by 31 December 2006.

#### **4. Finalize Sentinel Sites Nutrition Surveillance Tools**

While all implementation tools have already been developed, some of them might require minor changes. For instance, J. Mason suggested modifications of the HIV/underweight graph. This requires modification of the database and Nutrition Surveillance Bulletin template. In addition, once the list of sentinel sites is finalized; modifications to the Excel database (i.e. MASTER DATABASE worksheet and NAT'L FPI-CPI Database worksheet) and to the Bulletin template (table on change in underweight prevalence and names of sites in graphs) will be required.

A monitoring checklist (for sentinel sites nutrition surveillance) to be used by Food and Nutrition sub-division personnel during their monitoring visits to sentinel facilities should also be developed.

Joel Conkle has agreed to follow-up on the finalization of the tools, and will be working from New Orleans in consultation with J. Mason, S. Chotard and M. Van Wyk.

This task should be completed by 30 November 2006.

#### **5. Plan and Conduct Meeting with Representatives from Regional and District Health Directorates on Sentinel Sites Nutrition Surveillance.**

It has been agreed with M. Van Wyk and T. Muryini that MoHSS would call for a meeting (in Windhoek) with regional and district health directorates to brief them on Sentinel Sites Nutrition Surveillance. The meeting should not take longer than ½ day (or a day). MoHSS and UNICEF will try and piggyback on the RED meeting scheduled for the third week of November (starting November 13) with the same participants, and add an extra ½ day or full day (to save costs and time) to present Sentinel Sites Nutrition Surveillance.

This task should be completed by 15 December 2006.  
MoHSS should be responsible for this activity.

#### **6. Plan Training in Sentinel Sites Nutrition Surveillance for Health Workers**

The training for health workers and District PHC programme administrators in Nutrition Surveillance should be planned by end of 2006 and take place in January. This requires identifying training dates, location, participants and informing participants (and regional directors) with official correspondence.

This task should be completed by 31 December 2006.  
MoHSS (M. Van Wyk and J. Shatilwe) should be responsible for this activity.

#### **7. Produce a “Draft/Trial” Nutrition Surveillance Bulletin for Quarter 4 2006.**

MoHSS has suggested that a “draft/Trial” nutrition surveillance bulletin be produced for the last quarter of 2006 based on HIS data from sentinel facilities. This will enable a) practicing data entry, analysis and report writing and b) providing a bulletin example with real data to be shown to health workers during training sessions. This bulletin should be kept internal and interpretation will have to be handled carefully in light of the known constraints associated with GMP and HIS under their current form.

MoHSS (M. Van Wyk and J. Shatilwe) should be responsible for this task, with technical guidance from Tulane (JC and JM from New Orleans).

The draft bulletin should be produced before the nutrition surveillance training sessions are conducted in January.

## **8. Conduct Training in Nutrition Surveillance for health facility staff and District PHC programme administrators.**

Participants to the training on sentinel sites nutrition surveillance should include the main person(s) responsible for nutrition surveillance at facility level, his/her alternate and the district PHC programme administrators from sentinel districts.

Training should be conducted over two to three days with repeated practical sessions for weighing, assessment of nutritional status and data recording/compilation.

If we plan on a total of 39 participants minimum (i.e. minimum 2 health workers per health facility + district PHC programme administrators from each sentinel district), we will need to conduct, if possible, 4 training sessions – 3 would be the minimum, since ideally we want about 10 persons per training so that practical sessions can be effective.

Short training sessions should also be considered for health workers in sentinel maternity wards (including a practical session on weighing).

The Food and Nutrition sub-division has mentioned the possibility of combining the nutrition surveillance training with regular training in prevention of malnutrition, micro-nutrient deficiencies and appropriate feeding practices for infants and young children (this training is to be delivered as part of technical backstopping to the regions).

Training sessions should be conducted in January and completed by 31 January 2007 so that the nutrition surveillance system is up and running by 01 February 2007.

It has been suggested that someone from Tulane, preferably Sophie Chotard or Joel Conkle come and provide technical support for the first (pilot) training session to be conducted in January (and take action to modify training content and any other material as required). This should not take more than a couple of weeks.

## **9. Implementation Follow-up (technical support)**

A couple of visits from a Tulane team member (either John Mason, Joel Conkle or Sophie Chotard) will be necessary to follow-up on the implementation status of nutrition surveillance, identify and address constraints, and further build MoHSS capacity (through training). One visit could be conducted any time between March and say May and another one towards end of year (2007). The end of year visit may lead to the revision of excel analysis and report template to (i) make necessary corrections based on lessons learned and (ii) provide for analysis of year-to-year (e.g. Comparison current year with previous year), (iii) include/remove some indicators; (iv) review if and how nut surveillance information is used etc. The review of the system a year from now should also tell whether the number of sites can be expanded.

Training/capacity building can be done during those visits and/or in the context of courses organized by UWC in collaboration with Tulane in the course of the next year.

Technical assistance can also be provided from New Orleans throughout (J. Conkle, J. Mason) for example for report writing, specific database issues etc.

Table 1. Timetable for Implementation of Sentinel Sites Nutrition Surveillance and Health Facility Visits

Activity	2006		2007											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Presentations SSNS <sup>1</sup> for Endorsement (MVW)														
Sites Finalization (MVW)														
Tools Finalization (JC)														
Develop Training Material (JC/MVW)														
Briefing on SSNS for regions & districts (MVW)														
Plan SSNS Training (MVW/JS)														
Prepare Draft Bulletin (MVW/JS)*														
Conduct SSNS training (MVW/JS/Tulane)														
Implement SSNS (MoHSS)														
Follow-up Visits (UNICEF/Tulane)														
Develop HFV <sup>2</sup> Tools (MVW)*														
Conduct HFV Training (MoHSS)														
Implement HFV														

\* with Tulane technical support from New Orleans

<sup>1</sup> SSNS is the acronym for Sentinel Sites Nutrition Surveillance

<sup>2</sup> HFV is the acronym Health Facility Visits.

## II - Equipment Required and Costs Involved

### Equipment

UNICEF should plan procurement of the following items for MoHSS as soon as possible:

- Color printer. Color printouts of quarterly nutrition surveillance reports/bulletins should be given to Unit and Directorate chiefs, Under-Secretary etc. Without colors, charts included in the reports/bulletins will be difficult to read.
- Two new desktops for the Head of Food and Nutrition sub-division and the Nutrition Surveillance Officer are required. The desktops currently being used at the Food and Nutrition sub-division are old and very slow. Analysis of nutrition surveillance data requires better computers.
- 30 UNISCALES and 20 baby scales have already been ordered by UNICEF and should be allocated to sentinel facilities, mobile clinics and maternity wards.

### Other Costs

- Photocopies of training material.
- Costs for training sessions (i.e. cost of venue, meals, DSA for participants and facilitators and transport, stationary) will need to be planned and covered.
- Costs for UNICEF/Tulane consultant to come and provide support for training and launching of sentinel sites nutrition surveillance system in January. In addition, costs for UNICEF/Tulane consultant to come and follow-up on status of implementation of sentinel sites nutrition surveillance (between March and May and towards the end of 2007).
- Costs of meeting with representatives of regional and district health directorates (briefing on sentinel sites nutrition surveillance) to be conducted by 15 December 2006.

## II - Other Activities

- The implementation of health facility supervisory visits can be planned for a later stage, sometimes over the course of 2007, once the sentinel sites nutrition surveillance system is operational. UNICEF and Tulane University should continue to provide technical guidance and support for the development of the health facility supervisory visits' tools (i.e. checklist, mother's questionnaire, database and analysis/reporting tools) (see table 1).
- MoHSS to follow-up on issue of food fortification and standards. Although no recent data on micro-nutrient deficiencies is available; it is suggested to use South African fortification standards for the time being (unless a micro-nutrient survey can be conducted fairly soon, i.e. within the next year).

- MoHSS indicated that the NHIES data should be analyzed, since it is the only data source for nutritional status among school going children and adolescents and on food consumption (enables analysis of macro - and micro- nutrient content of food). M. Van Wyk will try and obtain data from CBS soon (by December). The analysis could be carried out in January-March by a student from UNAM with economics/statistics background; however, technical guidance will be required (e.g. from Tanzania Food and Nutrition Center; FANTA or FAO). A document has already been prepared by M. Van Wyk and S. Chotard on analysis output. The information generated from the analysis can be used to set targets and for policy formulation/program planning.



## **Annex 13.**

### **List of Persons Met**

#### **UNICEF**

**Ms. K. Lwin**, Representative, UNICEF Namibia.

**Dr. A. Munyiri**, Project Officer for Maternal and Child Health, UNICEF Namibia.

**Mr. E. Shimizu**, Project Assistant for Monitoring & Evaluation, UNICEF Namibia.

#### **Other UN Agencies**

**Mr. E. Kenefick**, Regional VAM Advisor, WFP Regional Bureau for Southern Africa.

**Mr. M. Mokati**, Representative, FAO Namibia.

**Mr. L. Muhigirwa**, Programme Officer, FAO Namibia.

**Mr. J. Prout**, Country Director, WFP Namibia.

#### **Ministry of Health and Social Services**

##### **Windhoek**

**Ms. E. Anaseb**, Public and Environmental Health Division, Primary Health Care Directorate, MoHSS.

**Ms. H. Auala**, Family Health Division, Directorate of Primary Health Care Services, MoHSS.

**Dr. N. Forster**, Under-Secretary for Health and Social Welfare Policy, MoHSS.

**Ms M. Hamana**, Administration Support, Primary Health Care Directorate, MoHSS.

**Mr. F. Magari**, Technical Advisor for PMTCT, ITEC TA/MOHSS.

**Mr. B. Maloboka**, IEC Division, Primary Health Care Directorate, MoHSS.

**Ms E. Matroos**, Senior Health Programme Administrator (HIS), Epidemiology Division, Primary Health Care Directorate, MoHSS.

**Ms. M Nghatanga**, Director, Directorate of Primary Health Care Services, MoHSS.

**Dr. K. Shangula**, Permanent Secretary for Health and Social Services, MoHSS.

**Ms. J. Shatilwe**, Micro-nutrient Officer, Food and Nutrition Sub-division, Family Health Division, Directorate of Primary Health Care Services, MoHSS.

**Mr. Shilunga**, Health Programme Administrator for Disease Surveillance, Directorate of Primary Health Care Services, MoHSS.

**Ms. S.A Swartz**, NHIS Data Clerk, Primary Health Care Directorate, MoHSS.

**Ms. M. Van Wyk**, Food and Nutrition Sub-division, Family Health Division, Directorate of Primary Health Care Services, MoHSS.

**Ms L. de Wee**, Chief Health Programme Administrator, Epidemiology Division, Primary Health Care Directorate, MoHSS.

#### **Oshana and Omusati regions<sup>1</sup>**

**Ms. I. Akashiope**, Programme Administrator for HIS, Health Directorate, Oshana Region.

**Ms. A. David**, PHC Supervisor, Okahao District.

**Ms. Helmi**, Nurse, Etilyasa Clinic, Okahao District.

**Ms. Hipinge**, Chief Health Programme Administrator, Special Programs, Health Directorate, Omusati Region.

**Ms. T. Kalana**, Okahao Primary Health Care clinic.

**Mr. D. Nakuanda**, HIS Officer and Nurse, Okahao District.

**Ms. E. Nendongo**, HIS Clerk and Nurse, Oshakati District, Oshana Region.

**Ms. Shipushu**, PHC Supervisor, Oshakati District, Oshana Region.

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<sup>1</sup> Please note that the list of persons met in Oshana and Omusati is incomplete.

**Ms. E. Shifotoka**, Programme Administrator for HIS, Health Directorate, Omusati Region.

**Ms. K. Toivo**, Programme Administrator for Family Health, Health Directorate, Oshana Region.

All health workers in Indira Gandhi Health Center, Okahao District.

**All members of the mobile clinic team** (met in Elolo outreach point), Oshana District, Omusati Region.

**Nurses at Ondagwa Health Center**, Oshakati District, Oshana Region.

**Nurses at Uukwiuyushona Clinic**, Oshakati District, Oshana Region.

## **Other Ministries**

**Mr. G. Kangowa**, Acting Director, Emergency Management Directorate, Office of the Prime Minister.

**Mr. L. Losper**, NEWFIU, Directorate of Planning, MAWF.

**Mr. Quita**, Responsible for NHIES, CBS, NPC.

**Mr. A. Tsheehama**, Chief Statistician, Price & trade Statistics, CBS, NPC.

## **Other**

**Ms. J. Sheehama**, Geo Business Solutions, Windhoek.

**Mr. J. Van Reusburg**, Geo Business Solutions, Windhoek.

**Mr. M. Damesyn**, Technical Advisor on M&E for HIV Programmes, CDC.

**Mr. A Strenger**, MEATCO.

**Ms. A. Venter**, Administrative Manager, Namibian Agronomic Board.

# Annex 14

9-1/0030

(Rev 08/00)

REPUBLIC OF NAMIBIA MINISTRY OF HEALTH AND SOCIAL SERVICES

Health Information System 2000 (HIS2K)

## IMMUNIZATION AND WEIGHING TALLY SHEET

FACILITY NAME: \_\_\_\_\_ TALLY SHEET FOR: \_\_\_\_/\_\_\_\_/\_\_\_\_ - \_\_\_\_/\_\_\_\_/\_\_\_\_  
DD MM YY DD MM YY

ROOM OR PROVIDER NAME: \_\_\_\_\_

☐ TICK if sheet is for Outreach Services

### CHILDHOOD IMMUNIZATIONS

VACCINE/DOSE	UNDER-1 YEAR-OLDS					1 YEAR-OLD AND OLDER				
	5	10	15	20	25	5	10	15	20	25
BCG	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
OPV0	00000	00000	00000	00000	00000					
OPV1	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
DPT1 (or DT1)	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
OPV2	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
DPT2 (or DT2)	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
OPV3	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
DPT3 (or DT3)	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
OPV BOOSTER	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
DT BOOSTER	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
MEASLES	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
HEPB1	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
HEPB2	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
HEPB3	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
SCHEDULE COMPLETE	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
VITAMIN A	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000

### WOMEN 15-49 YEARS-OLD TETANUS TOXOID (TT) IMMUNIZATIONS

	5	10	15	20	25	30	35	40	45	50
TT1	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
TT2	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
TT3	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
TT4	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
TT5	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000

WEIGHT MONITORING  
ON BACK →

Fig. 1. *Ph. nigrum* (1) and *Ph. rubrum* (2).

WEIGHT CATEGORY	0-5 MONTH-OLDS	6-11 MONTH-OLDS	12-23 MONTH-OLDS ( 1 Year-Olds)	24-35 MONTH-OLDS ( 2 Year-Olds)	36-47 MONTH-OLDS ( 3 Year-Olds)	48-59 MONTH-OLDS ( 4 Year-Olds)
NORMAL WEIGHT (Above Middle Line)	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000
MODERATE UNDERWEIGHT (Between Middle and Lower Line)	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000
SEVERE UNDERWEIGHT (Below Lower Line)	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 0000C 00000 00000 00000 00000

# Annex 15

/1-0031  
Rev. 08/00)

REPUBLIC OF NAMIBIA MINISTRY OF HEALTH AND SOCIAL SERVICES  
Health Information System 2000 (HIS2K)  
**IMMUNIZATION AND WEIGHING MONTHLY SUMMARY REPORT FORM**

FACILITY NAME: \_\_\_\_\_ REPORT FOR: MONTH: \_\_\_\_\_ YEAR: \_\_\_\_\_

IF THIS FORM IS FOR OUTREACH SERVICES ONLY, TICK (✓) HERE: ☐

## CHILDHOOD IMMUNIZATIONS

VACCINE/DOSE	UNDER-1 YEAR-OLDS	1 YEAR-OLD AND OLDER
BCG	_____	_____
OPV0	_____	X X X X X X
OPV1	_____	_____
DT1 (or DT1)	_____	_____
OPV2	_____	_____
DPT2 (or DT2)	_____	_____
OPV3	_____	_____
DPT3 (or DT3)	_____	_____
OPV BOOSTER	_____	_____
BOOSTER	_____	_____
MEASLES	_____	_____
EPB1	_____	_____
EPB2	_____	_____
EPB3	_____	_____
SCHEDULE COMPLETE	_____	_____
VITAMIN A	_____	_____

## WOMEN 15-49 YEARS-OLD TETANUS TOXOID (TT) IMMUNIZATIONS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## WEIGHT MONITORING

0-5 M.O.	6-11 M.O.	12-23 M.O.	24-35 M.O.	36-47 M.O.	48-59 M.O.
_____	_____	(1 YO)	(2 YO)	(3 YO)	(4 YO)
NORMAL WEIGHT.....					
MODERATE UNDERWEIGHT..					
SEVERE UNDERWEIGHT..					

FORM COMPLETED BY: NAME: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

FORM CHECKED BY: NAME: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_

# Annex 16

9-1/0022  
Rev 08/00

REPUBLIC OF NAMIBIA MINISTRY OF HEALTH AND SOCIAL SERVICES  
Health Information System 2000 (HIS2K)  
**MATERNITY (INPATIENT) DEPARTMENT MONTHLY SUMMARY REPORT FORM**

Report For Month Of \_\_\_\_\_ Year: \_\_\_\_\_

Facility Name: \_\_\_\_\_ Type (✓ ONE) : ☐ Hospital ☐ Health Centre ☐ Clinic

NOTE: Source Of Data For This Report Is The (New) Delivery Register. The numbers correspond to the numbers marked with a \* at the top and bottom of the corresponding column in the register. Refer to HIS 2000 Instructions Manual Maternity Reports chapter for detailed instructions.

- |   |     |
|---|-----|
| 1A. ADMISSION/Private/State/ <b>PRIVATE Patients</b> .....                | 1A  |
| 1B. ADMISSION/Private/State/ <b>STATE Patients</b> .....                  | 1B  |
| 2. ANC VISITS/Total Number/ <b>NONE</b> .....                             | 2   |
| 3. ANC VISITS/Total Number/ <b>1 or 2</b> .....                           | 3   |
| 4. ANC VISITS/Total Number/ <b>3 or More</b> .....                        | 4   |
| 5. ANC VISITS/Trimester of First Visit/ <b>1 (0-15 Weeks)</b> .....       | 5   |
| 6. ANC VISITS/Trimester of First Visit/ <b>2 (16-28 Weeks)</b> .....      | 6   |
| 7. ANC VISITS/Trimester of First Visit/ <b>3 (29 or More Weeks)</b> ..... | 7   |
| 8. ANC VISITS/ <b>TT2 or More</b> .....                                   | 8   |
| 9. PRE-DELIVERY STATUS/ <b>Premature Labour</b> .....                     | 9   |
| 10. DELIVERY TYPE/ <b>Normal</b> .....                                    | 10  |
| 11A. DELIVERY TYPE/Assisted/ <b>Vacuum Extraction</b> .....               | 11A |
| 11B. DELIVERY TYPE/Assisted/ <b>Forceps</b> .....                         | 11B |
| 12. DELIVERY TYPE/Assisted/ <b>Caesarian Section</b> .....                | 12  |
| 13. BORN BEFORE ARRIVAL.....  | 13  |
| 14. COMPLICATIONS/ <b>Maternal Death</b> .....                            | 14  |
| 15. BABY/Still Birth/ <b>Fresh</b> .....                                  | 15  |
| 16. BABY/Still Birth/ <b>Macerated</b> .....                              | 16  |
| 17. BABY/Live Birth/ <b>Live Birth</b> .....                              | 17  |
| ✓ 18. BABY/Live Birth/Birthweight/ <b>Less Than 2500 Grams</b> .....      | 18  |
| 19. BABY/Live Birth/ <b>Breastfed (Before 1/2 Hour)</b> .....             | 19  |
| 20. BABY/Live Birth/ <b>Neonatal Death</b> .....                          | 20  |
| 21. AT DISCHARGE/Mother/ <b>Vitamin A</b> .....                           | 21  |
| 22. AT DISCHARGE/Baby/ <b>BCG</b> .....                                   | 22  |
| 23. AT DISCHARGE/Baby/ <b>OPV</b> .....                                   | 23  |
| 24. AT DISCHARGE/Baby/ <b>Breastfeeding</b> .....                         | 24  |