

# Optimizing Foetal Growth and Development

*Report of a Bi-Regional Meeting  
Bangkok, Thailand, 7-9 December 2004*

WHO Project: ICP NUT 001



*South-East Asia Region  
New Delhi*

*Western Pacific Region  
Manila*

© World Health Organization

The contents of this restricted document may not be divulged to persons other than those to whom it has been originally addressed. It may not be further distributed nor reproduced in any manner and should not be referenced in bibliographical matter or cited.

November 2005

# CONTENTS

	<i>Page</i>
<i>Executive Summary</i> .....	v
1. INTRODUCTION .....	1
2. PROCEEDINGS .....	3
2.1 Nutrition and Reproductive Health Issues .....	6
2.2 Preparing the Woman Nutritionally for the First Pregnancy .....	7
2.3 Preventing Adolescent Pregnancy .....	8
2.4 Birth Spacing and Family Planning .....	9
2.5 Shortcomings of Safe Motherhood Programmes .....	9
2.6 Shortcoming of Nutrition Programmes .....	10
2.7 Social Consideration and Measures.....	10
2.8 Follow-up Plan at Country Level .....	11
3. SUMMARY AND NEXT STEPS .....	13

## Annexes

1. Programme.....	15
2. List of Participants.....	17



## EXECUTIVE SUMMARY

Experts in nutrition and reproductive health from 16 countries in WHO's South-East Asia and Western Pacific Regions participated in a consultation in Bangkok in December 2004 to identify region-specific issues related to the proposed strategy for optimizing foetal growth and development. The objective of the consultation was to inform the participants about the strategy, gather comments on its purpose, direction and contents for its development and to seek guidance on implementation issues in the context of other related strategies.

A previous WHO consultation in 2002 had highlighted the need to develop a strategy to reduce low birth weight (LBW). In practice, optimizing foetal development is critical, with size at birth marking one aspect of this process. Thereafter, a meeting of experts was held in November 2003, to review the recent knowledge about the impact of earlier life events on neonatal transition, infant development, cognitive development and life-long sequelae.

The experts concluded that an integrated strategy was needed to promote a broader characterization of pregnancy outcomes of 'mother- foetus dyad' than birth size alone. The strategy recognizes two types of interventions: a) public health interventions to make the environment optimal for the potential mother to nurture her foetus, and b) clinical interventions aimed at maximizing the role of an individual woman as an environment for the foetus. Because the causes of sub-optimal foetal development are multiple, it is unlikely that interventions focused on addressing only one aspect, for example, single nutrient deficiencies, will have a large impact on foetal development, whereas packages of interventions are likely to have synergistic effects. The objectives and targets of programme efforts will best relate to immediate causes of the problem keeping in mind the local context. The promotion of optimal foetal development will facilitate the achievement of many of the Millennium Development Goals by 2015.

LBW rates are highest in Asian countries, thus concerns about its impact on populations are most pressing. The participants identified region-specific issues related to the protection of foetal development, mainly (a) Nutrition and Reproductive Health issues regarding strategy, barriers to implementation and suggestions for further programme improvement; (b) preparing the

woman nutritionally for the first pregnancy; (c) preventing pregnancy among adolescents; (d) birth spacing and family planning; (e) shortcomings in the safe motherhood programme; (f) shortcomings in the nutrition programme; g) social consideration and measures. Priority areas for action were identified and feasible ways defined to implement the strategy, along with other global/regional strategies, and gaps identified in knowledge regarding optimal foetal growth and development that could serve as the basis for research topics necessary for moving the agenda forward. Similar consultations are planned next year in other Regions of WHO before finalizing the integrated strategy to promote optimum foetal development.

## 1. INTRODUCTION

There are numerous causes for sub-optimal foetal growth and development. They include genetic factors, maternal characteristics - nutrition, education, pregnancy at a very early age, unhealthy lifestyle; complications of pregnancy; physical and socio-economic position at birth, and factors in the environment; disease states, malaria/HIV; intergenerational effects; physical work during pregnancy; tobacco and alcohol use.

Addressing the above requires a comprehensive approach. A strategy that brings together all these issues, however, does not exist. Hence, guidance is needed for formulating global strategic directions for foetal growth and development.

Two meetings have provided the basis for developing strategic directions on optimizing foetal growth and development within the life cycle. The first was an Advisory Group meeting on maternal nutrition and low birth weight held in Geneva, in December 2002, to review current evidence, identify cost-effective interventions, and recommend a strategy for future action. This was followed by a Technical Consultation for Development of a Strategy for Promoting Optimal Foetal Development held in Geneva in November, 2003.

### *Objectives*

The overall objective of the present consultation was to inform the participants about the proposed draft integrated Strategy for Optimizing Foetal Growth and Development, and to review regional specific information, evidence, experience and programme needs to be included in the proposed strategy.

The specific objectives were to:

- (1) share the regional operational and programmatic issues, challenges and experiences on optimal foetal growth and development.
- (2) review and explore the feasibility of implementing the proposed strategy with other strategies through the existing health care system, and
- (3) review Region-specific consensus/gaps and identify relevant priority research areas.

The expected outcome was a compilation of regional findings for finalization of the strategy, bearing in mind that the strategic directions on foetal growth and development are based on the following: recognition that improved foetal growth and development has a positive influence on various outcomes throughout the life cycle; addressing this problem in the long term may have more to do with improving nutritional status. Other aspects such as the social and cultural context, including poverty and infections could not be ignored, in which maternal dietary intakes and nutrition status are likely to be compromised.

The causes of sub-optimal foetal growth and development are more likely to be multiple than single. The nutritional status of the mother is important in determining the outcome of pregnancy, but this embraces wider considerations than her current dietary intake alone, including previous nutrition. These are: physiological factors e.g., the age and size of the mother, birth order, ethnicity; others are pathological e.g., infections, tobacco and alcohol use, diabetes and hypertension.

Most of the evidence reviewed uses growth, and especially birth weight, as an index of foetal growth and development. However, there is a need to pay particular attention to other aspects beyond physical growth (i.e., maternal nutrition and health status as well as the neurological and immunological status of the child).

### ***Opening session***

Dr. Pattanee Winichagoon, Coordinator, Institute of Nutrition, Mahidol University, welcomed the participants. The remarks of the Regional Director, WHO-South-East Asia Region, Dr Samlee Plianbangchang, were delivered by Dr. Somchai Peerapakorn from the WHO Representative Office in Thailand. In his remarks the Regional Director emphasized that sub-optimal foetal growth and development increases the risk of perinatal mortality, whereas good maternal nutrition and weight gain improves perinatal outcome. He stated that six out of the eight Millennium Development Goals, including the goal for reducing infant mortality, are addressed by this strategy. He alluded to the Global Strategy for Diet, Physical Activity and Health, and the subsequent World Health Assembly resolution remarking that foetal origins of adult disease are gaining recognition, and that birth weight per se was too crude an indicator.

Dr. Steve Atwood, Regional Adviser, UNICEF East Asia Pacific Regional Office, stated that, as under-nutrition and high maternal mortality rates are of

concern in the Region, UNICEF had developed strategies to address maternal health and nutrition together. He drew attention to the fact that persistent anaemia and high maternal mortality rates are also gender and equity issues.

Dr. Sultana Khanum, WHO-HQ, underscored the underlying gender and socio-economic issues, and pointed out that there are different strategies already available, but not deliverable as one package in an integrated and comprehensive manner. The focus needs to shift from low birth weight, to foetal growth and development within an integrated strategy.

After a brief round of introductions, Professor Ramesh Adhikari, Dean of the Institute of Medicine, Tribhuvan University, Nepal, was nominated as chairperson, and Dr. Myrna C. Cabotaje, Director IV and Officer-in-Charge, National Center for Disease Prevention and Control, Department of Health, Philippines, and Professor Koum Kanal, Director, National Maternal and Child Health Centre, Ministry of Health, Cambodia, as rapporteurs. The programme and the participants' list are given in Annex 1 and 2 respectively.

## **2. PROCEEDINGS**

### *Technical presentations*

Dr. Sultana Khanum said that the proposed draft strategy is the combined effort of departments of RHR and NHD. She highlighted the burden of low birth weight, which stands at 15 % globally, and largely affects developing countries. It is one of the major determinants of early mortality, morbidity and adverse long-term health outcomes and poses substantial costs to the health sector and significant burden on the society. Dr Khanum briefly highlighted the results of the Advisory Group Meeting held at Geneva in December 2002, and the subsequent Technical Consultation in November 2003. She said that there was enough evidence to suggest that poor nutritional status at the start of pregnancy carried significant risk, and that the interventions designed to improve nutritional status for an established pregnancy should be differentiated from those that seek to improve maternal status before, or in anticipation of becoming pregnant. She also referred to Annexes 3 and 4 which were sent to the participants prior to the consultation for strategic thinking towards developing the strategy framework and emphasized that a more holistic approach is desirable since measures of birth weight alone, either as an index, or as an outcome, would not address the central issue of ensuring a healthy start to life. Undoubtedly early life events have a critical

impact on early and later survival, morbidity, growth and other measures of human capital.

Dr. Rukhsana Haider presented the situation and challenges in South-East Asia Region. She pointed out that teenage childbearing was common, and adversely affected foetal, neonatal and maternal outcomes. Low birth weight remains a problem in countries even where other indicators have improved, e.g., Sri Lanka. Nearly half of the pregnant women suffer from varying degree of anaemia, with the highest prevalence in India, which also has the highest number of maternal deaths in the Region. About one third to one half of the women were undernourished (BMI <18.5), and so were the children in most countries of the Region.

Dr. Khine Sabai Latt made a presentation on the situation in the Western Pacific Region and said that the South-East Asia and Western Pacific Regions shared similar problems and disparities. LBW was highest in Laos (60%), followed by Bangladesh (about 40%). In the ensuing discussions it was pointed out that there were wide intercountry and intracountry variations and that averages tend to hide the reality of marginalized sections and societies. SEARO and WPRO are currently developing programmes for reduction of LBW, maternal and neonatal mortality.

Dr Stephen Atwood presented the situation in the East Asia and Pacific region. He emphasized that improving maternal nutrition is important to reach women before they become pregnant. Different critical periods of growth lead to qualitative differences in dietary requirements during early and later pregnancy - micronutrients and proteins were required in early pregnancy, and calories and other nutrients later. He explained the strategies to decrease maternal deaths and maternal/child under-nutrition, citing initiatives taken in Bangladesh and Philippines.

Dr. Jelka Zupan from WHO, HQ, presented an overview of the strategic directions including the MDGs. She emphasized the need for a paradigm shift from efforts to improve size at birth, to efforts to improve foetal growth and development. This is not to say that one does not need to look at LBW, but it is not adequate. There are substantial differences in LBW rates (and the mean birth weight) between populations, and marked differences within populations. LBW has inherent deficiencies as a composite indicator as many of the influences of sub-optimal foetal growth and development are not reflected in birth weight, and birth weight does not always show a consistent relationship with outcomes such as mortality.

The factors determining the differences in birth weight within populations are not necessarily the same as those operating between populations. There is a need to determine the nature of factors that contribute to poor growth and development before birth, within, and between populations. Dr Zupan discussed the interventions needed, the existing strategies and instruments, emphasizing also on the need to focus on adolescents.

In response to the presentations, the participants shared the need to involve policymakers in order to sell the idea of preconception and the need to focus on adolescents, especially girls. They raised concerns regarding several issues, such as :

- too many vertical inputs and suggestions coming in from various channels which are difficult to translate in the field.;
- need for targeting advocacy efforts towards the more influential persons rather than women who anyway are seldom in the decision-making role;
- need for an integrated approach with involvement at the primary care level rather than an exclusive focus on specialists;
- client satisfaction, access and affordability;
- lack of male involvement;
- success of community-based interventions;
- involvement of more persons outside the health sector who will refer to the health centre when required;
- inclusion of birth length was suggested, as birth weight does not indicate much about foetal malnutrition;
- a need to move beyond the health sector for improving accessibility for societies in transition - e.g., accessing women and adolescents in factories where they work

Professor Alan Jackson shared the concept and the science behind optimal foetal growth and development. Starting with the classical concern during pregnancy, infancy and childhood, he highlighted the need for a shift in emphasis from pregnancy to pre-pregnancy, a paradigm shift from LBW to optimal foetal development and to consider the '*mother-infant dyad*', the scientific evidence for short and longer term benefits, as well as the need to acknowledge synergistic effects and plan for horizontal and upstream policies.

The challenge is where to start? Dr Jackson suggested that we should think outside the box, work together within a single framework of thought and operation, access the most inaccessible, and provide health care in pre-pregnancy, through pregnancy, post-pregnancy, childhood and beyond.

***Group work:***

Following the technical presentations, the participants were divided into groups, which discussed several issues based on the guidance provided.

## **2.1 Nutrition and Reproductive Health Issues**

### ***Nutrition Aspects***

The first group focused on the **interventions** that are available for improving nutritional status during pregnancy. These include iron supplementation and food fortification. Issues of concern include monitoring, evaluation and quality control. Of specific concern is compliance with iron supplementation, nutrition counselling which is non-existent, cultural beliefs regarding diet in pregnancy, and the whole issue of nutrition supplementation for working women, especially in the unorganized sector. Other related issues that the group deliberated upon included chemical safety of foods, use of pesticides, genetically modified food and environment factors like indoor pollution from cooking, smoking, both active and passive, use of alcohol, etc.

To address these issues the group suggested some strategies which included: iron supplements for adolescents (pre-pregnant); inter-agency collaboration, linkage with local and international NGOs in education; development and use of simple, easy to understand food-based dietary guidelines; maternity protection and nutrition support for working women; food supplementation programme are especially for vulnerable and hard-to-reach populations; and nutrition education in schools, especially for adolescents.

The second group focused on **maternal characteristics** like age, body size, weight, BMI, access to family planning, and biomedical characteristics like parity and birth interval, infection and micronutrient status and social determinants including age at marriage, age at first birth etc. The group suggested the need to focus on maternal diet and nutrition during pregnancy and ensuring optimal minimum weight gain through improved food intake via food supplementation, improved micronutrient intake, education and counselling of the pregnant woman and her family.

### ***Reproductive Health Aspect***

The participants suggested that international standards and guidelines for care in pregnancy and childbirth, including postpartum care, should be used across countries and regions. LBW could be used as the best available indicator but considering the need for better indicators, other than LBW, it is important to gather data from all populations. Families and communities have an important role to play and many interventions can be delivered through non-medical community level workers. There is a need to reach the marginalized and vulnerable sections of the population with targeted delivery of interventions. Epidemiological data reflecting intracountry and regional variations, would need to be collected.

While it is important to reach women as early in pregnancy as possible, reaching out and accessing adolescents would be critical for the success of this strategy. Men and other influential decision-makers in the family, including the mother-in-law, have an important role to play and their involvement must be ensured for improving family practices for the health of mothers and babies.

For improving the quality of care, universal distribution of standardized guidelines must be ensured. Skill-based training for health workers should be promoted.

The ensuing discussions raised some pertinent points e.g.: whether there was any evidence from within the Region that pre-pregnancy interventions make a difference, since women are usually reached by programmes in fairly advanced stages of pregnancy. While under-nutrition is recognised as a problem, there is a need to recognize obesity also as an emerging problem. The role of nutritional counselling and healthy food habits during Anti-Natal Care visits and the larger role of the community in promoting nutrition interventions is critical.

## **2.2 Preparing the Woman Nutritionally for the First Pregnancy**

Reporting to the plenary on their discussions, the first two groups recommended that a number of factors should be looked into while preparing the woman nutritionally for her first pregnancy. These were: food security, both within and outside the household, prior nutritional status, biomedical factors, namely, infections and infestations, social factors, namely, work load, age at first conception, environmental and lifestyle factors e.g.: smoking, indoor air pollution, personal hygiene and access to and quality of health

services including micronutrient supplementation. Some of the strategies that were suggested included a national policy for short term, medium term, and longer-term interventions to ensure proper nutrition throughout the life cycle. The groups emphasized an integrated approach across sectors for reaching all sections of the target population. They expressed the need for creating an environment for supporting women to make good food choices. It is important to recognize that the pre-pregnancy period is very important for action and could be used to improve infant and young child feeding (IYCF) practices, including exclusive breast-feeding and complementary feeding. The various channels that could be used for improving the nutritional status include nutrition education and counselling, school food supplementation programmes; improving family and community feeding practices by using community structures like women's groups, farmer's union, youth clubs etc. In terms of legal actions, a protection law at the national level for all working women should be implemented, and the minimum age at marriage enforced. Cross-sectoral convergence and integrated programming with the education sector for retaining girls in school and accessing adolescent boys was again highlighted.

The various constraints identified for implementing such programmes included; funding, lack of clear policy and lack of awareness on the issue at all levels - from policy makers to families and individuals.

In the discussions that followed, the participants commented on the issue of food security and the relation of the availability and accessibility vis-à-vis utilization, the need for behaviour change and improved nutrition habits rather than a focus only on micronutrients.

The participants felt that differences in body composition in terms of BMI/obesity should be factored into the strategy. It was felt that while the WHO documents are discussed at national level, the true challenge lies in translating the strategy into action. The participants expressed the need to disseminate evidence-based documents to ministries other than health and nutrition. China was cited as a good example where much progress had been made in addressing nutrition in the life cycle, primarily because pregnancy is considered very precious.

### **2.3 Preventing Adolescent Pregnancy**

The group reported that various programmes at the country level targeted adolescents. These include programmes to keep girls in school, life-skills

education, adolescent friendly services including friends' corners and adolescent help lines. However, there are certain constraints and limitations as there is no single nodal ministry responsible for adolescent programmes. They are scattered across many ministries and departments. Increasing consumerism and the powerful influence of the media often encourages sexual activity and promotes school dropouts, in order to earn money, and may promote irresponsible behaviour. Legislation on age at marriage is seldom enforced in its entirety, and reproductive health services, especially for unmarried adolescents, are all but nonexistent.

The group suggested the need for political commitment to tackle the problems of youth, and cross-sectoral collaboration to chart the direction for adolescent services in every field. The ministries of information and broadcasting would need to be involved to make media more responsible while keeping it from being repressive regarding sexuality and reproductive health. Area-focussed programmes that would differentiate between urban and rural problems, as well as ethnic and other cultural differences, were required.

Easy access to contraception and other reproductive health services should be ensured as a part of adolescent friendly health services.

Out-of-school children could be reached through NGOs, youth unions, and women's unions. Departments of education may include special directorates for out-of-school children. Reproductive health should be included in the curriculum of schools.

## **2.4 Birth Spacing and Family Planning**

The group recommended the need to improve access to information and services for spacing and limiting births. Special emphasis will be requested in reaching the vulnerable and marginalized where needs are higher and services scarce. A special focus on adolescents, especially unmarried ones, was recommended, as they are generally left out of family welfare and other reproductive health programmes while they are in need of services.

## **2.5 Shortcomings of Safe Motherhood Programmes**

The group reported that barriers to accessing health services in terms of cost, distance, and transportation, knowledge and awareness on danger signs and care seeking behaviours, the need for multi-disciplinary skill mix for wider coverage of services at various levels, and quality assurance issues are among

the leading issues challenging the safe motherhood programmes at country level.

The group further suggested that dissemination of action messages through the media, community-based organizations, accessing women during ANC visits, and focussed IEC campaigns can help in improving knowledge and care seeking during pregnancy, childbirth and the postpartum period. Efforts to improve and enhance skills of health providers, specially the frontline care providers, can help in improving the quality of care.

Other suggestions included improving monitoring and evaluation mechanisms and the need to focus on demand-side programming.

## **2.6 Shortcoming of Nutrition Programmes**

Low prioritization of nutrition programmes that lack in both human and financial resources, lack of specific programmes for pre-pregnant women, poor emphasis on nutritional education, segregation of mothers and infants in terms of nutrition interventions, poor updating of nutrition knowledge among health workers and the community and weak enforcement of laws relating to nutrition were cited as major drawbacks in the nutrition programmes at country level.

The group suggested that it is important to convince decision-makers to develop a minimum package of essential nutrition interventions with clearly defined delivery points. There is need for published recommendations for standard peri-pregnancy diets incorporating Recommended Dietary Allowance with local/traditional foods. A social marketing approach and community mobilization for increasing access to fortified foods and micronutrients supplementation needs to be explored. There is also need for advocacy with decision-makers to integrate nutrition with various ongoing programmes, to ensure effective enforcement of laws and legislation related to nutrition.

The programmes need to focus on community-based, self-sustaining projects. IEC interventions should be updated based on current knowledge and evidence and it is imperative to adapt standard guidelines to local settings.

## **2.7 Social Consideration and Measures**

These include education, especially retention of girls at secondary school level and higher, decision making within families, advocacy and IEC to reduce

workload during pregnancy and to counter harmful social customs and taboos, revision and enforcement of labour laws for mandatory maternity and, as far as possible, paternity leave in both the private and public sectors. Violence against women, especially during pregnancy, is an important social and health issue, and penal and legislative measures should be taken to ensure safety for pregnant women.

The group suggested that to improve care seeking and reduce the financial burden on poor women, financial incentives or schemes should be implemented at local level so that women can access these when needed. The health centre timings should be adjusted to suit women as far as possible in terms of distance, timing, and availability of health workers. Mechanisms to cater to the emergency needs through mobile teams for inaccessible populations should be established.

The measures to be taken depend on the actual situation/circumstances. The initial investment is to be made by the government to be carried forward by the community.

Government programmes lack good supervision. There is need to identify and re-identify, reiterate and re-stress nutrition and pregnancy for foetal growth and development.

## **2.8 Follow-up Plan at Country Level**

On the concluding day, the participants discussed in groups, the strategies and interventions that need further attention and how to move the agenda of optimal foetal growth and development forward in countries.

- (1) The first group discussed the **ways and means to involve relevant ministries and agencies** in protecting optimal foetal growth and development and to bring in other key stakeholders on board for ensuring coordinated implementation.

The main stakeholders for protecting optimal foetal growth and development include the ministries of health, social welfare, education, women and child, youth affairs, agriculture, industry, information and communication, NGOs - international, national, local, women's groups, religious organizations, the private sector in education and health, academic institutions and the media.

The mechanisms to involve them were through:

- dissemination of the information gathered in this meeting to the relevant stakeholders;

- a team of experts and interested people from related fields could be constituted to develop an action plan to take up this issue at country level;
- to identify 1-2 key ministries to lead the process and they could then subsequently bring in others;
- to lead the change in thinking, the group felt the need to identify key focal points in the key ministries and hold informal meetings with them;
- to take the agenda forward, a national, high-level meeting of relevant stakeholders on the issue could be organized;
- once a consensus is reached at the national level, a national level committee or board at both policy and operational levels with representation from all key stakeholders could be constituted for concerted efforts for translating the strategy into action by way of getting it into the national programme and policy guidelines.

- (2) The second group deliberated on **the best use of available human and financial resources** for the protection of optimal foetal growth and development. The scope of existing programmes should be broadened to include pre-pregnancy. There is a tendency within countries to run small, vertical programmes for short-term gains. The time has come to integrate related programmes for better, longer-term outcomes. To handle the paradigm shift, a champion is needed that could be someone or some institution/s who can lead the process. There is need to raise the profile of foetal growth and development and there is an urgent need to bring in the technical inputs and knowledge about monitoring systems.

While all this is being done, there is need to consider cultural sensitivity, factoring in monitoring, quality control and ongoing evaluation and cost effectiveness of interventions.

- (3) The third group discussed **the need and mechanisms to monitor the programme** on protection of optimal foetal growth and development in the light of available data and its use for decision making.

The group felt that for effective monitoring and evaluation of optimum foetal growth and development, it would be necessary required to implement the preconception activities, strengthen existing MCH services to improve coverage and quality, and

strengthen health data management system. It is important to collect outcome and process indicators to be used at various levels of the health system and set minimum indicators in coordination with other programmes. The capacity of grass root workers should be developed for collection and use of data for improved decision-making. Certain issues related to data gathering and monitoring that need to be borne in mind include the differences in birth weight availability between and within countries, very little or no data on LMP, fundus height, ultrasound, pregnancy curves, height and pre-pregnancy weight, limited and varied data Hb levels, infections, and iron/folate supplementation. Given these realities, the group recommended that birth weight should be made mandatory for birth registration purposes. Community structures like traditional birth attendants, village heads, teachers and women's unions can be involved to promote weighing of babies at birth. Alternatively, periodic surveys can be undertaken. During the preconception period, anthropometric measurement for girls can be thought of.

- (4) The fourth group discussed **expectations from the international community** that would make work on protection of optimal foetal growth and development more effective and efficient and the strategic and programmatic guidance that would be required for the same.

They recommended the need for provision of broad evidence-based guidelines, targeted strategy for vulnerable groups, data and information on health economics, and guidance on advocacy. It was also suggested that while assisting countries, the agencies should formulate their strategy without diluting the main agenda and try to incorporate it into the existing programmes. Better donor coordination was suggested for maximizing impact and minimizing duplication. The group also suggested that to be effective, optimal foetal growth and development should be introduced as a concept to be integrated across sectors, and not as a separate, vertical programme.

### **3. SUMMARY AND NEXT STEPS**

Prof A Jackson, while summing up, said that growth and development is an ordered process in space and time, and that the balance and extent is

determined by environmental factors operating on gene expression, of which availability of nutrients is a significant player.

He said that the overall problem for less than optimal reproductive health is a nutritional component which is potentially amenable to effective intervention. We can deliver effective interventions to protect reproductive health with our present understanding and capabilities. However, this requires rationalization and co-ordination among current programmatic activities for greater effectiveness.

Promoting optimal foetal growth and development is a real challenge, which we need to, and wish to take on. There are substantial opportunities for promoting health at all ages, generating wealth and enhancing greater social cohesion but this requires a structured, planned, coordinated approach at community, national and international levels. He suggested that we **should move programmes from the pregnancy to pre-pregnancy stage** with explicit policy to empower women and to ensure fundamental human rights for the mother and child. This requires active government endorsement at the highest level, active promotion of the social construct of health, distinct from the medical model of disease, with in-built mechanisms for ensuring cross-sectoral cooperation, coherence and complementarity, and development of accessible information systems

Dr Sultana Khanum concluded the meeting and said that all the participants had agreed with the main concept. Ownership and leadership within countries is important for promotion of the strategy. She suggested that there is a need to conduct national meetings for a closer look at country concepts, and also to create linkages between different programmes and departments and develop an integrated package to deliver this performance through the existing health system.

**Annex 1**  
**PROGRAMME**

**Day 1, December 7, 2004**

08:30- 09:00	Registration	
09:00-09:30	Inauguration/Opening	Director INMU WR/Staff for RD's speech Unicef WHO-HQ
09:30-10:00	Introduction of participants Chairperson and Rapporteurs to be identified	
10:20-11:00	Overview of meeting objectives - from LBW to foetal development (global)	Sultana Khanum
11:00-12:00	Regional status and overview: SEARO	Rukhsana Haider
	Regional status and overview: WPRO	Khine Sabai Latt
	UNICEF Regional Strategy on Preventing Maternal and Child under-nutrition	Steve Atwood
12:00-12:30	An Overview of Strategic directions including MDGs	Jelka Zupan
13:30-15:30	Group work I: Optimizing foetal growth and development: Pregnancy (and postpartum)	
15:30-17:00	Group work presentations in plenary discussion and recommendations	

**Day 2, December 8, 2004**

- 09:00-10:30      Group work II: Optimizing foetal growth and development: Reproductive-aged women
- 10:45-11:45      Group work presentations in plenary discussion and recommendations
- 11:45-13:00      Group work III: Optimizing foetal growth and development: Adolescents
- 14:00-15:15      Group work presentations in plenary discussion and recommendations
- 15:15-16:15      Group Work IV : Optimizing foetal growth and development: Infants and children
- 16:15-17:30      Group work presentations in plenary discussion and recommendations

**Day 3, December 9, 2004**

- 08:30-10:00      Group work: Issues for monitoring evaluation, information and advocacy
- 10:30-11:30      Group work presentations in plenary discussion and recommendations  
(Tea to be served in between)
- 11:30-12:15      Summary of Conclusions & Next Steps - Responsibilities and coordination      Alan Jackson
- 12:15-13:00      Closing and Vote of Thanks      WHO

## Annex 2

### LIST OF PARTICIPANTS

#### Bangladesh

Dr Shams El Arifeen  
Public Health Science Division  
ICDDR, B  
Dhaka  
Bangladesh  
Tel.: 880-2-8810115  
Fax: 880-2-8826050  
E-mail: [shams@icddr.org](mailto:shams@icddr.org)

Dr. Rahima Begum  
Professor for Obstetrics & Gynecology  
BIRDEM  
122 Kazi Nazul Islam Avenue  
Dhaka  
Bangladesh  
E-mail: [mahin55000@hotmail.com](mailto:mahin55000@hotmail.com)

#### Bhutan

Dr Tandi Dorji, Pediatrician  
JDWHRJ Hospital  
The Ministry of Health  
Thimphu  
Bhutan  
Tel.: 975-2-322494  
Fax: 975-2-322770  
E-mail: [dorjitandi@dnukef.bf](mailto:dorjitandi@dnukef.bf)

#### Cambodia

Professor Koum Kanal  
Director  
National Maternal and Child Health Centre,  
Ministry of Health  
Phnom Penh  
Cambodia  
Tel.: c/o WR/Cambodia: (855) 23-216610;  
(855) 23-216942  
Fax: c/o WR/CAM: (855) 23-216211  
E-mail: [nmhc@online.com.kh](mailto:nmhc@online.com.kh)  
[koumkanal@camnet.com.kh](mailto:koumkanal@camnet.com.kh)

#### China

Professor YIN Shian (male)  
Director of the Department of Maternal  
and Child Nutrition  
MOH National Institute for Nutrition  
and Food Safety  
Beijing, China  
Tel: 86-10-83132932  
Fax: 010-83132102 Attn to Yin Shian  
E-mail: [wy3333@126.com](mailto:wy3333@126.com)  
or [shianyin@camcn-cns.org](mailto:shianyin@camcn-cns.org)

Dr WANG Xin (female)  
Deputy Director, Department of Obstetrics  
Beijing Obstetric and Gynaecological Hospital  
Tel.: 86-10-85976699-8028  
Fax: 86-10-85968397  
Email: [wx1501@yahoo.com.cn](mailto:wx1501@yahoo.com.cn)

#### India

Dr B Sivakumar  
Deputy Director and Officer-in-charge  
NIN and FDTRC  
National Institute of Nutrition  
Indian Council of Medical Research  
Jamai-Osmania (P.O.) Hyderabad  
500 007 Andhra Pradesh  
Tel.: 091-40-27018083  
Fax: 091-40-2109074  
E-mail: [dirnin\\_hyd@yahoo.co.in](mailto:dirnin_hyd@yahoo.co.in)

Dr. Puneet Bedi  
Consultant Obstetrician & Gynaecologist  
and Specialist in foetal Medicine  
Apollo Hospital and Sitaram Bhartia Hospital  
New Delhi  
D / 49, Hauz Khas  
New Delhi 110016, India  
Tel: 26513682, 26568203  
Mobile: 98101-70717  
Email: [pbedi@vsnl.net](mailto:pbedi@vsnl.net) or  
[puneetbedi@yahoo.com](mailto:puneetbedi@yahoo.com)

## Indonesia

Dr Atmarita  
Head of Standardization Section,  
Micronutrient Division  
Directorate of Community Nutrition  
Departemen Kesehatan  
Jl. Rasuna Said Blok C Lantai 8,  
Kuningan  
Jakarta Selatan 12950  
Tel.: 021-5277382  
Fax: 021-5210176  
E-mail: [atmarita@qizi.net](mailto:atmarita@qizi.net)

Prof. Dr Gulardi Wignjosastro, Sp. OG  
Past President of POGI  
(Indonesian Society of Obstetrics  
& Gynaecology  
Chairman of JNPK-KR  
(NCTN: National Clinical Training  
Network-Reproductive Health)  
Jl Raden Saleh 49  
Tel.: 391-01-35  
Fax: 314-36-84  
E-mail: [gulardihw@hotmail.com](mailto:gulardihw@hotmail.com)  
[pogji@indo.net.id](mailto:pogji@indo.net.id)

## Lao PDR

Dr Bounthom Phengdy  
Paediatrician, Nutritionist  
Nutrition Focal Point MCH Division,  
Department of Hygiene & Prevention  
Ministry of Health  
Vientiane  
Laos  
Tel/Fax: (856-21) 214010  
Mobile: (856-20) 561-8246  
E-mail: [bphengdy@yahoo.com](mailto:bphengdy@yahoo.com)

Dr Alongkone Phengsavanh  
Lecturer in Obstetrics and Gynaecology,  
Faculty of Medical Sciences,  
National University of Laos  
Vientiane  
Laos  
Mobile: 856-20 2245407, 856-21-240854  
Fax: 856-21 214055  
E-mail: [ogalk@yahoo.com](mailto:ogalk@yahoo.com)

## Malaysia

Ms Zalma Abdul Razak  
Nutritionist, Family Health Development  
Division, Ministry of Health  
50590 Kuala Lumpur  
Malaysia  
Tel.: (603) 2694 6601  
Fax: (603) 2694 6510  
E-mail: [zairazak@hotmail.com](mailto:zairazak@hotmail.com)

Dr Kamaliah Mohamad Noh  
Family Health Development Officer  
Sarawak State Health Department  
Jalan Tun Abang Haji Openg  
93590 Kuching  
Sarawak, Malaysia  
Tel.: 60-82-256 566 ext 518  
Fax: 60-82-252 792  
E-mail: [kamaliah@sarawak.health.gov.my](mailto:kamaliah@sarawak.health.gov.my)

## Mongolia

Dr Enkhtsetseg Shinee  
Officer-in-charge for Public Health  
Nutrition and Food Security, Ministry of Health  
Ulaanbaatar, Mongolia  
Tel.: 976 99158505, 976-11-26372410  
E-mail: [enkhtsetseg@moh.mnq.net](mailto:enkhtsetseg@moh.mnq.net)

Dr Unurjargal Davaajav  
Head  
Department of Obstetrics and Gynaecology  
First Maternity Hospita  
Ulaanbaatar, Mongolia  
Tel.: 976-11-327367 (W);  
976-11-361420 (H);  
976-9918 6595 (mobile)  
Fax: c/o WR/Mongolia: (976) 11-324683  
E-mail: [unurja@chinggis.com](mailto:unurja@chinggis.com)

## Myanmar

Dr Aye Aye Thaw  
Deputy Assistant Director  
National Nutrition Centre  
Department of Health  
Yangon, Myanmar  
Tel: 95-1-545217 (res)  
95-1-290247 (off)  
Email: [mnaip@myanmai.com.mm](mailto:mnaip@myanmai.com.mm) (off)  
[Ayeaye@mail2world.com](mailto:Ayeaye@mail2world.com) (res)

Prof. Dr San San Myint  
Prof of Neonatology  
Central Women's Hospital,  
24C Pyidaungsu Yeiktha  
Dagon Township 11191  
Yangon  
Myanmar  
Ph: 95-1-222 805/152  
Res: Ph 95-1-380442  
Email: [ycwh@mptmail.net.mm](mailto:ycwh@mptmail.net.mm)

### Nepal

Prof Ramesh Adhikari  
Dean, Institute of Medicine  
Tribhuvan University  
Maharajgunj  
Kathmandu  
Nepal  
Tel: 00977-1-4410911 (0)  
Fax: 00977-1-4418-1866  
Email: [ramesh@healthnet.org.np](mailto:ramesh@healthnet.org.np)  
[iomdean@healthnet.org.np](mailto:iomdean@healthnet.org.np)

Dr. Gehanath Baral  
Western Regional Hospital, Pokhara  
Ministry of Health  
P.O.Box 2468  
Kathmandu  
Nepal  
Tel: +977 9856021041  
Fax: 00977 61520461  
Email: [drqbaral@wlink.com.np](mailto:drqbaral@wlink.com.np)  
[gehanath@yahoo.com](mailto:gehanath@yahoo.com)

### Papua New Guinea

Mrs Wila Saweri  
Technical Advisor Nutrition  
Family Health Unit,  
Department of Health  
P.O. Box 807  
Waigani, National Capital District  
Papua New Guinea  
Tel: (675) 301 3973  
Fax: (675) 323 5502  
E-mail: [wsaweri@health.gov.pg](mailto:wsaweri@health.gov.pg)  
(as of 10/03)

Dr Lahui Geita  
Obstetrician/Gynaecologist  
Department of Health  
P.O. Box 2119  
Madang Province  
Papua New Guinea  
Tel.: c/o WR/Papua New Guinea:  
(675) 325-7827; 301-3698; 325-2035  
Fax: c/o: WR/Papua New Guinea  
(675) 325-0568  
E-mail: [GaveraK@png.wpro.who.int](mailto:GaveraK@png.wpro.who.int)  
(c/o Ms. Keruma Gavera/WR/PNG)

### Philippines

Dr Myrna C. Cabotaje  
Director IV and Officer-in-Charge  
National Center for Disease Prevention  
and Control  
Department of Health  
San Lazaro Compound  
Rizal Avenue, Sta. Cruz  
Manila  
Philippines  
Telefax: 711-7846; 743-8301 loc. 1701  
E-mail: [mccabotaje@co.doh.gov.ph](mailto:mccabotaje@co.doh.gov.ph)

Dr Ruben Flores  
Medical Center Chief II  
Dr Jose Fabella Memorial Hospital  
WHO Collaborating Centre for Research in  
Human Reproduction  
Manila  
Philippines  
Telefax: (632) 735-7146  
E-mail: [jfmh@doh.gov.ph](mailto:jfmh@doh.gov.ph)

### Thailand

Dr. Emorn Wasantwisut  
Director  
Institute of Nutrition Mahidol University  
Salaya Campus  
Nakhom Pathom  
Thailand  
Tel. (662) 441-9740  
Fax: (662) 441-9344  
Email: [numdk@mahidol.ac.th](mailto:numdk@mahidol.ac.th)  
[directnu@mahidol.ac.th](mailto:directnu@mahidol.ac.th)

Dr Nipunporn Voramongkol  
Chief of Maternal and Child Health Group  
Bureau of Health Promotion  
Department of Health  
Ministry of Public Health  
Thailand  
Tel: 66 25904418  
Fax: 66 25904427  
Email: [niporn@health.moph.go.th](mailto:niporn@health.moph.go.th)  
[Job8018@yahoo.com](mailto:Job8018@yahoo.com)

#### **Vietnam**

Dr Le Thi Hop  
Deputy-Director  
National Institute of Nutrition  
Ministry of Health  
48B Tang Bat Ho Street  
Ha Noi  
Viet Nam  
Tel: +84-4 971 7090 / 971 6959  
Fax: +84-4 971 7885  
E-mail: [hpnin@hn.vnn.vn](mailto:hpnin@hn.vnn.vn)

Dr Dinh Thi Phuong Hoa  
Deputy Director  
Reproductive Health  
Department of Reproductive Health  
Ministry of Health  
Ha Noi  
Viet Nam  
Tel/Fax: c/o WR/Viet Nam:  
Tel: +84 4 9 433 734; +84 4 9 433 735;  
Fax: +84 4 9 433 740  
Email: [hoadp@fpt.vn](mailto:hoadp@fpt.vn)

#### **Observers from Thailand**

Dr. Sangsom Sinawat  
Director, Division of Nutrition  
Department of Health  
Ministry of Public Health  
Nonthaburi 1000  
Tiwanon Road  
Thailand  
Tel: 662-590-4328  
Fax: 662-590-4339  
Email: [nutritio@health.moph.go.th](mailto:nutritio@health.moph.go.th)

Dr. Nichara Ruengdaraganon  
Department of Pediatrics  
Faculty of Medicine  
Ramathibodi Hospital  
Mahidol University  
Rama VI, Ratchathewi  
Bangkok 10400  
Thailand  
Tel: 662-201-1772-3  
Fax: 662-201- 1850  
Email: [ranrd@mahidol.ac.th](mailto:ranrd@mahidol.ac.th)

Dr. Uraiporn Chittchang  
Community Nutrition  
Institute of Nutrition  
Mahidol University  
Salaya, Phutthamonthon 4  
Nakhon Pathom 73170  
Thailand  
Tel: 662-800-2380 ext. 312, 662-8992168  
Fax: 662-441-9344  
Email: [nuucc@mahidol.ac.th](mailto:nuucc@mahidol.ac.th)

Dr. Damrong Boonyoen  
Manager  
Regional Health Development Initiatives  
Kenan Institute Asia  
Queen Sirikit National Conference Center  
2nd Floor, Zone D  
60 New Ratchadapisak Road  
Klongtoey  
Bangkok 10110  
Tel : (662) 2293131-2  
Fax : (662) 2293130  
Email : [kihealth@loxinfo.co.th](mailto:kihealth@loxinfo.co.th)

Dr. Panus Prueksand  
Director Health Promotion Centre,  
Region 4  
429 Siruriyawong Road  
Muang District  
Ratchaburi 70000  
Thailand  
Tel: 66-32-310368 ext. 2220  
66-1-9826694  
Fax: 66-32-323311  
Cell Phone: 66-01-9826694  
Email: [p\\_panus@hotmail.com](mailto:p_panus@hotmail.com)

## UN Officials and other Organizations

### Resource Persons

Dr. Frances Davidson  
Global Health Bureau  
USAID  
Tel: 202 7120982  
Fax: 202 2163702  
Email: [fdavidson@usaid.gov](mailto:fdavidson@usaid.gov)

Professor Alan Jackson  
Institute of Human Nutrition,  
(TIP113), Treriona Rd  
Southampton General Hospital  
UK  
Tel: +44 23 80796317  
Fax: +44 23 80794945  
Email: [adj@soton.ac.uk](mailto:adj@soton.ac.uk)

Dr. Sultana Khanum  
Nutrition for health and development  
World Health Organization  
Ch-1211 Geneva 27  
Switzerland  
Tel: 041- 22 791 4342  
Fax: +41 22 791 4156  
Email: [khanums@who.int](mailto:khanums@who.int)

Dr. Jelka Zupan  
World Health Organization  
Ch-1211 Geneva 27  
Switzerland  
Tel: 041- 22 791 4342  
Fax: +41 22 791 4156  
Email: [zupanj@who.int](mailto:zupanj@who.int)

Dr Tommaso Cavalli-Sforza  
Regional Adviser in Nutrition and Food Safety  
WHO Regional Office for the Western Pacific  
P.O.Box 2932  
Manila 1000, Philippines  
Tel: 632-5289864 (direct) 5288001 (gen)  
Fax: 632-5211036  
Email: [tommaso@wpro.who.int](mailto:tommaso@wpro.who.int)

Dr Khine Sabai Latt  
WHO Regional Office for the Western Pacific  
P.O.Box 2932  
Manila 1000, Philippines  
Tel: 632-5289878  
Fax: 632-5211036  
Email: [lattk@wpro.who.int](mailto:lattk@wpro.who.int)

Dr. Rukhsana Haider  
Regional Adviser Nutrition for Health  
and Development  
WHO Regional Office for South-East Asia,  
New Delhi, India  
Tel: 011-23370804  
Fax: 91-11-2337-8510  
Email: [haiderr@whosea.org](mailto:haiderr@whosea.org)

Dr Razia Pendse  
STP-RHR  
WHO Regional Office for South-East Asia,  
New Delhi, India  
Tel: 011-23370804  
Email: [pendser@whosea.org](mailto:pendser@whosea.org)

Ms Karen Codling  
Regional Nutrition Project Officer  
UNICEF EAPRO  
Tel: (662) 356 9420  
Fax: (662) 2813563  
Email: [kcodling@unicef.org](mailto:kcodling@unicef.org)

Dr. Steve Atwood  
UNICEF EAPRO  
Tel: (662) 356 9420  
Fax: (662) 2813563  
Email: [satwood@unicef.org](mailto:satwood@unicef.org)

Dr. Jacques Berger  
Senior Researcher  
Institute of Research for Development  
BP64501, 34394 Montpellier Cedex 5  
France  
Tel: 84-4-972 22 90  
Fax: 84-4-972 06 30  
Email: [j.berger@fpt.vn](mailto:j.berger@fpt.vn)

### INMU Staff

Dr. Pattanee Winichagoon  
(INMU Coordinator)  
Associate Professor  
Deputy Director for Academic Affairs  
Institute of Nutrition  
Mahidol University (INMU)  
Salaya, Nakhon Pathom 73170  
Thailand  
Tel: (662) 889-2168, 800-2380, 889-3820  
Fax: (662) 441-9344  
Email: [nupwn@mahidol.ac.th](mailto:nupwn@mahidol.ac.th)