National Nutrition Policy and Strategy

24th December 2004

Nutrition Section, CHD, DoHS, MoH&P

Table of contents

ACRONYMS

AIDS	Acquired Immune–Deficiency Syndrome
ANC	Antenatal Care
API	Annual Parasitic Incidence
AR	Annual Report
ARI	Acute Respiratory Infections
BCC	Behavior Change Communication
BCHIMES	Between Census Household Information Monitoring and Evaluation Survey
BF	Breast Feeding
BFHI	Baby Friendly Hospital Initiative
BMI	Body Mass Index
BPP	Birth Preparedness Package
CBOs	Community Based Organizations
CDC	Curriculum Development Center
CF	Complementary Feeding
CHD	Child Health Division
DALYs	Disability–Adjusted Life Years
DFTQC	Department of Food Technology and Quality Control
DHO	District Health Office(r)
DHS	Demographic and Health Survey
DoHS	Department of Health Services
DOTS	Directly Observed Treatment Short Course
DPHO	District Public Health Office(r)
EDCD	Epidemiology and Disease Control Division
EPI	Expanded Program of Immunization
EPP	Emergency Preparedness Plan
Ex. BF	Exclusively Breast Feeding
FAO	Food and Agriculture Organization
FCHVs	Female Community Health Volunteers
FHD	Family Health Division
GM	Growth Monitoring
GMP	Growth Monitoring Practice
Hb	Hemoglobin
HIV	Human Immuno–Deficiency Virus

HMG	His Majesty's Government
HMIS	Health Management and Information System
HPs	Health Posts
HWs	Health Workers
IDA	Iron Deficiency Anemia
IDD	Iodine Deficiency Disorder
IEC	Information, Education and Communication
IMCI	Integrated Management of Childhood Illness
INGOs	International Non Governmental Organizations
IOM	Institute of Medicine
ISA	Iodized Salt Act
IU	International Unit
IYCF	Infant and Young Child Feeding
JICA	Japan International Cooperation Agency
KABP	Knowledge, Attitude, Behavior and Practice
LBW	Low Birth Weight
LMD	Logistic Management Division
LMIS	Logistic Management Information System
MD	Management Division
MDGs	Millennium Development Goals
MoAC	Ministry of Agriculture and Cooperatives
MoE	Ministry of Education
MoH	Ministry of Health
MoHAPP	Ministry of Housing and Physical Planning
MoIC	Ministry of Industries and Commerce
MoLD	Ministry of Local Development
MoWCSW	Ministry of Women, Children and Social Welfare
NCASC	National Center for AIDS and STDs Control
NCHS	National Center for Health Statistics
NFHS	Nepal Family Health Survey
NGOs	Non Government Organizations
NHEICC	National Health Education, Information and Communication Center
NHRC	Nepal Health Research Council
NHTC	National Health Training Center
NNIPS	National Nutrition Interventions Project-Sarlahi
NMSS	Nepal Micro–nutrient Status Survey
NPC	National Planning Commission
NS	Nutrition Section
ORCs	Outreach Clinics

PAHO	Pan American Health Organization
PEM	Protein Energy Malnutrition
PHCC	Primary Health Care Center
PNC	Postnatal Care
RDA	Recommended Dietary Allowances
RHCC	Reproductive Health Coordination Committee
SHN	School Health and Nutrition
SHPs	Sub–Health Posts
SLTHP	Second Long-Term Health Plan
SMC	School Management Committee
STC	Salt Trading Corporation
UIE	Urinary Iodine Excretion
UNICEF	United Nations Children's Fund
VA	Vitamin A
VAD	Vitamin A Deficiency
WFP	World Food Program
WHO	World Health Organization

PREAMBLE

Improving the nutritional status of people is one of the prime duties of the government and is an essential factor in improving their health status and the quality of life. There are already many nutrition-related programs. It is, therefore, important to clarify the strategies and the types of activities really necessary for each program. The development and the proposition of nutrition policies and strategies as well as activities to be carried out are thus very important. This is also expected to be useful in systematic and efficient implementation of various nutrition programs.

This paper introduces the causes and the consequences of various types of malnutrition commonly seen in Nepal; the current nutritional situation in Nepal; and the current government actions in the nutrition sector. Then it introduces the overall goal and objectives and targets of each strategic approach. Basis of nutrition policy and guiding principles were explained which are very important and indispensable for the implementation of all the nutrition activities and for the development of nutrition programs. Furthermore, the general strategies for all the nutrition programs are profiled to explain the concepts. Additionally, individual strategic approaches are illustrated with objectives, specific objectives, activities, and indicators. Specific objectives are induced as prerequisite condition to solve the cause of each nutritional problem. Strategies are set to accomplish each specific objective, and activities are set as components for supporting corresponding strategies. Responsible bodies for the implementation of these activities are also listed. Indicators are identified for monitoring and evaluating the achievement of the specific objectives. Finally, annexes are attached with important guidelines and standards as useful information for program implementation.

This paper introduces 13 strategic nutrition approaches, some currently being implemented by the nutrition sector and others not yet implemented but certainly necessary in the current situation. Except for 'the strategy for monitoring,' 12 other strategic approaches are categorized into the types of short and long term objectives according to the duration between programmatic input and their expected impacts. The programs that are categorized as ones with short term objectives are Protein-energy Malnutrition (PEM), Iron Deficiency Anemia (IDA), Iodine Deficiency Disorder (IDD), Vitamin A Deficiency (VAD), Intestinal Worm infestation, Low Birth Weight (LBW), Infectious Diseases and Nutrition in Exceptionally Difficult Circumstance. The programs categorized as those with long term objectives are Household Food Security, Dietary Habit, Life-style Related Diseases and School Health

and Nutrition.' PEM, including LBW, is a very challenging issue, because the prevalence is associated strongly with various socio- economic factors. Therefore, PEM can also be categorized as a long-term approach.

All the programs with short-term objectives, beside for 'nutrition in exceptional circumstances' have been conducted in the nutrition sector and other sectors, such as the family health and the public health sectors. However, the development or the improvement of the strategies is very urgent in order to strengthen the management of the programs. In addition, challenging programs, such as PEM and anemia control, need some collaboration with other programs with long-term approaches, such as food security, dietary habits and school health and nutrition.

To have effective and efficient achievement of program, we must consider expanding the target groups from those already at critical risk, to groups who are expected to be influence in the future. School children have great potential to contribute to increasing the knowledge about health and nutrition among their family and community members and to improve the health and nutrition standard as a result of education and practice of health and nutrition at schools. Since the school health and nutrition programs must be effective in this long term view-point, the school health and nutrition strategies are also included in this policy and strategy paper.

Malnutrition during childhood can lead to a risk of life-style diseases in the future as well as immediate risks of morbidity/mortality, according to a recent study[1]. We must recognize that the causes of life-style diseases are not necessarily the current life style, but can also reflect the nutritional status of childhood. Yet, current life-style, including food habits, has a great influence on life-style diseases, and people's life style is gradually changing in Nepal. Several studies alarmed to pay attention to these types of diseases even in developing countries. The paper summarizes the strategies for such diseases, considering that the program implementation of life-style disease control is now necessary in this country.

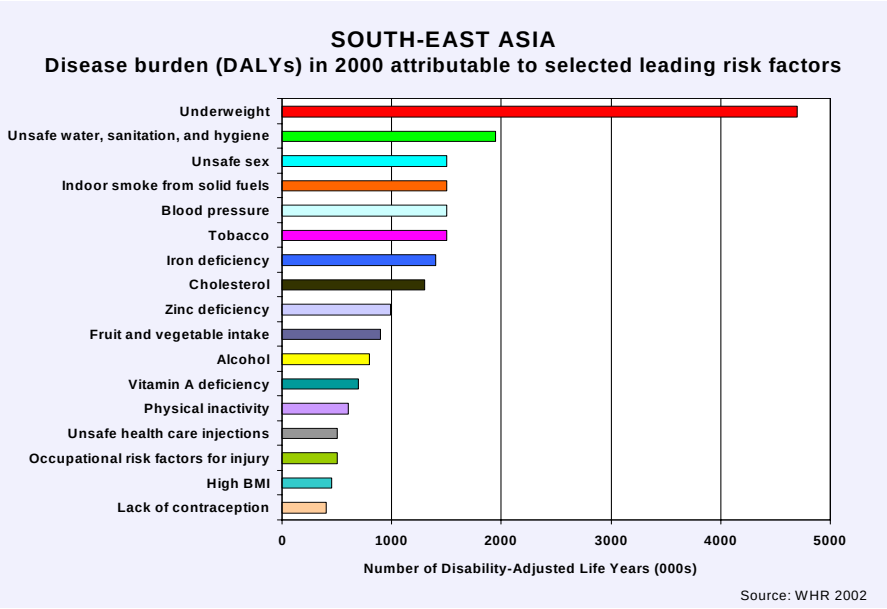
Due to the political conflict and natural disasters, Nepal is facing the problem of migration and displaced people. Natural disasters such as flood and landslides occur seasonally, increasing the number of displaced people who suffer from lack of food. In addition, special attention has to be paid to HIV positive mothers who breastfeed their babies, because these babies have a high risk of transmission of HIV through breast milk. To reduce the risk of malnutrition and the death from HIV, possible interventions must be conducted to protect children and mothers from this critical situation. Considering the current situations of Nepal, the strategies for nutrition in exceptionally difficult circumstances are proposed and incorporated in this paper.

We expect that this paper will contribute to the recognition, measurement and sharing of nutritional concerns held in common by any stakeholders planning to take action.

1. Background

Human beings need to have adequate nutrition to attain normal physical growth (in children) and for a healthy life. Adequate nutrition is a fundamental right for every human being. If people fail to consume sufficient quality and quantity of nutrients, they will suffer from hunger or malnutrition. Malnutrition takes a variety of forms. The main types of malnutrition seen in Nepal are protein-energy malnutrition, iodine deficiency disorders, iron deficiency anemia and vitamin A deficiency[2]. In particular malnutrition places an enormous burden on children and women. Even mildly or moderately malnourished children and women are more likely to be at high risk of death due to lack of resistance against common infectious diseases. The above types of malnutrition not only affect people's health but also affect the quality of life and the development of the socio-economic situation in the country.

The World Health Report 2002 clearly describes how childhood and maternal underweight are the greatest risk factor among several main factors that affect people's health and disease status in the world, particularly in Asia[3]. In the Millennium Development Goals (MDGs), underweight has been adopted as a key indicator of poverty and hunger[4]. In addition, improved nutrition can help in reaching the MDGs by contributing to the achievement of universal primary education, reducing child mortality, improving maternal health, reducing the burden of HIV/AIDS and other infectious diseases as well as reducing poverty and hunger[5]. From these points of view, it is recognized that policies, programs and processes for nutrition improvement have a great role to play in promoting healthy lives and development across the globe.



DALYs: Disability-adjusted life years (DALYs) for a disease or health condition are calculated as the sum of the years of life lost due to premature mortality (YLL) in the population and the years lost due to disability (YLD) for incident cases of the health condition.

The burden of disease study (SLTHP, 1997-2017) has shown that group 1st category that includes pre-transition disorders such as infectious diseases, maternal and perinatal disorders and nutrition deficiency in Nepal are responsible for more than two-thirds of the disease burden i.e. 68%. Therefore nutrition intervention has been recommended as a priority element of essential health care services. Main interventions included are nutritional supplementation, enrichment, nutrition education and rehabilitation. Similarly, Nepal Health Sector strategy 2004, and Nepal Health Sector Implementation Plan have recognized the nutritional problems of mother and children and have recommended adopting a specific implementation strategy with regards to nutrition.

Considering the nutritional situation in Nepal the government needs to take more intensified action to reduce the risk of malnutrition for all the Nepali people and to contribute to creating better lives and development in Nepal.

1.1 Causes and consequences of

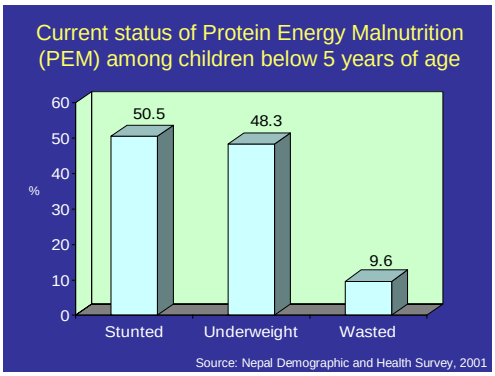
	Causes	Consequences

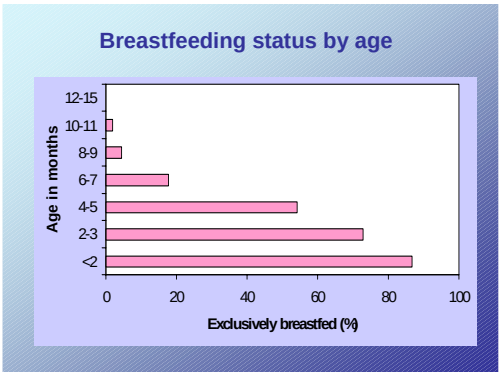
Protein-energy Malnutrition (PEM) **(Children)**	• Inappropriate breastfeeding • Inadequate complementary feeding practices • Insufficient health services (Growth monitoring and counseling) • Low birth weight. • Infectious diseases • Inadequate energy intake	• Failing to grow (underweight, stunted, and wasted) • Reduced learning ability • Reduced resistance and immunity against infection • Reduced productivity in the future
(Women)	• Inadequate energy intake • Inadequate knowledge and practice of maternal feeding • Heavy physical workload • Lack of extra food intake during pregnancy and lactation	• Low birth weight • Increased risk of maternal mortality and morbidity • Reduced productivity
Iron Deficiency Anemia (IDA)	• Inadequate intake of iron from daily diets • Inadequate absorption of dietary iron • Infestations such as hookworms and malaria • High requirements of iron particularly during growth and pregnancy • Blood loss (menstruation, and injury) • Vitamin A deficiency	• Impaired human function at all stages of life • Impaired work performances, endurance and productivity • Increased risk of maternal morbidity and mortality • Increased risk of sickness and death for the baby
Iodine Deficiency Disorders (IDD)	• Lack of iodine in food	• Cretinism • Goiter • Impaired cognitive function • Increased prenatal morbidity and mortality • Reduced productivity
Vitamin A deficiency (VAD)	• Low intake of Vitamin A from daily diets • Restricted Vitamin A (VA) absorption • Worm infestation • Increased VA requirement resulting from infectious diseases	• Xerophthalmia (Night blindness, Bitot's spot, corneal ulcer, Keratomalacia, xerosis) • Increased risk of morbidity and mortality • Increased risk of anemia
Intestinal worms	• Poor hygienic manner and environment • Inadequate opportunities for taking deworming tablets	• Anemia and malnutrition
Low birth weight (LBW)	• Small maternal size at conception (low weight and short stature) • Low gestational weight gain • Maternal anemia • Maternal malnutrition • Premature delivery • Early pregnancy	• Increased mortality and morbidity • Increased risk of stunting • Poor neurodevelopment • Reduced strength and work capacity • Increased risk of chronic diseases
Household food insecurity	• Low food production • Food loss during storage and preservation • Poor food processing skills • Poor management in food allocation • Low income for purchasing foods	• Malnutrition • Reduced productivities • Increased risk of mortality and morbidity
Infectious diseases	• Lack of knowledge, attitude and practice of good hygiene manner • Insufficient access to public health services and medical treatment • Poor nutritional status • Poor hygienic environment	• Increased mortality • Increased malnutrition
Life-style	• Unbalanced food intake	• Increase mortality

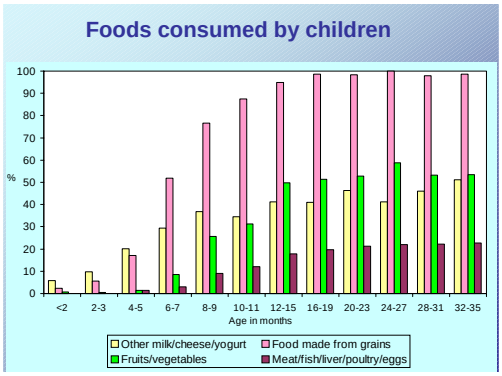
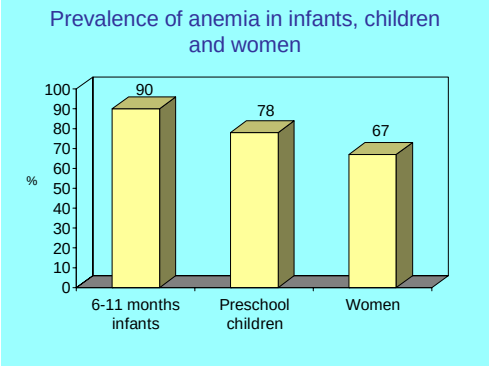
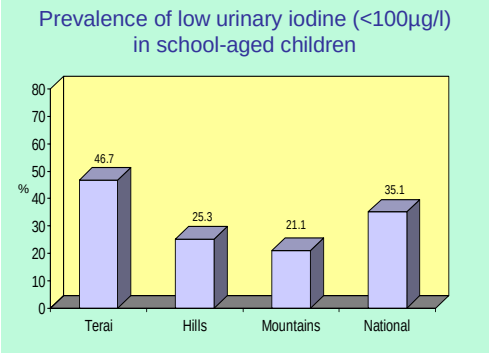
related diseases	• Insufficient practice of healthy life style (tobacco use, alcohol, lack of exercise, etc) • Childhood malnutrition and obesity • Mental stress	• Reduced quality of life • Reduced productivity

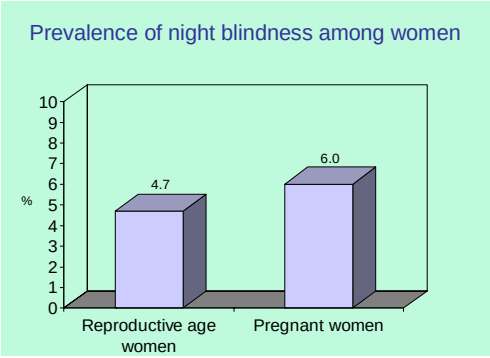
1.2 Current nutritional situation in

Protein-energy Malnutrition (PEM)	• 51% of children below 5 years of age are affected by stunting (short for their age), which can be a sign of early chronic under-nutrition[6]. • 48% of the children are underweight (low weight for age)[6]. • 10 % of the children are wasted (thin for their age), which can be an indicator of acute under-nutrition[6]. • Stunting is more common in the Mountain areas than in the Terai, but underweight and wasting are more common in the Terai areas. • 27% of women fall below the cut-off point of BMI (<18.5) • Prevalence of stunting, underweight and wasting tended to increase after 6 months of age indicating that the practice of complementary feeding was not appropriate for their growth.
Breast feeding (BF)	• Percentage of exclusively breastfed children <6 months is 68.3, however this coverage is still low. Only about half of the children continue to be exclusively breastfed by the time they are 4-5 months old[6]. • Nearly one in three children are breastfed within one hour of birth. • Initiation of breastfeeding is delayed for more than 24 hours for one in three neonates[6]. • 40% of neonates received a prelactal feed [6].





Complementary feeding (CF)	• 65% of children aged 6-9 months receive foods made from grains as complementary food[6]. • The consumption rate of vegetables and fruits is relatively low, with only about 50% even in children aged one year[6]. • Only around 20% of children aged one year consume meat products[6]. • The frequency of meal was about 3 times per day in children aged one year[6]. This is quite low compared with the recommended frequency of 4 to 6 times including snacks, according to WHO complementary feeding guideline[10]. 
Iron Deficiency Anemia (IDA)	• Prevalence of anemia was higher in preschool children (78%) than in women (67%). An astonishingly high rate of 90% was found in infants, 6-11 months old [7]. • Among women, there is distinct variation between ecological zones, with highest levels in the Terai, followed by the Mountains[7]. • Only 32% of pre-school children and 29% of pregnant women consumed an adequate amount of iron to fulfill their daily requirements[7]. • Prevalence of anemia was also high (64%)in high school adolescents who attended the Government Girl's high school in Kathmandu valley[8]. 
Iodine Deficiency Disorder (IDD)	• Currently only 63% of households in Nepal are using adequately iodized salt[2]. • The proportion of low UIE values (<100µg/l) was 39.1% (adult women and school-aged children) [7]. • The prevalence of low UIE is highest among women in the Terai zone. It is still high as a public health problem in that group[7]. • Only 35% of the respondents had heard educational messages about iodized salt and very few of the respondents (19%) knew about the importance of iodized salt for health[7]. 
Vitamin A deficiency (VAD)	• The overall prevalence of night blindness in reproductive aged women and pregnant women was 4.7% and 6.0% respectively, while 16.7% of women reported having night blindness during their last pregnancy[7]. • The prevalence of night blindness was 0.27% among 12-59 months children, and that of Bito's spot was 0.33 % among 6-59 months children[7]. (These prevalence are below WHO-Cut points for public health problems) • In school-aged children, the prevalence of night blindness was 1.2%, and Bito's spot was 1.9%[7]. • Serum retinol levels revealed 16.6% of women and 32.2% of preschool children had sub-clinical VAD[7]. • Only 42% of pre-school children and 37% of women consumed an adequate amount of vitamin A[7].



Intestinal worms infestations

- Since there was no national data on worm infestation it is estimated that more than 50% of the children and adolescents are suffering from intestinal worms from the following studies.

Studies	Districts studied	Roundworm prevalence	Whipworm prevalance	Hookworm prevalence	Total
1996 NNIPS study 292 pregnant women	Sarlahi	56%	8%	79%	
1996 WHO/WFP study 711 school children	Parsa, Surkhet and Dailekh	22%	19%	65%	74%
1998 JICA study 1905 school children	Kavrepalanchowk	43%	5%	9%	48%
1998 NNIPS study 129 infants	Sarlahi	0.8%	0	0.8%	
2004 NS/JICA study 536 adolescent girls	Kathmandu, Bhaktapur and Lalitpur	45.1%		35.1%	40%

Low birth weight (LBW)

- Percentage of infant with low birth-weight is 21% in Nepal[9].

Life-style related diseases

- The morbidity and mortality of life-style related diseases are likely to be increased according to the data based on the hospital source

Life-style related disease	1997/1998		2002/2003	
	Hospital Inpatient Morbidity	Death	Hospital Inpatient Morbidity	Death
Cancer	572	28	1360	37
Hypertension	311	12	1022	30
Diabetes	91	5	308	14
Cardiovascular disease	1867	140	4878	283

Source: DHS Annual Report 1997/1998 & DHS Annual Report 2002/2003

Life-style related disease	Admitted cases	
	2001	2003
Coronary Artery Disease	572	28
Hypertension	311	12
Diabetes	91	5

Note:

Cut-off points for assessment of nutritional status: see Annex 1

Adjustment of Hb-cut-offs for populations living at higher altitudes: see Annex 1

WHO standards for parameters of life-style related disease: See annex 2

1.3 Government actions in nutrition

Current government actions for reducing various nutrition problems

PEM	• Growth monitoring and nutrition counseling at Primary Health Care Center (PHCC), Health Posts (HPs), Sub-Health Posts (SHPs) and Outreach Clinics (ORCs). • Promotion of exclusive breastfeeding through mass media • Implementation of Breast Milk Substitute Act 2049 and Regulation 2051. • Promotion of complementary feeding after 6 months. • Seven hospitals certified as Baby Friendly Hospital Initiatives (BFHI) in various parts of country. 
IDA	• Distribution of iron/folate tablets to pregnant women and lactating mothers through hospitals, PHCC, HPs, SHPs and ORCs. • Intensification program of maternal iron supplementation through Female Community Health Volunteers (FCHVs) in 12 districts. 
IDD	• Universal salt iodization as sole strategy to address IDD. • Distribution of iodized salt in remote districts at subsidized rates. • Implementation of Iodized Salt Social marketing Campaign. • Monitoring of iodized salt at the entry points, regional and national levels. • Evaluation of IDD status through National Survey and integrated mini- surveys for Vitamin A, iodized salt and deworming. • Iodized salt warehouse constructions in various parts of country. • Development of Iodized Salt Act in 1998. 

VAD	• Mass supplementation of high-dose VA capsules to children aged 6 and 59 months of age in 75 districts. • Nutrition education activities through Behavior Change Communication (BCC) and mass media, community-level health workers and agricultural extension workers. • Initiation of VA capsules supplementation for postpartum mothers through FCHVs and health facilities. • Treatment of night-blind pregnant women with low dose VA capsules in the selected districts. • Case treatment for measles, severe malnutrition, chronic diarrhea and eye problems related to VAD. 
Intestinal worms	• Biannual deworming of children aged 1-5 years during vitamin A capsule supplementation in all 75 districts. • Deworming of all pregnant women after completing the first trimester of pregnancy.
LBW	• Advocacy for antenatal check up and counseling at least 4 times during prenatal period according to MoH policy. • Nutrition education through health institutions for the general population with special focus on adolescents and expectant mothers. 
Infectious Disease Control (in other sectors)	• Standard case management of diarrhea, ARI, measles, malnutrition and malaria among under 5 children through community based Integrated Management of Childhood Illness (IMCI) program. • Vaccine preventable disease control through regular immunization and periodic campaigns. • DOTS program for TB patient
Life-style related diseases (in other sectors)	• Tobacco advertisement have been banned in the electronic mass media • Establishment of a focal point in MoH to deal with problems related to non communicable diseases (coronary heart diseases, cancer etc) • The money collected from the tax of tobacco products is being diverted for the treatment of cancer and heart disease patients.

2. Overall goal and objectives and targets of each strategic

Overall goal:

Achieving nutritional well being of all people in Nepal so that they can maintain a healthy life and contribute to the socio-economic development of the country, through improved nutrition-program implementation in collaboration with relevant sectors.

In order to achieve the overall goal, the following conditions are indispensable:

1. The measures in this document have to be implemented and sustained to reduce the burden of nutritional problems such as protein-energy malnutrition, iron deficiency anemia, iodine deficiency disorder, vitamin A deficiency, low birth weight, diet-related diseases (life-style related diseases) and other nutritional disorders.
2. The measures for improved dietary habits, household food security and 'school health and nutrition' should be implemented as long-term strategies to modify nutritional status of the people and to reduce the prevalence of the nutritional disorders.
3. The control of infectious diseases including intestinal worm infestation has to be strengthened to help reduce the risk of malnutrition as well.
4. It is urgently necessary to address or promote the measures regarding nutrition in exceptionally difficult circumstances such as breastfeeding of HIV positive mothers and food shortages in crisis situation.
5. In order to promote the above mention measures efficiently and effectively, the monitoring, assessment and supervision of program implementation must be conducted regularly.

In order to accomplish the above conditions, the area of approach with objectives and targets have been set up as following:

Objectives and targets:

Categories		Objectives and targets
PEM	**Objective 1**	To reduce protein-energy malnutrition in children under 5 years of age and reproductive aged women
	Target 1	*To reduce the prevalence of PEM among children to half of the 2000 level by the year 2017*
	Target 2	*To reduce the prevalence of low BMI in women to half of the 2000 level by the year 2017*
IDA	**Objective 2**	To reduce the prevalence of anemia among women and children
	Target 1	*To reduce the prevalence of iron deficiency anemia to less than 40% by the year 2017*
IDD	**Objective 3**	To virtually eliminate iodine deficiency disorders and sustain the elimination
	Target 1	*To virtually eliminate iodine deficiency disorders by the year 2017*
VAD	**Objective 4**	To virtually eliminate vitamin A deficiency and sustain the elimination
	Target 1	*To virtually eliminate vitamin A deficiency by the year 2017*
Intestinal worm infestation	**Objective 5**	To reduce the infestation of intestinal worms among children and pregnant women

	Target 1	*To reduce infestation of intestinal worms to less than 10% by the year 2017*
LBW	**Objective 6**	To reduce the prevalence of low birth weight
	Target 1	*To reduce the prevalence of low birth weight to 12% by the year 2017*
Household food security	**Objective 7**	To improve household food security to ensure that all people can have adequate access, availability and utilization of food needed for healthy life
	Target 1	*To reduce the percentage of people with inadequate energy intake to 25% by the year 2017*
Dietary Habit	**Objective 8**	To promote the practice of good dietary habits to improve the nutritional status of all people
	Target 1	*To reduce the prevalence of undernutrition (underweight) and low BMI to half of the2000 level by the year 2017*
Infectious disease	**Objective 9**	To prevent and control infectious diseases to improve nutritional status and reduce child mortality
Life-style related diseases	**Objective 10**	To control the incidence of life-style related diseases (coronary artery disease, hypertension, tobacco and smoke related diseases, cancer, diabetes, dyslipidemia, etc)
School health and nutrition	**Objective 11**	To improve health and nutritional status of school children
Nutrition in exceptionally difficult circumstances	**Objectives 12**	To reduce the critical risk of malnutrition and life during exceptionally difficult circumstances
Monitoring	**Objective 13**	To strengthen the system for analyzing, monitoring and evaluating the nutrition situation

Note:

Indicators and targets for reducing malnutrition: see Annex 3

3. Basis of Nutrition Policy

The Government of Nepal is concerned about the serious problem of malnutrition that persistently exists in large sections of the population in different forms, degrees and magnitudes and hence is strongly committed to improving the situation and ensuring the nutritional well being of all the people. In order to reduce/control nutritional problems, the Government of Nepal needs to take various measures based on the following important principles:

Human rights	Hunger and malnutrition are unacceptable in a world that has both the knowledge and the resources to end this human catastrophe. We recognize that accesses to nutritionally adequate and safe food and services for nutrition education are the rights of each individual.
Pre-condition for development	Nutritional well being of all people is a pre-condition for the development of societies and it should be a key objective for progress in human development. It must be at the centre of our social-economic development plans and strategies.
Healthy Life	Malnutrition is directly or indirectly associated with more than 50% of

	all child mortality and is associated with most of the major risk factors for maternal mortality. Malnutrition is the main contributor of the burden of diseases in the developing world. Nutritional improvement has to be enhanced to ensure the healthy life of all people.
Universal primary education	Under nutrition in infancy and early childhood affects school enrolment rates and on cognitive and behavioral development. Iodine and iron deficiencies lead to impaired cognitive development and thus effects educational attainments. Nutrition is therefore one of the key elements not only for normal physical development but also for improved intellectual resources.
Prioritized groups	Infants, young children, pregnant and nursing women, disabled people and the elderly within poor households are the most nutritionally vulnerable groups. Priority must be given to them for the protection and promotion of their nutritional well-being.
People's participation	People-focused policies for nutritional improvement must acknowledge the fact that people's own knowledge, practices and creativity are important driving forces for social change. Local community involvement, including that of families and households, is a prerequisite for improving food production and sustaining access to food and for instituting nutrition improvement programs and projects.
Gender	Women play a key role in socio-economic development and in many societies they are also the main producers of food. Special attention should be given to the nutrition of women during pregnancy and lactation. All forms of gender discrimination including traditional practices detrimental to women must be eliminated in accordance with the 1979 Convention on Elimination of All Forms of Discrimination against Women.

4. Guiding

The following general strategies have been pursued to improve the nutritional situation in Nepal.

Community Participation	Promote, facilitate and utilize community participation and involvement for all nutrition activities;
Coordination among Intra Sectors	Develop understanding and effective co-ordination between the various sections and divisions in the Department of Health Services, i.e., Family Health Division (FHD), Logistics Management Division (LMD), National Health Training Centre (NHTC) and the National Health Education, Information and Communication Centre (NHEICC).
Coordination	Maintain and strengthen co-ordination among other agencies

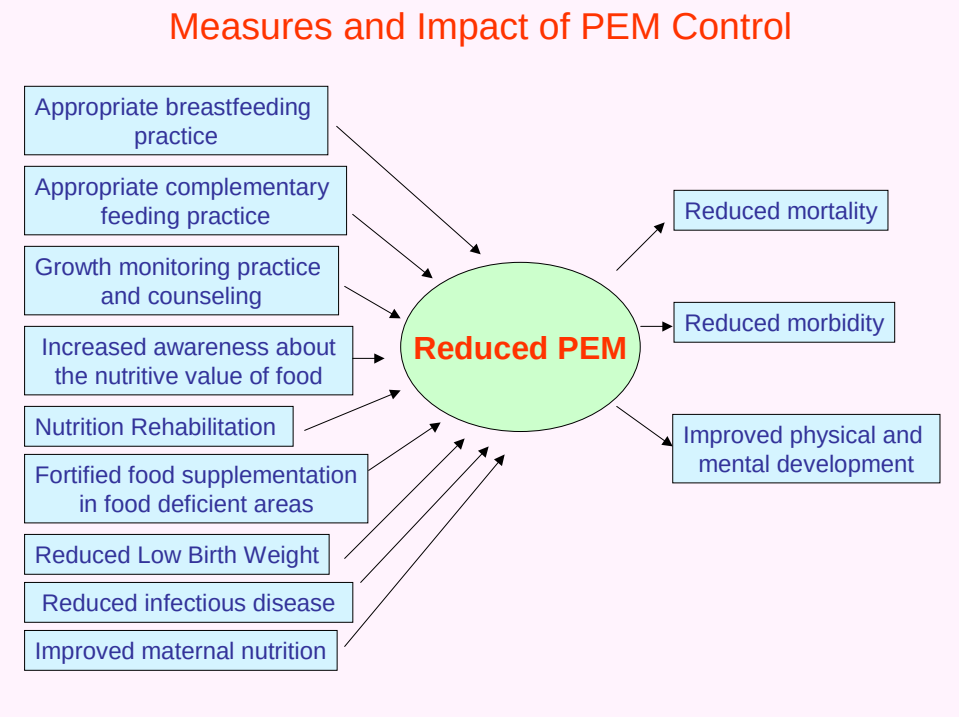
among Inter Sectors	involved in nutrition activities, i.e., the Ministry of Agriculture and Cooperatives (MoAC), Ministry of Education (MoE), Ministry of Women, Children and Social Welfare (MoWCSW), Ministry of Local Development (MoLD) and the National Planning Commission (NPC), as well as with other programs, International Development agencies, NGOs, INGOs and private sectors.
Decentralization	Decentralize authority to the region, district, Health Post, Sub Health Post and community for assessment, planning, implementation, and monitoring of nutrition activities.
Advocacy	Conduct National Advocacy and Social Mobilization Campaigns.
Communication	Develop behavior change communication strategies to implement nutrition programs with adequate messages and media use. Strengthen effective use of interpersonal communication and mass media for synergistic effect
Integration	Integrate/incorporate nutrition plans in activities such as the Expanded Programmes on Immunization (EPI), Integrated Management of Childhood Illness (IMCI), Maternal and Child Health, Family Planning programs, etc.
Monitoring and evaluation	Monitor and evaluate the situations of nutritional status and program implementation to strengthen nutrition policy and strategy and to modify programs as necessary
Research	Carry out research and feasibility study to analyze the current nutritional situation to identify the major factors of nutritional problems and to clarify the possibility of new approaches.
Capacity Building	Develop the capacity of all health workers so they can effectively transfer appropriate knowledge and implement nutrition programs with good skills. Develop the system to educate dieticians. Nutrition institution building is essential to strengthen all the nutrition programs.

5. Strategic approaches for nutritional

5.1 Protein-energy Malnutrition

Objective 1: To reduce Protein-energy malnutrition in children under 5 years of age and

reproductive aged women



(for children)

Specific objective	Strategy	Activities	Responsibility	Indicator
To protect, promote and support optimal feeding practice for infants and young children[a]	Ensure early initiation of BF within one hour of birth, avoidance of prelactal feed and promotion of Ex. BF for the first 6 months.	• Campaign through mass media • Counsel the mother regarding BF • Mobilize women's group • Develop school curriculum	NS/CHD, DHO/DPHO, MoE	Coverage of Ex. BF Coverage of appropriate CF
	Ensure continuation of BF for at least 2 years and introduction of appropriate CF after 6 months			
	Strengthen the capacity of HWs/ medical professionals for nutrition/BF management	• Train HWs/medical professionals, community level service providers and volunteers • Reactivate BFHI	NS/CHD, DHO/DPHO, CBOs	
	Protect from commercial promotional practices which undermine optimal BF practices	• Implement, strengthen and monitor the Breast-milk Substitute Marketing Control Act • Appoint Inspector for monitoring	NS/CHD, DHO/DPHO, MoH	
	Empower all mothers, families and care-givers to make and carry out fully informed decisions about feeding	• Provide nutrition counseling and education for mothers and caregivers	DHO/DPHO, MoH, Health institutions	

	Support community based programs	• Create and support the network of mother to mother support group • Integrate community-based programs with other health programs. • Collectively assess, analyze and take action for optimal feeding practice	DHO/DPHO, Health institutions	
	Promote mother and child friendly working environment	• Establish crèches • Promote BF breaks for working mothers • Advocate for extended maternity leave • Advocate for paternity leave	NS/CHD, DHO/PHO	
	Promote the use of appropriate and adequate locally available complementary foods like *Jaulo and Sarvottam Pitho*	• Develop guidelines on safe IYCF[b] • Explore innovative approaches through fortification • Develop mandatory standards on commercial production of CF, fortification and marketing practices • Nutrition education for mothers/care takers	NS/CHD DFTQC	
To increase the coverage of Growth Monitoring (GM)	Strengthen the system of GM and supervision/monitoring for GM	• Update guidelines on GM • Explain the guidelines of GM to all health workers through training • Regular implementation and monitoring of GM • Training and workshop for DHO/PHO/NFP	NS/CHD, DHO/DPHO, Health institutions	GM coverage
	Improve skills and knowledge regarding GM and nutrition counseling among health workers.	• Training and orientation • Monitoring and supervision	NFP, DHO/DPHO, NS/CHD	
	Provide PHC/HP/SHP with necessary equipment and material for GM	• Distribution of weighing scales, growth charts, and IEC materials	LMD	

To improve nutrition knowledge, attitudes and practices of parents and community people	Create awareness regarding the importance of appropriate and adequate nutrition for children, pregnant and lactating mothers	• Nutrition education and counseling practice through ANC/PNC services, GM and mass media	DHO/DPHO, NS/CHD	Improved KABP
	Change culturally acceptable nutrition behavior to improve intake of nutritious foods and diversification of diet	• Nutrition education and counseling practice through ANC/PNC services, GM and mass media • School Health and Nutrition Programs	DHO/DPHO NS/CHD Health institutions	
To facilitate the building of nutrition rehabilitation institutions for severe malnutrition	Facilitate the function of nutrition rehabilitation at hospital level	• Establish a rehabilitation center at each zonal hospital	NS/CHD, Zonal hospitals, NGOs/INGOs	No. of rehabilitation centers No. of malnourished cases treated
	Strengthen the ability of health personnel in dietary and clinical management of severely malnourished children	• Train health personnel in the treatment of severe malnutrition	NS/CHD	
To reduce the No. of children who suffer from inadequate energy intake	Distribute fortified foods to children aged 6 to 36 months (and expectant and nursing mothers) in food deficient areas	• Develop guidelines for food supplementation • Collaborate with donor agencies for effective distribution to target areas.	NS/CHD, Donor agencies	
To reduce low birth weight	See objective 6			
To reduce the risk of infectious diseases	See objective 9			
To improve maternal nutrition	See the next strategy for women			

Note:

a. Concept of objectives and strategies in this part were based on the IYCF Strategy paper (draft)

b. Guideline for complementary foods should be developed following WHO guideline: see Annex 4

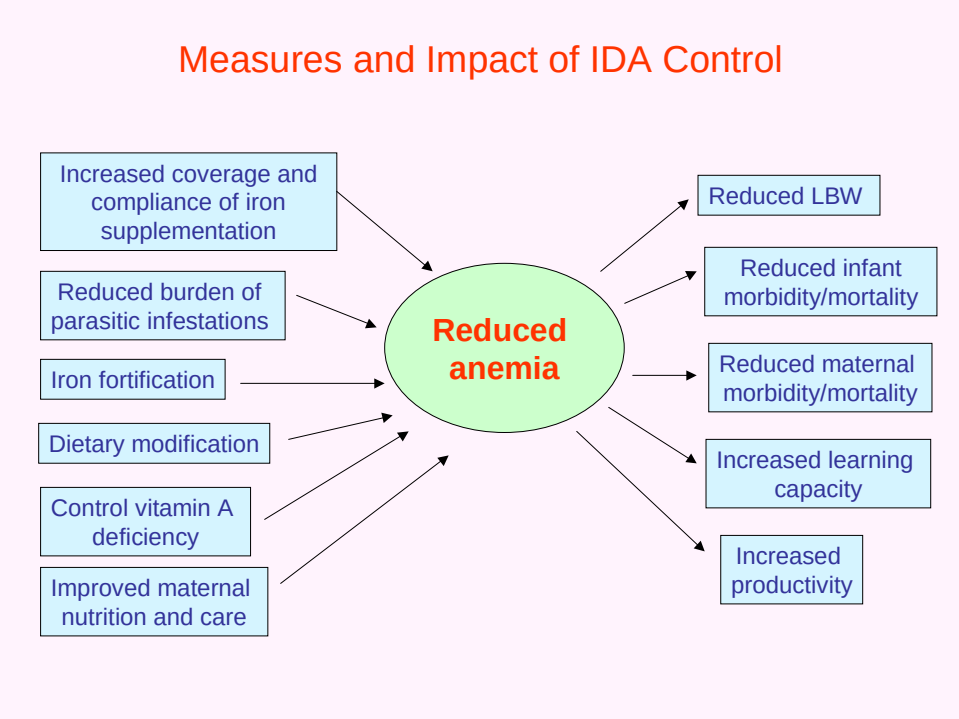
(For women)

Specific Objective	Strategy	Activities	Responsibility	Indicators
To reduce the risk factors for under-nutrition in women, particularly pregnant and lactating women	Create awareness of the importance of additional dietary intake during pregnancy and lactation	• National campaign by mass media (National nutrition week) • Use local media (FM) • Implement BCC and BPP • Intra-sectoral collaboration	NS/CHD, FHD, MoWCSW, MoE	Weight gain during pregnancy BMI for non-pregnant women

	Strengthen the activities of nutrition education and counseling	• Train HWs and other initiators on nutrition • Activate nutrition education and counseling at health facilities • Use local media (FM)	NS/CHD, FHD	
	Promote social (community and family) support for maintaining good heath care and dietary habit	• Implement BCC and BPP	NS/CHD, FHD	
	Reduce heavy work load of pregnant and lactating women	• Implement BCC and BPP	NS/CHD, FHD	
	Prevent early pregnancy and ensure adequate birth spacing	• Implement BCC and BPP	NS/CHD, FHD	
	Improve iron status of pregnant and lactating women	See Objective 2		

5.2 Iron Deficiency Anemia

Objective 2: To reduce the prevalence of anemia among women (reproductive aged) and children (preschool)



Specific objectives	Strategy	Activities	Responsibility	Indicators

To increase coverage and compliance of iron/folate supplementation for pregnant and postpartum women[a]	Create awareness of anemia and importance of iron supplementation	• IEC campaigns through mass media • Nutrition education at community level	NS/CHD, DHO/DPHO, NHTC, NHEICC	Anemia prevalence Coverage and compliance of iron supplementation
	Ensure availability of iron/folate supplements at all health facilities and ORC	• Strengthen logistic system and monitoring for delivery of iron/folate tablets	NS/CHD, DHO/DPHO, LMD,	
	Increase accessibility of iron/folate at the family and community level	• Involvement of FCHVs • Activation of the role of PHCC/ORC	DHO/DPHO	
To reduce burden of parasitic infestations[b] (helminthes, kalazar and malaria)	Strengthen parasitic infestation control programs (intestinal helminthes, malaria and kalazar)	• Biannual Deworming activities for preschool children • Deworming of pregnant women during second trimester of pregnancy • Appropriate use of insecticide spray • Distribution of impregnated mosquito nets	NS/CHD DHO/DPHO EDCD	Prevalence of parasitic infestation Coverage of deworming tablets Reduction in API
	Create awareness about improving living conditions including sanitation and hygiene	• National campaign through mass media • Health education • Collaboration with related sectors	NHEICC, DHO/DPHO, EDCD, MoHAPP	
To control vitamin A deficiency in children, pregnant and postpartum mothers	Promote vitamin A deficiency control program for children, pregnant and postpartum mothers	See objective 4 (strategy for VAD control)		
To effectively implement food fortification to increase dietary iron intake	Identify suitable food vehicles for iron fortification	• Feasibility study of iron fortification	NS/CHD DFTQC MoAC	Production and consumption of iron fortified foods
	Devise necessary policies to successfully implement fortification	• Revise food regulations • Develop a systematic plan for production and distribution • Establish monitoring system to ensure quality of fortification		
	Fortify commercially produced wheat flour with iron	• Encourage private sectors and NGOs in iron fortification of wheat flour		

To promote locally appropriate dietary modifications to improve the quality and diversity of food consumed	Increase awareness about iron rich foods[c], both animal and vegetables sources	• National campaign • Nutrition education • Develop IEC materials • National campaign for gender equity	NFP/DHO, NS/CHD, NHEICC, MoWCSW	Improved KABP
	Promote dietary practices that improve the content and bioavailability of iron in diet			
	Advocate for equity among genders in access and control over household foods			
To promote maternal care practices to improve health and nutritional status of mothers and their babies	Create awareness of the importance of increased food intake and reduced work load during pregnancy	• IEC campaign • Nutrition education • Coordination with existing gender programs	DHO/DPHO, NS/CHD, MoWCSW, NHEICC, NGOs/INGOs	Improved KABP Maternal morbidity/ mortality Incidence of LBW babies
	Promote advocacy campaigns against teen age pregnancy, early marriage and short birth spacing	• IEC campaign • Coordination with existing gender programs		
	Develop a scheme for screening and diagnosing high risk women for severe anemia	• Develop guidelines for screening and diagnosis of high risk groups		
To identify effective modalities to address iron deficiency in children, adolescents and non-pregnant reproductive aged women	Conduct operational research regarding anemia	• Operational research • Collect information and review other possibilities	NS/CHD	Operation research
	Review the possibility of extending iron/folate supplementation to other groups at risk as well as to find out alternative approaches to supplementation			
To develop a systematic approach to monitoring and evaluation of anemia control program activities	Strengthen HMIS and LMIS to routinely monitor, supervise and report on program implementation	• Review existing HMIS/LMIS • Strengthen reporting and recording systems at all levels	NS/CHD, DHO/DPHO, LMD, MD	Monitoring and evaluation report
	Evaluate the impact of the program through periodic surveys and identify `hot spots' which need to be prioritized	• Design and carry out the evaluation surveys		
	Develop capacity in screening for anemia by measuring hemoglobin with field testing tools	• Training for health workers in screening for anemia		

Note:

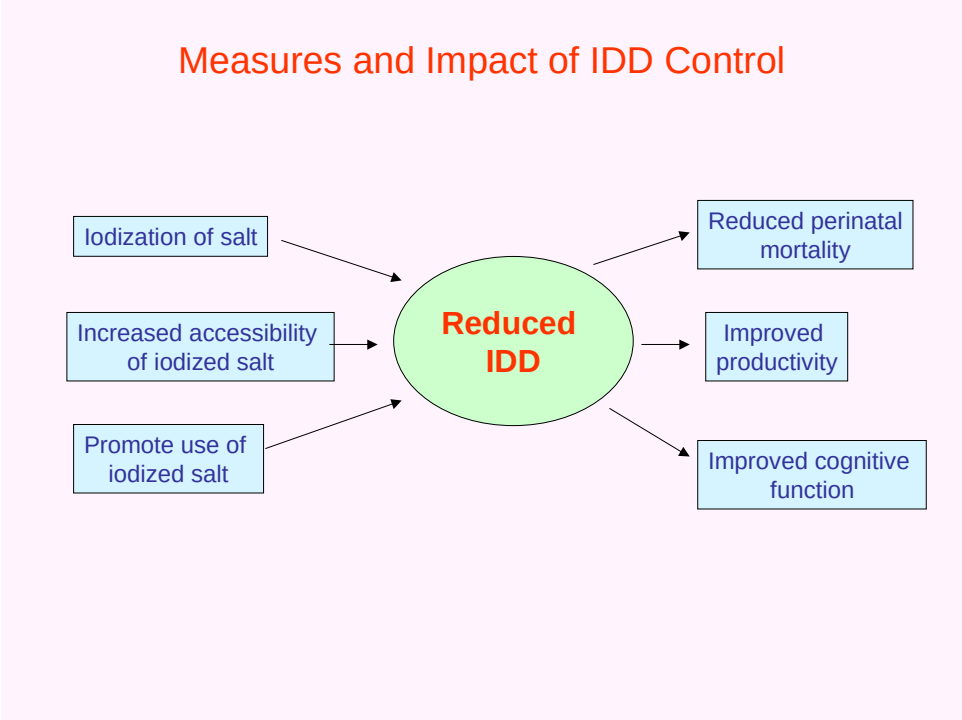
a. National Protocol on Iron Supplementation and guidelines for treating severe anemia: see Annex 5

b. Guidelines for the distribution of deworming tablets: see Annex 6

c. List of iron rich foods: see Annex 7

5.3 Iodine Deficiency Disorder

Objective 3: To virtually eliminate iodine deficiency and sustain the elimination



Specific objectives	Strategy	Activity	Responsibility	Indicator
To ensure all edible salt is iodized	Strengthen implementation of Iodized Salt Act	• Implement Iodized Salt Regulations • Develop operational guidelines for iodized salt trading • Strengthen monitoring and regulating bodies[a] of iodized salt trading	NS/CHD, DFTQC, IDD committee	Prepared Guidelines Iodine level at entry, dealer and household levels % of households consuming adequately iodized salt
	Encourage better storage practices to prevent iodine loss	• Advocacy for importer/trader, dealer, retailer and community people	MoH, STC	

	Ensure systematic monitoring of iodized salt	• Internal monitoring at entry points • External monitoring at the entry sites and depot sites • Monitoring at community level	STC, Salt traders NS/CHD, DFTQC. DHO/DPHO	(>15 ppm)
To increase the accessibility of iodized packet salt with quality assurance logo[b]	Increase the market share of the iodized packet salt	• Advocate among dealers/traders • Monitore the market share of iodized packet salt with quality assurance logo in salt business • Distribution of iodized salt in inaccessible districts at subsidized costs • Coordinate with different government bodies to restrict infiltration of non iodized salt or inadequately iodized salt	NS/CHD	Coverage of the market share of iodized packet salt
To increase the use of iodized packet salt	Create awareness of the importance of iodized salt	• Implement social marketing campaign • Initiate school based promotion campaign • Training/orientation to health workers and volunteers	NS/CHD, DHO/DPHO, NGOs/INGOs	Coverage of the use of iodized packet salt
To monitor IDD prevalence at national level	Develop IDD monitoring system and implement the monitoring survey at national level	• Collaborations with external and internal partners to practice	NS, IOM,	Prevalence of IDD based on UIE examination and coverage of iodized salt[c]

Note:

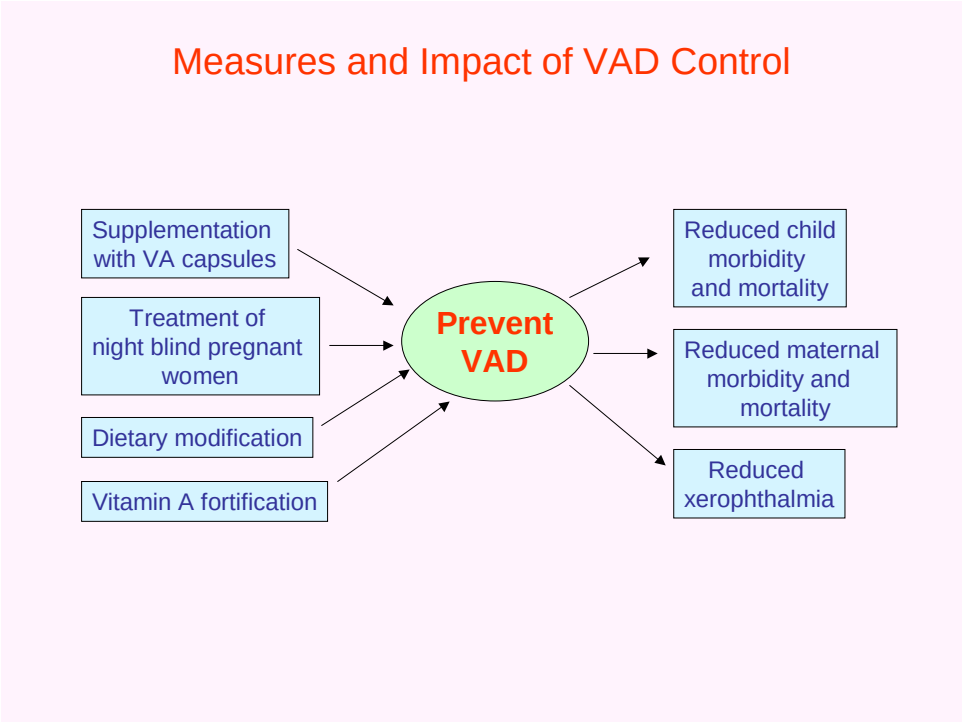
a. Regulation bodies: 1. Ministry of Health 2. IDD elimination committee and 3.DFTQC

b. Quality assurance logo: IDD technical Committee under Ministry of Health issued a two child logo for the quality assurance of iodized packet salt at 50 ppm level (minimum) in 1998.

c. WHO/UNICEF/ICCIDD has recommended two main indicators to assess the status of IDD. These are urinary iodine excretion (bio-chemical indicator) and salt iodine (process indicator). Criteria based on both of the indicators should be met in order to declare elimination of IDD from a particular area.

5.4 Vitamin A Deficiency

Objective 4: To virtually eliminate vitamin A deficiency and sustain the elimination



Specific objectives	Strategy	Activities	Responsibility	Indicator
To sustain the existing high coverage of supplementation of high-dose VA capsules to children aged 6-59months[a]	Ensure availability of VA capsules at health facilities	• Strengthen logistic system of VA capsules distribution	LMD, DHO, CHD	Coverage of VA supplementation
	Increase awareness of importance of VA capsules supplementation	• Distribution of VA capsule through FCHVs • Supervision by Health post workers • Training to newly appointed HWs and newly recruited FCHVs	DHO/DPHO, NS/CHD	
	Promote biannual VA capsules supplementation through FCHV at VA days	• National campaign through mass media • Mobilization of community leaders	DHO/DPHO, NS/CHD	

To increase coverage of supplementation of high-dose VA capsule to postpartum mothers[b]	Increase awareness of benefits of VA capsules supplementation	• Campaign and education	DHO/DPHO, NS/CHD	Coverage of VA supplementation
	Promote VA capsules supplementation within 6 weeks of delivery	• Distribution of VA capsule through FCHVs and HP staffs • Supervision by Health post workers • Training to newly appointed HWs and newly recruited FCHVs • Supplementation of VA capsule at the time of BCG vaccination	DHO/DPHO, NS/CHD	
To reduce the risk of VA deficiency for night blind pregnant mothers[c]	Promote treatment of night-blind pregnant women with low-dose VA capsules after first trimester.	• Advocate for low-dose VA capsules • Low-dose treatment through health institutions	DHO/DPHO, NS/CHD, Health institutions	Coverage of LDVAC dose Prevalence of night blindness
To ensure treatment of clinical conditions such as xerophthalmia, measles, severe malnutrition and prolonged diarrhea by the recommended dose of VA capsules	Strengthen implementation of the activity for treatment	• Training to health workers at health institutes • Disseminate and distribute case treatment protocol card	NS/CHD	Coverage of cases treated
	Ensure availability of VA capsules	• Supply VA capsules to all health facilities	LMD, NS/CHD	
To promote dietary modification to improve the quality and diversity of foods	Advocate for increased home production, consumption and preservation of VA rich foods	• National campaign • Nutrition education • Promote home gardening and animal husbandry	NS/CHD, MoAC, DFTQC, MoE	Improved KABP
	Promote the consumption of VA rich foods[d] and balanced diet through nutrition education	• Campaign by mass-media • Promote home gardening and animal husbandry • Nutrition education		

To promote the use of VA fortified food	Strengthen implementation of fortification activity	• Create awareness about fortified food • Identify appropriate food vehicle for VA fortification • Establish fortification policy • Encourage industrial partners and NGOs/INGOs in fortification	NS/CHD, MoIC, DFTQC	Increased use of fortified food

Note:

a. *Guidelines for VA Capsule supplementation and treatment protocol: see annex 8*

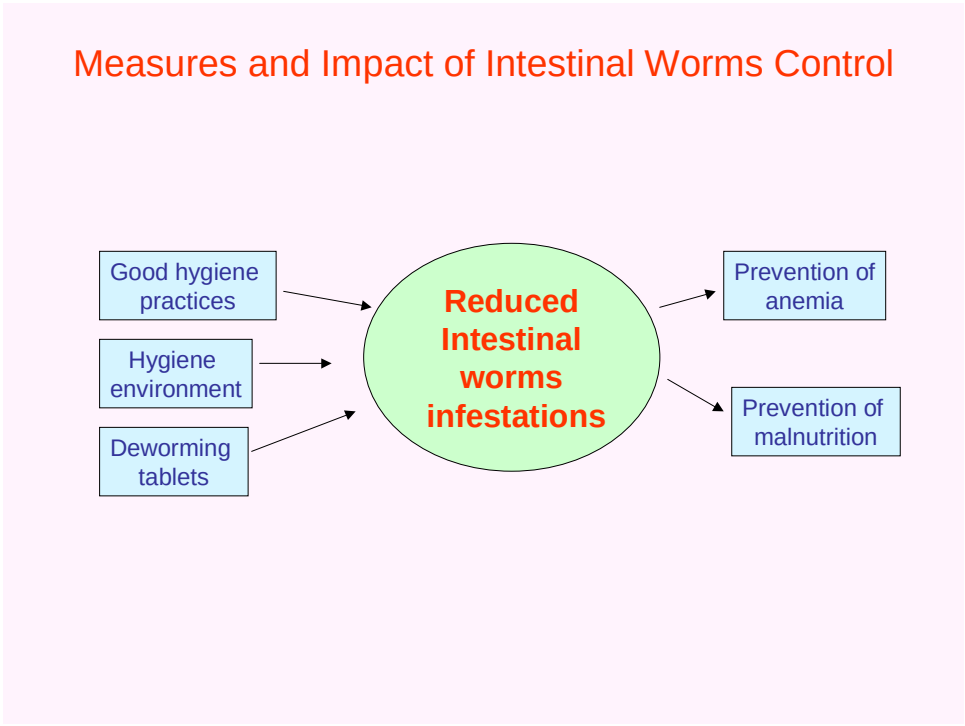
b. *Postpartum supplementation is aimed to correct VAD in infants from birth to 6 months.*

c. *Currently practicing in three districts only.*

d. *List of vitamin A rich foods: see Annex 9*

5.5 Intestinal Worm

Objective 5: To reduce the infestation of intestinal worms among children and pregnant women



Specific objectives	Strategy	Activities	Responsibility	Indicator
To sustain the existing high coverage of deworming tablets among children aged 1-5 years[a].	Distribute the deworming tablets to target groups during vitamin A capsule supplementation in all districts.	• Training to FCHVs • Logistics management of deworming tablets • Distribution of deworming tablets by FCHVs • Advocacy for deworming	LMD, DHO/DPHO NS/CHD, Health institutions	Coverage of deworming tablets Prevalence of intestinal worm infestation
To increase the coverage of deworming tablets to pregnant women[b]	Strengthen deworming program for pregnant women through health facilities	• Training to Health workers • Logistic management of deworming tablets • Distribution by health workers • Advocacy for deworming	LMD, DHO/DPHO NS/CHD, Health institutions	Coverage of deworming tablets Prevalence of intestinal worm infestation
To promote the improvement of hygiene practices to reduce contamination with intestinal worms/ova	Advocate for people to improve their hygiene practices.	• Campaign • Health education	DHO/DPHO, NS/CHD, NHEICC	Coverage of deworming tablets Prevalence of intestinal worm infestation

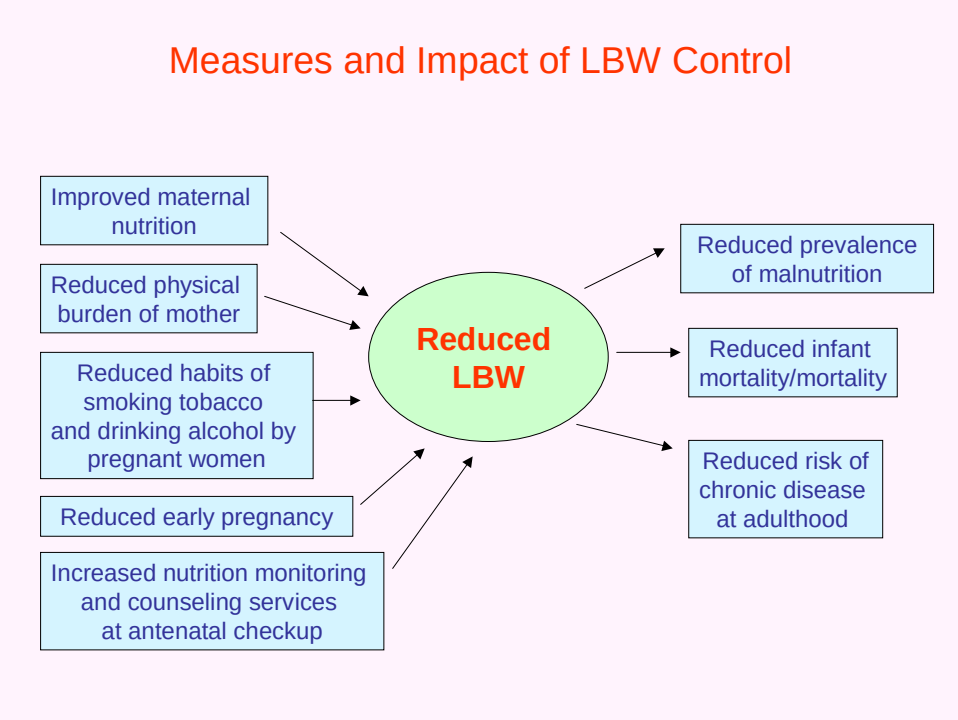
Note:

a. *Guidelines for distribution of deworming tablets: see annex 6*

b. *Single dose of deworming tablets (Albendazole 400 mg) from 2nd trimester (4months) of pregnancy.*

5.6 Low Birth Weight

Objective 6: To reduce the prevalence of low birth weight

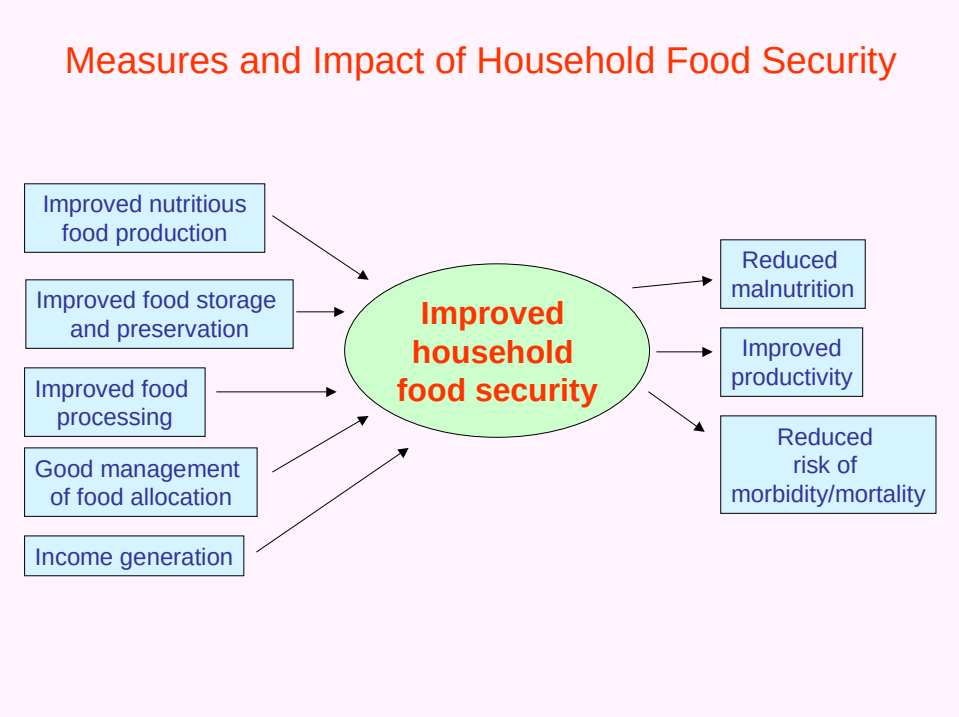


Specific objectives	Strategy	Activities	Responsibility	Indicator
To improve maternal nutritional status	Reduce maternal PEM	• Nutrition education counseling • National campaign • Monitoring nutritional status at antenatal clinic	DHO/DPHO, NS/CHD, MoWCSW, NHEICC, Health institutions	Weight gain of pregnant mother Coverage of iodized salt Anemia prevalence VAD prevalence Improved KABP
	Reduce maternal IDD	• Campaign to promote use of iodized salt		
	Reduce maternal VAD	• Treatment of night blind pregnant women with low dose VA capsules		
	Reduce maternal anemia	• Provide iron tablets and de- worm medicine		
	Reduce workload of pregnant women	• Collaboration with gender sector		
To reduce number of pregnant women who have the habits of smoking tobacco and drinking alcohol	Increase awareness of risks of smoking and alcohol to LBW	• National campaign through mass media • Nutrition/health education • Enforce respective legislation	FHD, Health institutions	No. of pregnant women with the habits of smoking and drinking alcohol
To reduce cases of early pregnancy	Increase awareness of risks of teen-age pregnancy to infant and maternal health	• Establish and strengthen adolescent clinic • Develop school curriculum on reproductive health • Counseling and education • Improve family planning	FHD, Health institutions	Cases of Teen age pregnancy

To increase % of pregnant women who access services for nutrition monitoring and counseling at antenatal clinic	Strengthen activities for nutrition monitoring /counseling at antenatal clinics	• Monitor body weight gain • Develop guideline/manual for nutrition counseling • Implement nutrition counseling by trained HWs • Collaboration with safe motherhood program or Family Health Division	Family health sector	Coverage of ANC visits

5.7 Household Food

Objective 7: To improve household food security to ensure that all people have adequate access, availability and utilization of food needed for a healthy life.



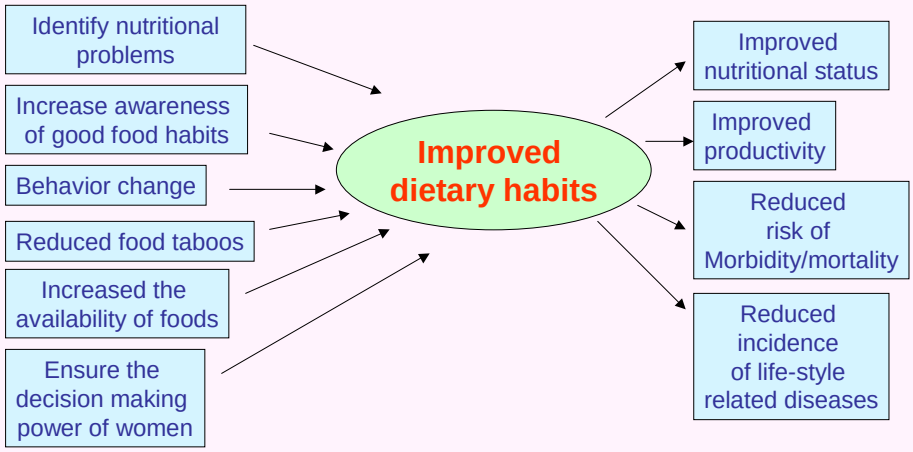
Specific objectives	Strategy	Activities	Responsibility	Indicator
To improve nutritious food production at household level	Promote kitchen gardening Improve agricultural skills Promote raising of poultry, fish and livestock for household consumption	• Collaboration with agricultural sector	MoAC, MoH	Energy availability/ Capita

To improve food storage and preservation skills	Advocate among community people as to how to store and preserve their foods at home	• Develop IEC materials • Training to community people • Collaboration with agricultural sector	MoAC, DFTQC	Improved KABP
To diversify utilization of various food items	Improve technical knowledge of food processing	• Establish cooperatives • Establish community processing unit	MoAC, DFTQC	Quantity of production and consumption of processed foods
To improve food allocation throughout the year within the household	Advocate among community people as to how to manage their food allocation	• Develop IEC materials • Campaign and education • Training	MoAC, MoE, NS/CHD	Food deficit data
To increase income generating opportunities for sustained purchasing power of foods	Promote activities of women's groups which are interested in income generation	• Introduction of appropriate income generation activities	MoAC, MoWCSW, Local development offices, NGOs/INGOs	Increased household income

5.8 Improved Dietary

Objective 8: To promote the practice of good dietary habits to improve the nutritional status of all people

Measures and Impact of Improved Dietary Habits

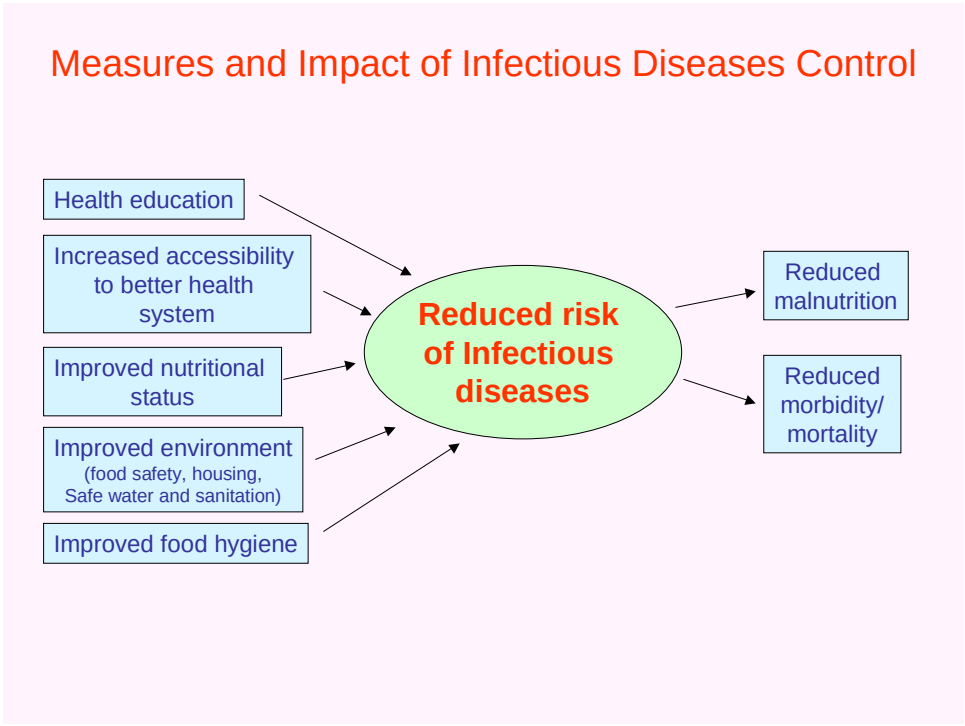


Specific objectives	Strategy	Activities	Responsibility	Indicator
To identify nutritional problems due to culturally related dietary habits	Conduct a study to clarify the problems of culturally-related dietary habits	• Collect information about dietary habits and food intake • Review and analyze the culturally-related dietary habits	NS/CHD DFTQC	Nutritional status (Prevalence of underweight and Prevalence of low BMI)
To increase the awareness and knowledge of balanced diets, nutritious foods, and good dietary habits	Promote nutrition education activities and advocate for good diets and dietary habits	• Update and disseminate existing guidelines on good diets and dietary habits • Develop IEC materials for good dietary habits • Coordinate with curriculum development center to update the curriculum • Implement nutrition education /advocacy at various levels	NS/CHD DFTQC CDC/MoE DHO/DPHO	Improved knowledge
To promote behavior change to improve dietary habits	Develop and strengthen programs that focus on behavior change as the means of improving dietary habits	• Develop tools which promote behavior change for improved dietary habits • Train health workers in the use of behavior change tools • Utilize local people and resources in programs aimed at	NS/CHD, NHTC, DHO/DPHO	Improved behavior change

		behavior change		
To reduce the risk of nutritional problems due to food taboos	Strengthen the activities of nutrition education/advocacy which seek to eliminate the food taboos affecting nutritional status	• Identify food taboos which are still commonly practiced • Advocate using behavior change tool at the community level • Advocate among traditional healers	NS/CHD, NHTC, DHO/DPHO	Identified food taboos
To increase the availability of various types of food at the household level	Promote the program of household food security	• See objective 7	NS/CHD MoAC	Nutritional status Number of different types of foods in households
To encourage women in the decision making for preparation of family foods	Promote empowerment of women/gender equity	• Social mobilization • Support women's groups	MoWCSW	% of women having decision making power for food preparation

5.9 Infectious Diseases

Objective 9: To prevent and control infectious diseases to improve nutritional status and reduce child mortality

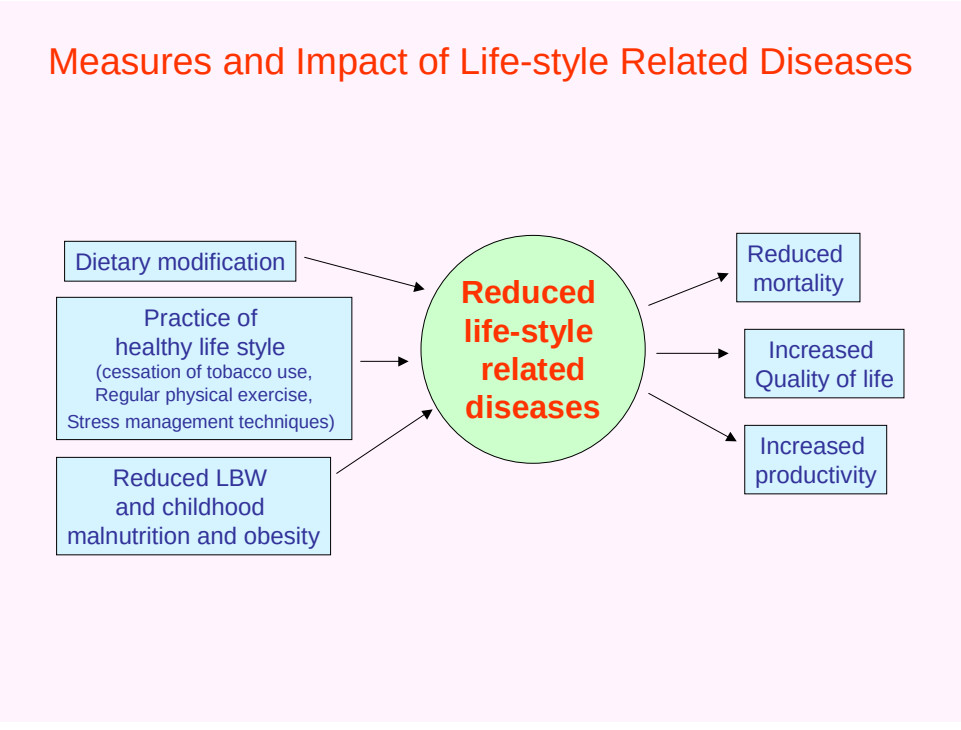


Specific objectives	Strategy	Activities	Responsibility	Indicator
To reduce the risk of morbidity and mortality by infectious diseases	Promote knowledge, attitudes and practices which will prevent infectious diseases	• Campaign through mass media • Education on health and hygiene	MoE, MoLD, MoE	Morbidity and mortality of infectious diseases Severity and incidence of diarrhea and pneumonia Immunization coverage Access to safe drinking water Percentage of malnourished children
	Ensure access to appropriate health services	• Immunization services • Measles control	EPI section/CHD	
		• Diarrheal disease control • ARI control	IMCI section/CHD, MoHAPP	
		• HIV prevention	NCASC	
		• Tuberculosis control	TB Center	
		• Vector born disease control (malaria, kala-azar etc)	Epidemiology division/EDCD	
		• Improve referral system	DHO/DPHO	
	Improve nutritional status to raise resistance against infectious disease	• Implement PEM program (see objective 1) • Sustain vitamin A supplementation (see objective 4) • Promote IYCF practices (see objective 1)	CHD, FHD	

	Improve safe water supply, sanitation and housing	• Increase access to safe drinking water • Improve sanitation system • Increase the availability of public and private toilets • Advocate about the importance of better housing	MoHAPP, MoH (Environment health focal point), NHEICC	
	Improve food hygiene	• Health education through BCC for improved food hygiene • Campaign amongst food handlers for food hygiene • Advocacy for appropriate food safety legislation and regulations	MoE, NHEICC, DFTQC	

5.10 Life-style Related Diseases

Objective 10: To control the incidence of life-style related diseases (coronary heart disease, hypertension, tobacco and smoke related diseases, cancer, diabetes, dyslipidemia, etc)



Specific objectives	Strategy	Activities	Responsibility	Indicator
To promote good food habits	Create awareness among adults about the importance of maintaining good food habits for life[a]	• Develop IEC materials • Develop systematic networking system to distribute IEC materials • Campaign through media • School health and nutrition education	NS/CHD, DHO/DPHO	KABP
	Develop capacity for counseling at health facilities	• Develop IEC counseling materials • Training to health workers		
To promote better lifestyle for improved health	Create awareness about the importance for adolescents and adults to control smoking and body weight	• Develop IEC materials • Develop RDA for Nepali people • Revise nutritive value of foods • Campaign through media • Nutrition and health education	NS/CHD, FHD, Schools, Universities, Hospitals, NGOs/INGOs	Incidence of life style related diseases
	Create awareness to increase physical activity and improve stress management techniques			
To reduce inadequate intrauterine development and malnutrition and obesity during childhood[b]	See objective 6 and objective 1			

Note:

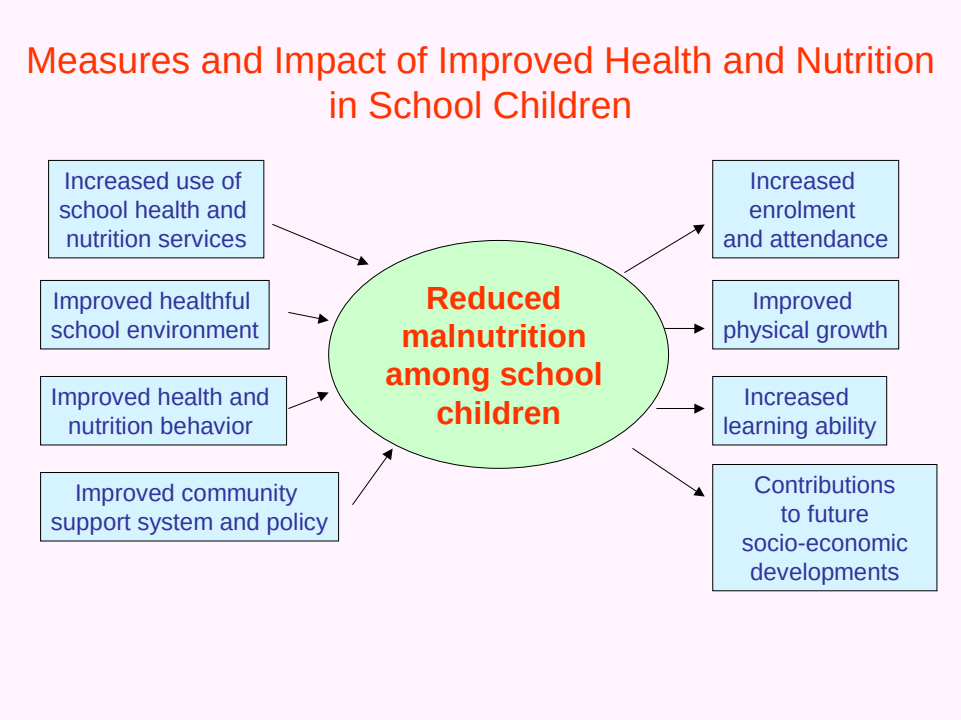
Association between selected dietary components and cancer: see annex 10

a. *Dietary guidelines for Life-style related diseases: See annex 11*

b. Recent data demonstrated that malnutrition in childhood and during the gestational period could increase risk of the above non-communicable diseases in adulthood

5.11 School Health and

Objective 11: To improve health and nutritional status of school children



Specific objectives	Strategy	Activities	Responsibility	Indicator
To Increase use of SHN services by school children	Build capacity of the policy and working level stakeholders	• Training of teachers, Child clubs, SMCs and SHN Committees on anthropometric measurements, iron and Vitamin A supplementation and deworming	MoE, NS/CHD, SMC/SHN Committee	% in enrolment and attendance rates Prevalence of anemia, VAD and worm infestation Proportion of malnourished children
	Increase SHN Services	• Assessment of nutritional status, development of dietary guidelines, mass deworming, iron tablet distribution and school feeding program		

To improve healthful school environment	Formulate policies and standards by MoE and MoH	• Incorporate school programs aiming SHN services into the School Improvement Plan	MoE, MoLD, MoAC, SMC, MoH, MoHAPP	% of schools with separate latrines for girls and boys Reduced incidence of diarrhea and worm infestations
	Minimize environmental risks	• Provide safe and hygienic food service		
	Provide adequate and safe water supply and sanitary facilities	• Build separate latrines for boys and girls • Maintain hand-washing facilities at schools		
To improve health and nutrition behavior	Enhance knowledge, skills and learning ability	• Conduct behavior-centered sessions on personal hygiene and nutrition • Promote kitchen gardens at schools	Schools, MoE, Curriculum Development Center, NHEICC	% of children who report at least two nutritional measures % of schools having a kitchen garden
	Introduce child to child and child-to-parent approach	• Develop and disseminate IEC materials and SHN facilitation reference manuals		
To improve and strengthen community support systems and policy environment	Strengthen linkage, networking and partnership between MoE and MoH at various levels	• Form a national level SHN Advisory and Steering Committee, Integrate school based health and nutrition services	MoE, MoH, SMC/SHN committee, Child clubs, MoWCSW	% of schools with partners active in and supportive of SHN program
	Improve policy environment	• Formulate school policy and protocols on healthy food, helminthes control and prepare SHN implementation guidelines		

5.12 Nutrition in exceptionally difficult

Objective 12: To reduce the critical risk of death and/or malnutrition during exceptionally difficult circumstances

Specific objective	Strategy	Activities	Responsibility	Indicator
To reduce the risk of malnutrition and morbidity/mortality by HIV transmission through BF of infants	Increase awareness of BF in relation to HIV positive mothers at all levels	• Develop evidence-based guidelines on HIV and infant feeding • National campaign through mass-media • Health education at various levels (health facilities, community, school, etc)	NS/CHD, NCASC, DHO/DPHO, Health institutes, schools	Nutritional status of HIV-positive infants % of infants who contracted HIV through BF % of HIV-positive mothers who have access to counseling services
	Provide support to HIV-positive mothers to successfully carry out their infant feeding decision	• Develop counseling system for HIV-positive women • Build capacity of counselors/health workers for counseling • Implement counseling services for HIV-positive mothers		
To Reduce the risk of malnutrition and morbidity/mortality of people who suffer through complex emergencies including natural or human-induced disasters (flood, drought, earthquake, war, civil unrest, severe political and economical living conditions)	Ensure that nutrition is integrated as a key component of Emergency Preparedness Plan (EPP)	• Advocate importance of nutrition in EPP	NS/CHD, UN Agencies, Red Cross, Human right's group, Ministry of Home Affairs and other concerned Ministries	Prevalence of malnutrition % of target populations who access minimal nutritional requirements
	Ensure that affected people have access to minimal nutritional requirements, particularly young children and women	• Develop an implementation plan and guidelines for different situations • Collaborate with relief agencies for effective delivery of food • Monitor nutritional status, and availability /accessibility of foods		

5.13 Analyzing, Monitoring and Evaluating Nutrition

Objective 13: To strengthen the system for analyzing, monitoring and evaluating nutrition situations

Specific objectives	Strategy	Activity	Responsibility	Indicator

To strengthen existing institutional capacities and capabilities at various levels	Increase knowledge and skills of key actors at all levels	• Seminar • Workshop • Nutrition education at academic institutions	NS/CHD University	Situational analysis
To improve coordination of data collection, analysis and reporting	Strengthen collaboration amongst relevant institutions	• Establish committee • Establish nutrition association	NS/CHD University	Data collection
	Develop networks for data collection, processing and databank	• Network		
To standardize tools for monitoring and evaluation of the nutrition situation	Acquire necessary tools and facilities required for data collection, processing and reporting	• Create nutritional RDAs for Nepali people • Identify standard values of anthropometric measurements for Nepali people	NS/CHD University	Nepal RDAs and Anthropomet-ric standards
To implement national survey to assess nutritional status in Nepal	Strengthen capacity building for national nutrition survey	• Training • Implementation of national nutrition survey	NS/CHD	National survey

ANNEXES

Annex 1: Cut-off points for the assessment of nutritional status

Type	Level	Target	Cut-off point	Clinical examination
Low Birth-weight		Neonate	<2500 g	
Underweight[1,2]	Moderate-Severe	< 5 yrs	≤-2SD W/A[a], ≤3 centile of W/A	
	Severe	< 5 yrs	≤-3SD W/A[a], <60% of W/A	
Stunting[1]	Moderate-Severe	< 5 yrs	≤-2SD H/A[b]	
	Severe	< 5 yrs	≤-3SD H/A[b]	
Wasting[1]	Moderate-Severe	< 5 yrs	≤-2SD W/H[c]	
	Severe	< 5 yrs	≤-3SD W/H[c]	
Adult malnutrition (Based on BMI)[3]	Undernourished	Adult	<16 BMI[d]	
	Probably undernourished		16 – 18.5 BMI	
	Normal		18.5 – 25 BMI	
	Probably obese		25 – 30 BMI	
	Obese		>30 BMI	
Vitamin A deficiency[4,5]	Sub-clinical		Serum retinol <0.70 µmol /L[e]	

	Clinical		Serum retinol <0.35 µmol /L[f]	Night blindness, Bitot's spot Conjunctive xerosis, Keratomalacia Active corneal lesions
Iodine deficiency Based on urinary iodine excretion[6]	Mild		50-99 µg/L UIE[g]	
	Moderate		20-49µg/L UIE	
	Severe		<20µg/L UIE	
Based on palpation[7]	Grade 0			No goiter
	Grade 1			Not visible with the neck in normal position. The mass moves upward when the subject swallows. Nodular alternations can occur even when the thyroid is not visibly enlarged.
	Grade 2			A swelling in the neck that is visible when the neck is in a normal position and is consistent with an enlarged thyroid by palpation
Anemia[8,9] *WHO adjustment of Hb cut-off points for population living at higher altitude)		6-59 months	<110 g/L Hb[h]	
		5-11 years	<115 g/L Hb	
		12-14 years	<120 g/ L Hb	
		Adult woman	<120 g/L Hb	
		Pregnant woman	<110 g/L Hb	
		Adult man	<130 g/L Hb	
	Mild	For all	<10.0 g/L Hb cut-off point	
	Moderate	For all	7.0 - <10.0 g/L Hb	
	Severe	For all	<7.0 g/L Hb	

a: weight for age in NCHS/WHO standard
b: height for age in NCHS/WHO standard
c: weight for height in NCHS/WHO standard
d: Body Mass Index =Weight in kg / (Height in meters)^2
e: less than 5% with serum values ≤0.70 µmol/l is characteristic of affluent societies and children with adequate vitamin A status
f: A prevalence of >5% of serum levels <0.35 µmol/l is strong corroborative evidence of any clinical criteria met to identify an urgent public health problem.
g: The benchmark for monitoring progress towards elimination of IDD as a public health problem is 50% of the target group with urinary iodine below 100 µg/l and less than 20% with levels below 50µg/l
h: A classification of countries with respect to the degree of public-health significance of anemia has been proposed by WHO (1996) in which countries or population groups with anemia prevalence of at least 40% are categorized as "high", 15-40% as "medium" and under 15% as "low".

References:

1. WHO. *Measuring Change in Nutritional Status: Guideline for Assessing the Nutritional Impact of Supplementary Feeding Programs for Vulnerable Groups,* WHO, Geneva, 1983
2. FS. King and A. Burgess. *Nutrition for Developing Countries,* Oxford University Press, 1993
3. G. Beaton, A. Kelly, J. Kevany, R. Martorell and J. Mason. *Appropriate uses of anthropometric indices on children,* ACC/SCN Nutrition Policy Discussion Paper, No. 7, ACC/SCN, Geneva, 1990
4. ACC/SCN. Micronutrients*, Third Report on the World Nutrition Situation,* ACC/SCN, Geneva, 1997
5. WHO. *Indicators for accessing Vitamin A Deficiency and their application in monitoring and evaluating intervention programs,* World Health Organization, 1998
6. ACC/SCN. Micronutrients Update, *4th Report on The World Nutrition Situation,* ACC/SCN2000
7. UNICEF. *Indicators for assessing Iodine Deficiency Disorders and Their Control Through Salt Iodization,* NewYork, 1994
8. ACC/SCN. *Controlling iron deficiency,* Nutrition Policy Discussion Paper, No. 9. ACC/SCN, Geneva
9. CP. Howson, TE. Kennedy and A. Horwitz, *Prevention of Micronutrient Deficiencies: Tools for Policymakers and Public Health Workers,* Institute of Medicine, National Academy Press, Washington, D.C. 1998

Adjustment of Hb cut-offs for populations living at higher altitudes

Normal increases in hemoglobin related to long term altitude exposure

Altitude (meters)	Increase in Hb (g/dl)
<1000	0
1000	+ 0.2
1500	+ 0.5
2000	+ 0.8
2500	+ 1.3
3000	+ 1.9
3500	+ 2.7
4000	+ 3.5
4500+	+ 4.5

Source: Nepal Micronutrient Status Survey, 1998

Annex 2: WHO standard for parameters of life-style disease

Definitions of the characteristics of the metabolic syndrome (WHO standard for reference)

	Desirable	Borderline	Risk
Cholesterol			
Total Cholesterol	<200 mg/dl	200-239 mg/dl	>240 mg/dl
HDL-Cholesterol[1]	>60	35-59	<35
LDL-cholesterol[2]	<130	130-159	>160
Triglycerides	<200	200-400	>400
Blood glucose stage/ Diabetes			
FPG Test[3]	<6.1 mmol/L (<110 mg/dl)		≥7.0 mmol/L (≥126 mg/dl)
OGT Test[4]	<7.8 mmol/L (<140 mg/dl)		≥11.1 mmol/L (≥ 200 mg/dl)
Uric acid level			
Male	2-7 mg/dl		>7 mg/dl
Female	2.5-6 mg/dl		>6 mg/dl
Blood Pressure/ Hypertension			
Systolic	<120 mmHg	120-140 mmHg	≥140 mmHg
Diastolic	80 mmHg	80-90 mmHg	≥90 mmHg

Note:

1. HDL-Cholesterol: High Density Lipoprotein-Cholesterol
2. LDL-Cholesterol: Low Density Lipoprotein-Cholesterol
3. FPG Test: Fasting Plasma Glucose Test. Fasting is defined as no caloric intake for at least eight hours.

OGT Test: Oral Glucose Tolerance Test. It is defined as 2 hour blood glucose

Annex 3: Indicators and targets for reducing malnutrition

Indicators and targets for reducing the prevalence of PEM in children under three years

Indicators	1990's	2000's	Target 10th Plan (2007)	Target 11th Plan (2012)	Target MDGs (2015)	Target SLTHP (2017)	Reference
Prevalence of underweight[a] (<5yrs)	46.9[b]	48.3	39	32	27	24	NFHS1996 DHS2001
Prevalence of stunting[a]	48.4 [b]	50.5	41	33	28	25	NFHS1996 DHS2001
Prevalence of wasting[a]	11.2 [b]	9.6	8	6	5	5	NFHS1996 DHS2001
Rate of exclusive	74.0	68.3	77	84	88	>90	NFHS1996

breastfeeding (<6 months)[c]							DHS2001
Rate of optimal complementary feeding (6-9 months)		65	75	83	88	>90	DHS 2001
Coverage of growth monitoring [d] (<3yrs)		12-17	30	45	55	>60	DoHS AR 20002/03

a. <-2SD of NCHS/WHO standard
b. Average data for children under 3 years
c. The average rate of exclusive breastfeeding among all the groups from 0 to 5 months old
d. Coverage of growth monitoring = (number of visits ÷ number of targets) × 100
Number of targets is calculated as follows: 1/3 × target population × 6 visits + 2/3 target population × 4 visits, where target population is all children 0-36 months of age.

Indicators and target for reducing the prevalence of PEM in women

Indicator	1990's	2000's	Target 10th Plan (2007)	Target 11th Plan (2012)	Target MDGs (2015)	Target SLTHP (2017)	Reference
Prevalence of Low BMI[a]	28.3	26.7	22	18	15	13	DHS 1996 DHS 2001
(Prevalence of poor weight gain during pregnancy)							No data

a. Low BMI: less than 18.5kg/m²

Indicators and targets for reducing the prevalence of anemia

Indicator	1990's	2000's	Target 10th Plan (2007)	Target 11th Plan (2012)	Target MDGs (2015)	Targets SLTHP (2017)	Reference
Prevalence of anemia among children	78.0		60	49	43	<40	NMSS 1998
Prevalence of anemia among all women	67.7		54	47	42	<40	NMSS 1998
Prevalence of anemia among pregnant women	74.6		58	48	43	<40	NMSS 1998
Coverage of iron distribution		54-68	72	76	79	>80	DoHS AR 2000/03
Compliance of iron supplementation							No data

Indicators and targets for eliminating IDD

Indicators	1990's	2000's	Target 10th Plan (2007)	Target 11th Plan (2012)	Target MDGs (2015)	Target SLTHP (2017)	Reference
Median Urinary	144µg/l					>100µg/l	NMSS

Iodine Excretion							1998
Coverage of iodized salt use (≥15 ppm)	55	63	75	83	88	>90	NMSS 1998 BCHIMES 2000

Indicators and targets for eliminating Vitamin A deficiency

Indicators	1990's	2000's	Target 10th Plan (2007)	Target 11th Plan (2012)	Target MDGs (2015)	Target SLTHP (2017)	Reference
Prevalence of VAD (sub-clinical)	32.3		19	11	7	<5	NMSS1998
Prevalence of night blindness in pregnant women	6.1		3	2	1	<1	NMSS1998
Coverage of VA supplementation for children aged 6-59 months		97	>90	>90	>90	>90	DoHS AR 2002/03
Coverage of VA supplementation for postpartum mothers		47	57	74	84	>90	HMIS Report 2003/04
Coverage of cases treated							No data

Indicators and target for reducing low birth weight (LBW)

Indicators	1990's	2000's	Target 10th Plan (2007)	Target 11th Plan (2012)	Target MDGs (2015)	Target SLTHP (2017)	Reference
Prevalence of LBW		21	19	15	13	12	UNICEF 2004
Rate of poor weight gain during pregnancy							No data

Indicators and target for improving household food security

Indicators	1990's	2000's	Target 10th Plan (2007)	Target 11th Plan (2012)	Target MDGs (2015)	Target SLTHP (2017)	Reference
Rate of people with inadequate energy intake	50		38	32	28	25	CBS 1998

Indicators and target for intestinal worms control

Indicators	1990's	2000's	Target 10th Plan (2007)	Target 11th Plan (2012)	Target MDGs (2015)	Target SLTHP (2017)	Reference
Rate of infestation of intestinal worms among children	74		45	27	16	<10	WHO/WFP 1999
Coverage of deworming tablets among children aged 2 to 5 years[a]		90	>90	>90	>90	>90	DoHS AR 2002/03

a. Only since October 2004 children aged 1 years have been included

Annex 4: Guidelines for complementary feeding

1. **Duration of exclusive breastfeeding and age of introduction of complementary foods:** Practice exclusive breastfeeding from birth to six months of age, and introduce complementary foods at six months of age (180 days) while continuing to breastfeed.
2. **Maintenance of breastfeeding:** Continue frequent, on-demand breastfeeding until two years of age or beyond.
3. **Responsive feeding:** Practice responsive feeding, applying the principles of psychosocial care. Specifically:
   - feed infants directly and assist older children when they feed themselves, being sensitive to their hunger and satiety cues;
   - feed slowly and patiently, and encourage children to eat, but do not force them;
   - if children refuse many foods, experiment with different food combinations, tastes, textures and methods of encouragement;
   - minimize distractions during meals if the child loses interest easily;
   - remember that feeding times are periods of learning and love – talk to children during feeding, with eye-to-eye contact.
4. **Safe preparation and storage of complementary foods:** Practice good hygiene and proper food handling by:
   - washing caregivers' and children's hands before food preparation and eating;
   - storing food safely and serving foods immediately after preparation;
   - using clean utensils to prepare and serve food;
   - using clean cups and bowls when feeding children;
   - avoiding the use of feeding bottles, which are difficult to keep clean.
5. **Amount of complementary food needed:** Start at six months of age with small amounts of food and increase the quantity, as the child gets older, while maintaining frequent breastfeeding. The energy needs from complementary foods for infants with "average" breast milk intake in developing countries are approximately 200 kcal per day at 6-8 months of age, 300 kcal per day at 9-11 months of age, and 550 kcal per day at 12-23 months of age. In industrialized countries these estimates differ somewhat (130,310 and 580 kcal/d at 6–8, 9–11 and 12–23 months, respectively) because of differences in average breast milk intake.
6. **Food consistency:** Gradually increase food consistency and variety as the infant get older, adapting to infant's requirements and abilities. Infants can eat pureed, mashed and semi-solid foods beginning at six months. By eight months most infants can also eat "finger foods" (snacks that can be eaten by children alone). By 12 months, most children can eat the same types of foods as consumed by the rest of the family (Keeping in the mind the need for nutrient-dense foods, as explained in 8. below). Avoid foods that may cause choking (i.e., items that have a

shape and /or consistency that may cause them to become lodged in the trachea, such as nuts, grapes, raw carrots).

7. **Meal frequency and energy density:** Increase the number of items that the child is fed complementary food, as he/she gets older. The appropriate number of feeding depends on the energy density of the local foods and the usual amounts consumed at each feeding. For the average healthy breastfed infants, meals of complementary foods should be provided 2–3 times per day at 6–8 months of age and 3–4 times per day at 9–11 and 12–24 months of age. Additional nutritious snacks (such as a piece of fruits or bread or chapatti with nuts paste) may be offered 1–2 times per day, as desired. Snacks are defined as foods eaten between meals, usually self-fed, convenient and easy to prepare. If energy density or amount of food per meal is low, or the child is no longer breastfed, more frequent meals may be required.
8. **Nutrients content of complementary foods:** Feed a variety of foods to ensure the nutrients needs are met. Meat, poultry, fish or eggs should be eaten daily, or as often as possible. Vegetarian diets cannot meet nutrient needs at this age unless nutrients supplements or fortified products are used (see 9. below). Vitamin A-rich fruits and vegetables should be eaten daily. Provide diets with adequate fat content. Avoid giving drinks with low nutrient value, such as tea, coffee and sugary drinks such as soda. Limit the amount of juice offered so as to avoid displacing more nutrient-rich foods.
9. **Use of vitamin-mineral supplements or fortified products for infants and mother:** Use fortified complementary foods or vitamin-mineral supplements for the infant, as needed. In some populations, breastfeeding mother may also need vitamin-mineral supplements or fortified products, both for their own health and to ensure normal concentrations of certain nutrients (particularly vitamins) in their breast milk. [Such products may also be beneficial for pre-pregnant and pregnant women].
10. **Feeding during and after illness:** Increase fluid intake during illness, including more frequent breastfeeding, and encourage the child to eat soft, varied, appetizing, favorite foods. After illness, give food more often than usual and encourage the child to eat more.

Source: Guiding Principles for Complementary Feeding of the Breastfed Child. Washington DC: PAHO, WHO, 2003

Annex 5: National Protocol on Iron Supplementation and Guidelines to treat severe anemia

National protocol on Iron Supplementation for Pregnant and Postpartum Women

Dose:	60 mg iron + 400µg folic acid, daily
Duration:	From the beginning of the second trimester in pregnancy (6 months) till 45 days postpartum (total 225 days)

Note: It is also globally recommended that *if 6 months duration cannot be achieved in pregnancy, continue to supplement during the postpartum for 6 months or increase the dose to 120 mg iron in pregnancy* (Source: Rebecca J. Stoltzfus and Michele L. Dreyfus., Guidelines for the use of iron supplements to prevent and treat iron deficiency anemia, INACG, WHO and UNICEF., 1998)

Guidelines for oral and folate therapy to treat severe anemia		
Age group	**Dose**	**Duration**
<2 years	25 mg iron + 100-400µg folic acid daily	3 months
2-12 years	60 mg iron + 400µg folic acid daily	3 months
Adolescents and adults, including pregnant women	120 mg iron + 400µg folic acid daily	3 months

- After completing 3 months of therapeutic supplementation, pregnant women and infants should continue preventive supplementation regimen.
- Children with Kwashiorkor or marasmus should be assumed to be severely anemic. However, oral iron supplementation should be delayed until the child regains appetite and starts gaining weight, usually after 14 days

Source: Rebecca J. Stoltzfus and Michele L. Dreyfuss, Guidelines for the use of Iron Supplements to Prevent and Treat Iron Deficiency Anemia, INACG, WHO and UNICEF, 1998

Annex 6: Guidelines for distribution of deworming Tablets

According to World Health Organization, if more than 20% of the population in a country (community) is suffering from worm infestation then, that country should provide the biannual deworming tablets to the community. Many studies carried out in Nepal show that almost one-third of pregnant women and children are suffering from worms (esp. hook worms).

One tablet Albendazol (400 mg) or one tablet Mebendazol (500 mg) can kill the different types of intestinal worms. In Nepal, one tablet of Albendazol (400 mg) is being distributed according to the decision of HMG, MoH and WHO. This tablet can kill the roundworm, trichuris and hook worms and the eggs of these worms also come out mixing with the stool. There are no side effects when children take this tablet even if they are not suffering from worms.

This tablet can be given to children above one year of age who are suffering from intestinal worms or suspected to be suffering. But, HMG, MoH is providing this tablet only to the targeted age groups.

Target	Dose	Time
Children (1-<2 years)	1/2 tablet of Albendazol (200 mg)	Twice a year (integrated with vitamin A program)
Children (2-5 years)	1 tablet of Albendazol (400 mg)	Twice a year (integrated with vitamin A program)
Pregnant women (after first trimester)	1 tablet of Albendazol (400 mg)	Once (after completion of first trimester)

Source: Guidelines for distribution of deworming tablets
Nutrition Section, CHD, MoH

Annex 7: List of iron rich foods

Iron content in selected foods

Name of the food	Iron content (mg/100 gm)	Name of the food	Iron content (mg/100 gm)
Mustard leaf "gundrukh"	94.3	Watermelon	7.9
"Masyaura"	44.0	Lentil	7.6
Garden cress	28.6	Onion stalk	7.4
Turnip greens	28.4	Peas, dry	7.1
Radish leaf "gundrukh"	26.6	Horse gram	6.8
Rice, beaten	20.0	Liver, goat	6.6
Tamarind pulp	17.0	Broad beans, sprouted	6.2
Mustard leaves	16.3	Mutton	2.5
Sugar unrefined "sakkar"	11.4	Egg, hen	2.1
Soybean	10.4	Chicken	1.5
Colocasia leaves	10.0	Milk, buffalo's	0.2
Liver, chicken	9.7	Milk cow's	0.2
Bengal gram, roasted	9.5	Fish, dried	1-89.0
Cow pea	8.6		

Source: Ministry of Agriculture, *Nutrient Content in Nepalese Foods*
Ramesh K. Adhikari, Miriam E. Krantz, *Child Nutrition and Health*

Annex 8: Guidelines for VA Capsule supplementation and treatment protocol

Guidelines for the implementation of the national vitamin A deficiency control program in Nepal

Basic activities

High dose supplementation of VA capsule to children 6-59 months in 75 districts through mass distribution twice a year according the following schedule:
Baisakh (March- April) during the peri-measles season and before the beginning of the high risk season of xerophthalmia.
Kartik (October/November) prior to the harvest season, to boost vitamin A stores for the acceleration in growth that often follows.

- Children 6 to under 12 months of age – one oral vitamin A dose of 100,000 IU two times per year during the capsule distribution campaign.
- Children 12 to 59 months of age – one oral vitamin A dose of 200,000 IU two times per year during the capsule distribution campaign.
- Special emphasis will be given during the campaign for severely malnourished children in order to be sure they will receive one mega dose of vitamin A, and that their mothers will receive special attention from the FCHVs.
- Women immediately following childbirth, or as soon as possible up to six weeks post-partum, can be given one oral dose of vitamin A 200,000 IU. (Postpartum supplementation is aimed to correct VAD in infants since birth to 6 months)
- Nutrition education activities and promotion of home gardening, to be carried out utilizing various communication media, including community-level health workers, and agricultural extension workers.
- The target population for the nutrition education activities will be all the mothers of children 6-59 months, as well as pregnant and lactating mothers. This population will also be the priority target for adult literacy and post-literacy activities.

Case treatment in all 75 districts with vitamin A capsules for xerophthalmia, measles, severe malnutrition and prolonged diarrhea, in accordance with WHO/UINICEF/IVACG guideline. For treatment of children with these illnesses, the following

protocols for the use of vitamin A should be observed:

Prevention and treatment protocol		
	Targets	**Dose**
Prevent Protocol	Children 6 to <12 months	100,000 IU of vitamin A, 2 times/year
	Children above 12 to 59 months	200,000 IU of vitamin A, 2 times/year
	Mothers (within 6 weeks of delivery)	200,000 IU of vitamin A,
Treatment Protocols (for children)	Xerophthalmia (Night blindness, Bitot's Spot, Keratomalacia, etc.)	Three doses[a]: One dose upon diagnosis One dose the following day One dose one month later
	Measles	Two doses One dose upon diagnosis One dose the following day
	Prolonged diarrhea (>14 days duration)	One dose Immediately upon diagnosis
	Severe malnutrition (Undernutrition)	One dose Immediately upon diagnosis
(for women)	Night blind pregnant mothers and others	25,000 IU weekly single dose, four doses

a. one dose: 100,000 IU for children aged 6-<12 months; 200,000 IU for children more than 12 months

Annex 9: List of Vitamin A rich foods

Pre vitamin A content in selected foods

Name of the food	Carotene (mcg/100 gm)	Name of the food	Carotene (mcg/100 gm)
Stinging nettle	12857	Liver chicken*	1930
Colocasia leaves	12000	Bethe leaves	1740
Coriander leaves	6918	Mustard leaf "gundrukh"	1520
Spinach	5580	Rape leaves	1380
Amaranth, tender	5520	Pumpkin*	1160
Radish leaves	5295	Papaya, ripe	666
Carrot	4275	Onion stalk	595
Liver goat*	3030	Soybean	426
Mango	2743	Egg, hen	420
Mustard leaves	2622	Lentil	270
Fenugreek leaves	2340	Cabbage	120
Pumpkin leaves	1940		

*The value is equivalent to B-carotene

Source: Ministry of Agriculture, *Nutrient Content in Nepalese Foods*
Ramesh K. Adhikari, Miriam E. Krantz, *Child Nutrition and Health*
National Institute of Nutrition, *Nutritive Value of Indian Foods*

Annex 10: Associations between selected dietary components and cancer

Associations between selected dietary components and cancer

Site of cancer	Fat	Body weight	Fiber	Fruits and vegetables	Alcohol	Smoked, salted and pickled foods
Lung				–		
Breast	+	+			+/–	
Colon	++		–	–		
Prostrate	++					
Bladder				–		
Rectum	+			–	+	
Endometrium		++				
Oral cavity				–	+(a)	
Stomach				–		++
Cervix				–		
Oesophagus				–	++(a)	+

Key:
+ = Positive association; increased intake with increased cancer.
– = Negative association; increased intake with decrease cancer.
a = Synergistic with smoking

Source: Report of a WHO Study Group, WHO Technical Report Series 797

Annex 11: Dietary guidelines for life-style related diseases

Dietary guidelines for life-style related diseases

- Consume a variety of food.
- Eat fruits and vegetables.
- Include sufficient grains/cereals.
- Eat more fiber.
- Include calcium-rich foods and protein-rich foods in the diet.
- Drink sufficient and clean fluids.
- Restrict the use of fats and oils and be selective about the types of fats used.
- Use less salt and eat less salty foods.
- Cut down on sugar, and on drinks and foods that contain sugar.
- Encourage exclusive breastfeeding combined with suitable complementary foods after six months.
- Maintain a healthy body weight.
- Encourage physical activity and exercise and suggest its minimum duration.
- Control alcohol intake
- Stop or avoid tobacco use.

Source: Report of a Joint FAO/WHO Consultation, 1998

REFERENCES:

1. ACC/SCN. *Ending Malnutrition by 2020: An Agenda for Change in the Millennium,* Global Nutrition Challenges: a life cycle approach, ACC/SCN. 1999
2. Ministry of Health, Department of Health Services. *Annual Report,* 2002/2003, Kathmandu, Nepal.
3. WHO, *The world Health Report 2002, Reducing Risks, Promoting Healthy Life,* Geneva. 2002
4. United Nations, *Millennium Development Goals,* http://www.un.org/millenniumgoals
5. SCN: *Nutrition trends and implication for attaining the MDGs,* In SCN 5th Report on the World Nutrition Situation, pp5-24 (2004) UN System SCN, Geneva.
6. Ministry of Health/New ERA/ORC Macro. *Nepal Demographic and Health Survey,* 2001.
7. Ministry of Health/UNICEF/WHO/MI/New Era Ltd. *Nepal Micro Nutrient Status Survey*, 1998.
8. Rikimaru, Toru., Joshi, Nira., Pandey, Sharada. *Prevalence of Anemia and it's Relevant Factors among High School Girls of Kathmandu Valley-Nepal,* 2003.
9. UNICEF. *The State of the World's Children,* 2004.
10. PAHO, WHO. *Guiding Principles for Complementary Feeding of the Breastfed Child.* Washington DC, 2003.

Advisory Committee:

1. Dr. B.D.Chataut, Director General, Department of Health Services
2. Dr. B. P. Pandit, Chief Specialist, Ministry of Health
3. Dr. Y.V. Pradhan, Director, Child Health Division, DoHS
4. Dr. G.P. Ojha, Former Director, Child Health Division, DoHS
5. Dr. R.K. Adhikari, Dean, IOM, Maharajgunj
6. Mrs. Sharada Pandey, Chief, Nutrition Section, CHD
7. Mr. Muniswor Mool, Chief HMIS Section, Management Division, DoHS
8. Mr. K.M. Neupane, Under Secretary, MoH
9. Dr. Indira Sharma, Professor, P.K. Campus
10. Dr. Toru Rikimaru, JICA Nutrition Advisor, JICA/Nutrition Section, CHD
11. Dr. Madhu Dixit Devkota, MBBS Coordinator, IOM

members:

Group Sessions

ProteinEnergy Malnutrition

1. Dr. Madhu Dixit Devkota
2. Dr. Prakash Sundar Shrestha
3. Dr. Bhim Acharya
4. Dr. Toru Rikimaru
5. Mrs. Roshani Shrestha
6. Ms. Nira Joshi

Iron Deficiency Anemia

1. Dr. Bhim Acharya
2. Dr. Toru Rikimaru
3. Mrs. Munu Thapa
4. Dr. Kalpana Tiwari
5. Ms. Nira Joshi
6. Ms. Rina Tiwari

Iodine Deficiency Disorders

1. Mr. M.R. Maharjan
2. Mr. Dilli Raman Adhikari
3. Dr. Toru Rikimaru
4. Mr. Naveen Paudyal

Vitamin A Deficiency Disorders & Deworming

1. Mr. M.R. Maharjan
2. Dr. Bhim Acharya
3. Dr. Toru Rikimaru
4. Mrs. Sushila Risal
5. Ms. Nira Joshi
6. Mr. K.P. Acharya
7. Mr. Tuyu N. Paechhai

Household Food Security

1. Mrs. Bidhya Manandhar
2. Dr. Bhim Acharya
3. Dr. Toru Rikimaru
4. Ms. Vicky Haines
5. Ms. Nira Joshi

Improved dietary habit

1. Mrs. Bidhya Manandhar
2. Dr. Toru Rikimaru
3. Ms. Vicky Haines
4. Ms. Nira Joshi
5. Mr. Naveen Paudyal

Infectionu diseases

1. Dr. Sun Lal Thapa
2. Dr. Tekendra Karki
3. Dr. Bhim Acharya
4. Dr. Toru Rikimaru
5. Ms. Nira Joshi

Life-style related diseases

1. Dr. Prakash Regmi
2. Dr. Sushila Malla
3. Mrs. Mansha Thakurathi
4. Dr. Bhim Acharya
5. Dr. Toru Rikimaru
6. Ms. Nira Joshi
7. Ms. Nani Shova Shakya
8. Mrs. Sunita Shrestha

Policy and planning

1. Dr. Y.V. Pradhan
2. Mrs. Sharada Pandey
3. Mr. Prem Kumar Shrestha
4. Mr. Bishwo Prashad Subedi
5. Mr. K.M Neupane

6. Dr. Prakash Raj Regmi
7. Mr. Ramji Dhakal
8. Mr. Dhurba Thapa
9. Dr. Toru Rikimaru
10. Dr. Karuna Onta
11. Ms. Nira Joshi
12. Mr. Naveen Paudyal

Working group members:

1. Dr. Sailesh Upadhya
2. Mrs. Pramila Ghimire
3. Dr. B.K. Subedi
4. Mr. P.O. Blomquist
5. Mr. Pragyan Mathema