WHO-EM/NUT/239/E

Report on the

Regional workshop to introduce the new WHO growth curves

Muscat, Oman
12–14 September 2005

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Regional Office for the Eastern Mediterranean

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CONTENTS

1. INTRODUCTION

A regional workshop to introduce the new World Health Organization (WHO) growth curves in countries of the Eastern Mediterranean Region was held in Muscat, Oman on 12–14 September 2005. The workshop was organized by the WHO Regional Office for the Eastern Mediterranean (EMRO). The objectives were to orient managers of national nutrition, maternal and child health and senior health programmes about the new growth curves; and develop a regional plan of action for the implementation of the new growth curves.

The workshop was attended by health policy-makers, experts and practitioners from Bahrain, Egypt, Djibouti, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Libyan Arab Jamahiriya, Morocco, Oman, Pakistan, Palestine, Qatar, Sudan, Syrian Arab Republic, Somalia, Tunisia, United Arab Emirates and Yemen. It was also attended by representatives of the Food and Agriculture Organization of the United Nations (FAO), the United Nations Children's Fund (UNICEF) Regional Office for the Middle East and North Africa, World Food Programme (WFP) and WHO staff from the country offices, the Regional Office and headquarters.

The meeting was opened by Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean. Dr Gezairy emphasized that assessing a child's growth was the most important tool for determining the child's physical and developmental needs. Growth references were relied upon for assessing the health status of the child, for planning interventions and for monitoring the effectiveness of such efforts.

Several years ago, the World Health Organization had embarked on a multicentre growth reference study (MGRS) to develop new references for infant and child growth. The MGRS was designed to provide data describing how infants and young children should grow by including in the study several health behaviours that are consistent with WHO recommendations on child and maternal nutrition. By replacing the current international growth references, which were based on children from a single country, with a set based on an international group of children from six distinct sites, it was possible to determine how growth could proceed amid diversity and variations in population groups.

Dr Geziary noted that the workshop was organized to introduce the new growth curves in countries of the Eastern Mediterranean Region. This would require re-orienting health staff from all strata of the health services to the new growth references and eventually replacing the existing growth monitoring charts and tables with the new growth curves. Most importantly it would require reviewing the nutritional profiles of children from all Member States against the new growth curves. Dr Gezairy concluded by emphasizing that establishing strong collaboration at the outset was essential for

overcoming hurdles and bringing about the effective introduction of the new growth curves.

Dr Mahendra Sheth, UNICEF Regional Health Adviser, delivered a message in which he observed that child malnutrition was a challenge not only in developing countries in the region but also in developed countries in terms of both malnutrition and obesity. New growth curves would play an important role in improving monitoring and sharpening responses in Middle East and North Africa countries as well as world-wide. However, growth monitoring in itself was not enough. Timely and appropriate action was critical for child survival and development.

The State of the World's Children Report for 2005 for countries in the Middle East and North Africa showed that the average underweight (low weight-for-age), stunting (low height-for-age) and wasting (low weight-for-height) prevalence was 12%, 18% and 6% respectively. This regional average hid the true picture. Disaggregating data by country showed disparities ranging from a high of 46% underweight to a low of 4%. Further disaggregation by urban and rural populations showed even more pronounced disparities. Possible strategies for addressing this included promoting exclusive breastfeeding and appropriate complementary feeding practices, emphasizing nutrition in school to raise awareness of children, promoting centres of excellence on child nutrition, and including nutrition in the training of health workers.

Mr. Amir Abdallah, Director of the World Food Programme (WFP) Regional Bureau of the Middle East, Central Asia And Eastern Europe noted that, if the new growth curves were very different from the old curves, the growth and nutritional status of millions of children would have to be reassessed. This would not be an easy task but might be necessary for the purpose of comparability of the data generated from the use of the new references to that of the U.S. National Center for Health Statistics (NCHS) references.

Mr Abdallah noted that the WFP Regional Bureau covered 16 countries in the Middle East, Central Asia and Eastern Europe. Among these, seven countries had maternal and child health-related programmes under either Protracted Relief Operations and/or Country Programmes, in which the growth charts were used. Five of these fell within the Eastern Mediterranean region of WHO. In these countries, WFP would support respective ministries of health and its partners in adopting the new growth chart whenever necessary.

The final address was given by Dr Ali Bin Jaffer Bin Mohamed, Director General of Health Affairs, Ministry of Health, Oman. He noted that the growth and development of children was one of the most important indicators for their health, mental and psychological development. Malnutrition did not only lead to increased morbidity and

mortality among children, but also the survivors of its effects lived to be less productive both physically and mentally, leading to a vicious circle of poverty and disease.

Oman had achieved a great deal in the field of child health and prevention of communicable diseases. The Ministry of Health ensured that every child received the child health card which contained information on immunization, growth curves, head circumference and mental and physical growth. The country's commitment to child health had led them to participate in the MGRS. All those involved in conducting the study, including doctors, administrative staff, nutritionists, nurses and statisticians, should be commended for the impressive effort made over the past five years.

Chairs were appointed for the three days of the workshop: Ms Deena Alasfoor for the first day, Dr Khairya Moosa for the second day and Dr Mahendra Sheth for the third day. Dr Dure Akram and Dr Kazuko Yoshizawa were appointed as Rapporteurs. The objectives and mechanics of the workshop were elaborated by Dr Kunal Bagchi, Regional Adviser, Nutrition, WHO/EMRO.

The three-day workshop covered regional experiences in growth charts and growth monitoring, country experiences in the use of growth charts, presentation of group work and conclusions and recommendations. The agenda, programme and list of participants are attached as Annexes 1, 2 and 3 respectively.

2. TECHNICAL PRESENTATIONS

2.1 Impact of early growth on health over the life course

Dr Ali Bin Jaffer Bin Mohamed

Understanding growth in infancy and early childhood will help us in the interpretation of the growth pattern of children. Growth in the first years of life is influenced by maternal and foetal nutrition and health. Poor growth at birth and during childhood has an impact on the health and well being of individuals throughout the lifecycle: childhood and adolescence; adulthood and the reproductive years; and old age. Early growth is not only a manifestation of feeding and good health, but is reflective of multiple intergenerational factors.

Infants with a low birth weight, intrauterine growth retardation (IUGR), or premature deliveries never catch up in growth and they grow to be more susceptible to more frequent infections and chronic diseases. Studies have also shown a relationship to cognitive function.

Low birth weight correlates with micro-nutrient deficiency. At six and 12 months, children who were small at birth are more likely to suffer from anaemia and iron

deficiency. At six months, birth weight is highly associated with haemoglobin levels. At the same age, plasma retinol and zinc levels were also associated with birth weight.

Low birth weight is associated with impaired immune function, which is thought to persist throughout the lifetime. Low birth weight infants have more frequent infections. They are two to four times more likely to contract, or be hospitalized for, diarrhoea. They are twice as likely to contract acute lower respiratory infections.

The risk of death is four times higher for infants with a birth weight of 2000–2500 grams, than for infants born over 2500 grams. The risk of death for those under 2000 grams at birth is ten times higher.

A considerable body of evidence has shown the relationship between IUGR and the risk of coronary heart disease, stroke, diabetes and raised blood pressure. At the other end of the scale, large birth weight is associated with an increased risk of type 2 diabetes and cardiovascular disease. Retarded fetal growth followed by excessive weight/height gain during infancy can be a factor in later chronic diseases.

Low birth weight risk factors include: maternal low birth weight, low pre-pregnancy weight and low calorie intake. Even if the infant was born healthy and at an optimal weight, a host of factors may contribute to him or her developing malnutrition over the course of the first five years. The UNICEF framework for factors leading to malnutrition illustrates the three layers of causality: primary, secondary and underlying causes.

Conversely, optimal child growth protects against infectious diseases and facilitates intervention of diarrhoea and immunization. It protects against chronic disease and has a lifelong impact on cognition and consequently life achievements and progress. It is therefore imperative to include prevention of low as well as high birth weights as part of health strategies.

2.2 Growth monitoring: an instrument in the context of child survival and the Millennium Development Goals

Dr Mahendra Sheth

A small number of causative factors kill most children world-wide. Recent studies on global child mortality have shown that the most common direct causes are malaria (16%), diarrhoea (20%), pneumonia (22%) and neonatal conditions such as asphyxia, tetanus and sepsis (24%). In some regions and countries, malaria and HIV/AIDS are the main causes of death. Malnutrition is an underlying cause of almost 60% of child mortality. Ninety per cent of child mortality occurs in just 42 countries. Reduction of

child mortality by two-thirds by 2015 is one of the Millennium Development Goals (MDGs).

The Lancet Child Survival series found that the Eastern Mediterranean Region has the third highest child mortality in the world. Pneumonia and diarrhoea are major causes of deaths. The *Lancet* series found that full coverage with proven interventions could reduce under-five mortality by 66%, equivalent to six million child deaths per year. Possible prevention measures include: breastfeeding; insecticide-treated nets and intermittent preventive treatment for malaria; zinc supplementation; complementary feeding; and improved water, sanitation and hygiene. Treatment measures include: oral rehydration therapy; antibiotics for pneumonia and sepsis; newborn care; antimalarials; antibiotics for dysentery; and zinc supplements.

Data from 10 Mashriq, Magreb and Arab least-developed countries (LDCs) show that 11% of the child population in the Arab region was severely or moderately underweight in 2003, the same figure as in 1990. Between 1990 and 2003 the underweight prevalence in under-fives increased in the Mashriq, from 7.65% to 8.1%. In the Arab LDCs, it increased from 26.6% to 39.2%. In the Maghrib the under-five underweight prevalence decreased from 6.84% to 5.6%.

The UNICEF Global Study on Growth Monitoring consisted of a review of the existing literature and project documents, and field research conducted in seven countries: China, Ecuador, Indonesia, Malawi, Thailand, Zaire and Zambia. Over 5000 caretakers were surveyed and observed. More than 750 acts of growth monitoring were documented, and over 950 in-depth interviews and 210 focus group discussions were carried out with caretakers and monitors.

The key findings were that the information that growth monitoring provides – nutritional outcome data – is insufficient on its own to stimulate nutrition-oriented Triple-A (Assessment, Analysis, Action) processes.

Many children are not monitored. For example, in Indonesia there was full coverage for 53% of children under 12 months, but this declined as children grew older. Similar results were found in other countries. Few actions are taken based on the analysis of growth monitoring data.

Efforts to discover the causes of malnutrition have been weak. No agreement has emerged on the human, organizational and financial resources needed for successful growth monitoring. Growth monitoring programmes have not received sufficient funds to build local capacities. There has been a varying level of investment in equipping monitors with the required knowledge and skills: for example, the study found that the time period for initial training ranged from three days to six months.

Efforts to link growth monitoring data to national nutrition surveillance have been unsuccessful. Filling in reports has diverted monitors and their supervisors from analysing data at the local level and making timely decisions. It also absorbs substantial resources at the regional and central levels. Substantive methodological problems, related mainly to the representativeness of data, are often ignored in national-level interpretation of growth monitoring data.

Research and evaluation of growth monitoring programmes have been narrowly focused on the supply side. Monitors' abilities to weigh children and the presence of charts have been examined. However, impact, coverage and costs have been neglected.

Recommendations are to:

- Invest at community and national levels to counter misinformation and disseminate locally relevant information about nutrition.

- Develop an integrated country programme strategy for monitoring, evaluation and research. The research should be based on gaps in knowledge identified during the preparation of situation analyses of women and children.

- Develop and implement innovative strategies to communicate existing and new information at community and household levels to stimulate the completion of Triple A cycles. This would help caretakers and growth monitors gain a more thorough and locally relevant understanding of what can be done at the household or community level when analysing growth monitoring data.

In conclusion, growth monitoring is a useful tool for measuring child malnutrition. It helps in monitoring progress towards the MDGs and is useful for measuring prevalence and trends. It should be linked to appropriate action for the reduction of child malnutrition.

2.3 Current use of child growth charts in the Region: results of a questionnaire survey

Dr Kunal Bagchi

A study of growth monitoring in the countries of the Eastern Mediterranean Region was carried out summarizing existing research and the results of a survey of 14 countries. Countries of the Region fall into one of four nutritional stages. Those in the advanced nutrition transitional stage (the Gulf Cooperation Council countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates) have high levels of over-nutrition or obesity as well as moderate under-nutrition and micronutrient deficiencies in certain population sub-groups. Countries in the early nutrition transitional stage (Egypt,

Islamic Republic of Iran, Jordan, Libyan Arab Jamahiriya, Lebanon, Morocco, Palestine, Syrian Arab Republic and Tunisia) have moderate levels of over-nutrition; moderate levels of under-nutrition in limited areas and population groups; and widespread micronutrient deficiencies. Pakistan has a mixed scenario: there is significant under-nutrition, but also emerging over-nutrition in specific (affluent, urban) population groups. Finally, countries with complex humanitarian emergencies (Afghanistan, Djibouti, Somalia, Sudan and Yemen) experience severe child and maternal under-nutrition and widespread micronutrient deficiencies.

The study was based on the analysis of a questionnaire and an in-depth study of the use of growth charts and growth monitoring in three Member States: Egypt, Libyan Arab Jamahiriya and Yemen. A review of the current literature on growth and growth monitoring was included. Comparative analyses of nutritional status and child and mortality patterns in relation to growth monitoring were made.

According to the literature review, the highest prevalence of exclusive breastfeeding in the region is in Syrian Arab Republic, Saudi Arabia and Morocco while the lowest is in Somalia, Qatar, Kuwait and Iraq. Yemen has the highest prevalence of malnutrition (57% for weight-for-height and 22% for height-for-age), followed by Pakistan (46% for weight-for-height and 15% for height-for-age). Malnutrition prevalence is lowest in Jordan (7.8% for weight-for-height and 1.9% for height-for-age) and Lebanon (9.3% for weight-for-height and 2.2% for height-for-age).

According to the survey findings, all respondents used weight-for-age for categorising nutritional status. Sixty nine per cent used height-for-age and 69% used head circumference-for-age. Body mass index (BMI) is the least used indicator at 7.7%.

Approximately 80% of the countries surveyed used the NCHS/WHO growth references. Percentiles were used by 69% of respondents, z-score by 23% and percentage of median by 8%. For 92% of respondents, growth monitoring charts were provided by the government. The rest were provided by UNICEF or WFP. Existing programmes that include growth monitoring include primary health care (PHC) (61.5%), immunization (61.5%) and maternal and child health or integrated management of child health (IMCI) (46.1%).

Nearly 45% of countries surveyed did not use the information obtained from growth monitoring. For those that did, follow-up actions to improve growth included referral to a health educator or nutritionist (77.7%), referral to a medical officer (36.4%) and referral to a higher level (27.3%). Lack of training was the most common constraint in monitoring growth, followed by inadequate equipment and inaccurate understanding and interpretation.

2.4 The use of growth charts in emergencies

Dr Pushpa Acharya

WFP is a food aid agency, not a technical agency, and relies on ministries of health, UNICEF, WHO and nongovernmental organizations to provide technical support to its programmes.

Nutrition and growth is affected by a number of scenarios common in emergencies: destruction of livelihoods; lack of food and cooking facilities; high prevalence of diarrhoea; high risk of measles and ARI; disruption of breast feeding and complementary feeding; emotional stress affecting caring practices; death of care-takers; and heightened insecurity.

These scenarios can lead to protein energy malnutrition including marasmus, kwashiorkor and marasmic kwashiorkor. They can also lead to micronutrient deficiencies, especially deficiencies of iron, iodine, vitamins A, C and B1, and niacin.

WFP's emergency response has four phases: assessment and analysis; programme design; programme implementation; and monitoring and evaluation. During the assessment and analysis phase, severity of availability, access and utilization of food are examined. Nutritional indicators of food utilization are used to decide what kind of support is needed, and for who, and how many, and where.

During the intervention stage, 2100 Kcal/person is taken as a reference and adjusted based on the environmental temperature; health and nutritional status; demography; and physical activity of the target group. Actions taken depend on the malnutrition severity and rate, as well as the existence of aggravating factors.

Monitoring and evaluation activities include carrying out qualitative surveys; household surveys; household food economic assessments; food and livelihood security assessments; anthropometric surveys; growth monitoring; and impact assessments.

The growth reference curves are used in all four programme phases. The introduction of the new curves will therefore create a number of challenges and opportunities for WFP, including a reassessment of nutritional status trends for the programme design and monitoring phases.

Potential action includes information sharing with partners and country offices, technical support, data adjustment and implementation support for ministries of health and WHO/UNICEF in WFP project areas and health centres.

2.5 New child growth standards: Why? How? What next?

Dr Mercedes de Onis

A comprehensive review by the 1991-1993 WHO Working Group on Infant Growth showed that growth patterns of healthy breastfed infants differed from the current NCHS/WHO international references. New growth references were needed to improve infant health management. The reference population should reflect current health recommendations and should be representative of the world's children.

The MGRS was designed to construct new growth curves. The study populations were selected from six countries across the WHO regions: United States, Brazil, Norway, Ghana, Oman and India. A longitudinal study was used for the group of children aged 0–24 months, while a cross-sectional study was used for the group aged 18–71 months. The total sample size was 8440 children: 300 newborns and 1400 children aged 18–71 months, per site.

Eligibility criteria for inclusion in the study were: no health, environmental or economic constraints on growth; a mother willing to follow feeding recommendations; full-term birth; single birth; lack of significant perinatal morbidity; and a non-smoking mother (before and after delivery).

The new reference data developed are: weight-for-age, length/height-for-age, weight-for-length/height, body mass index-for-age, mid-upper arm circumference-for-age, triceps skinfold-for-age, subscapular skinfold-for-age and head circumference-for-age. Growth velocity reference data developed are: weight, length/height, head circumference, arm circumference and body mass index.

The new curves have a number of innovative aspects. The approach was prescriptive: the breastfed infant was taken as a normative model. The curves were developed using an international sample. They include reference data for assessing childhood obesity and velocity reference data. They link physical growth and motor development.

The preparation and release of the new WHO Child Growth Standards will involve:

- the construction of the new standards;
- evaluation and field testing of provisional standards;
- development of WHO ANTHRO 2005 software to support individual- and population-based uses;
- development of training modules to guide appropriate use;
- reviewing interventions for the prevention and treatment of impaired child growth;
- development of roll-out strategies with partners;

- overseeing global and country-level implementation of the new standards; and
- the adoption of a monitoring system for MDG tracking.

During the discussion period, participants expressed appreciation of the new growth charts. However, concerns were raised over implementation. General guidelines and country-specific actions plans are needed. Guidelines would be needed by January 2006 to check the feasibility of implementation. More information is needed to convince policy-makers. It was suggested that implementation would be aided by initial pilot projects in a few provinces.

3. COUNTRY PRESENTATIONS

3.1 Bahrain

Dr Khairya Moosa

Progress has been made in child health resulting in the steady decline of infant mortality from 2.5% in the 1980s to 0.95% in 2004. A number of new programmes have been introduced: a routine immunization programme was launched in 1980 and the Control of Diarrhoeal Diseases (CDD) and Control of Acute Respiratory Infection (ARI) programmes in 1986. The growth and developmental screening of under-fives (currently under-sixes) was also launched in 1986 and is now part of the Baby Friendly Hospital Initiative (BFHI) established in 1993.

Monitoring is implemented under the children screening and immunization programmes. The charts used are the NCHS/WHO references and the Tanner Standards for Adolescents. Weight-for-age, height-for-age and head circumference-for-age are plotted. The target population is boys and girls under six years.

Existing constraints include the lack of accurate equipment, especially height measuring tools. Training for health workers on measuring techniques should be made more frequent.

3.2 Djibouti

Ms Rachida Souissi

A 2002 Pan Arab Project for Family Health (PAPFAM) survey showed 23% stunting, 26.8% underweight and 17.9% wasting. Infant mortality is 103.15 per 1000 live births and under-five mortality is 124.4 per 1000 live births. In the district of Djibouti, 55% of children from two months to five years are malnourished. The survey found that 96.8% of children under three are breastfed. However, 80% of mothers prefer mixed breastfeeding and 22% of these use milk powder.

Growth monitoring is implemented through the IMCI programme which was launched in July 2004 in 12 centres. The NCHS/WHO chart is used and children of both genders from 2 months to 5 years are measured for weight-for-age.

Activities promoting nutrition include maternal and child health. There is systematic iron supplementation during pregnancy and post partum. The IMCI community component promotes nutrition (including breastfeeding and micronutrients) and hygiene.

Constraints include a lack of qualified or trained personnel and improperly maintained equipment. Recommendations are: the integration of growth monitoring with other programmes (maternal health and immunization), training on monitoring at basic levels (e.g. nursing school) and increased community participation.

3.3 Egypt

Dr Safaa Abdel Fattah Hussein and Dr Azza S Gohar

Growth monitoring is implemented for all under-fives through the PHC system and the new family health centres which were launched in 1997. Monitoring is carried out at the same time as compulsory vaccinations for healthy children, and is part of IMCI services for sick children. Weight-for-age is plotted using the NCHS/WHO charts. Cases of underweight or overweight are referred to the family doctor who either manages and follows up, or refers to higher level care. Motor development is also monitored.

Existing constraints to monitoring include: poor maintenance of equipment; problems with the accuracy of the data recorded (especially for length measurements) due to improper training and supervision; difficulties in interpreting the charts; a high turnover of personnel; and a continuous need for training. There is a lack of standard distributed protocols for the management of malnutrition. Health workers concentrate mainly on under-nutrition and there is little attention to the increasing problem of obesity. The data collection system is not regularly updated at all levels.

Standards, guidelines and manuals should be prepared for monitoring growth and managing malnutrition. Training courses are needed for both doctors and nurses. Public awareness of the importance of monitoring during regular check ups should be raised. Growth measuring tools in different health units should be optimized and properly distributed and maintained. An efficient and sustainable supervisory system should be established. More attention needs to be paid to obesity. Other growth curves such height-for-age should be added to the health card.

3.4 Islamic Republic of Iran

Ms Mina Minaei and Dr Abbass Habibelah

A number of health programmes include growth monitoring: PHC, IMCI, Well Child Care (WCC), community-based programmes on child growth assessment and the primary school entrance examination. The NCHS/WHO references are used, and weight, height and head circumference are recorded. BMI is beginning to be used to identify overweight children. Under-eight boys and girls are the target population.

If the child's growth curve deviates inwards, the community health worker can take a number of actions. For some conditions, primary treatment is given based on the guidelines. Mothers are advised on better nutrition for the child. The child is placed on a special care list and the number of visits is doubled. If on subsequent visits the child's growth curve has not increased, the child is referred to a physician. If the child does not attend appointments, the community health worker visits them in their home.

Existing problems include lack of equipment such as standardized scales. Families and health workers (from physicians to community health workers) lack awareness of the importance of monitoring. Many paediatricians do not use the growth charts. The high staff turn-over also causes difficulties. Comprehensive guidelines and training for health workers and day-care staff are needed along with pre-service training for medical doctors and other paramedics. Maternal awareness should be increased.

3.5 Iraq

Dr Faiza Abdul Ahad Majeed

Monitoring is implemented through the routine immunization programme, IMCI, maternal and child health (MCH), the Targeted Nutrition Programme for protein-energy malnutrition (PEM) and community child care units. MCH services include periodic antenatal visits and routine periodic examination for children from birth to five years: bi-monthly in the first year, tri-monthly during the second two years, and then every six months until age five. Weight-for-age, height-for-age, mid-upper arm circumference and head circumference are measured. The WHO references are used.

A Rapid Evaluation Survey in 1997 (carried out by the Ministry of Health and WHO) showed that mothers have little awareness of the importance of monitoring. Other existing problems include: a lack of trained personnel; badly equipped and maintained centres; and poor attendance by mothers due to the security situation.

Recommendations are: training for health workers; strengthening BFHI; increased monitoring and supervision; the provision of better equipment; and increased maternal awareness.

3.6 Jordan

Dr Mai Al-Hadidi

Weight-for-age, height-for-age, weight-for-height and head circumference-for-age are plotted for all children from 0–36 months using the NCHS/WHO growth charts. Separate growth charts are provided for boys and girls. Any abnormalities are referred to the maternal and child health centre, a general practitioner or a paediatrician.

Current constraints include inaccurate plotting of measurements and difficulties for health workers in understanding and interpreting the curves. There are also difficulties in supplying equipment to remote areas.

Improved guidelines and adequate protocols for managing growth curve problems are needed. Health providers should receive training, particularly in interpreting the growth chart. Adequate equipment should be supplied to maternal and child health centres. Information obtained should be used for programme planning and resource allocation. There should be coordination and cooperation with other health sectors. Growth charts should be used for all children under 18 years of age.

3.7 Libyan Arab Jamahiriya

Dr El Mokhtar Mohamed Hadida and Dr Mabrouka M. Legnain

The national health strategy is based on a PHC system. Well-Baby clinics administer vaccinations; monitor nutrition and growth; identify children at risk; and promote breastfeeding. Currently, 92.4% of children are breastfed for the first three months. In maternal and child health centres, the NCHS/WHO references are used. Weight-for-age is plotted.

Constraints include: inadequate equipment, inadequate training of personnel and difficulties in interpreting health curves by health workers.

Recommendations include: the use of the height-for-age parameter in addition to weight-for-age; awareness-raising and training in maternal and child health centres on the use of growth charts; improved follow-up action when growth curves are abnormal; and improved parental and community awareness of the importance of growth supervision.

3.8 Morocco

Dr Fatima Dehbi

Studies carried out in 2004, showed that 9% of children exhibited wasting (up from 2% in 1987), 18.1% were stunted (down from 23% in 1992) and 10.2% were underweight (up from 9% in 1992). Current activities promoting child nutrition include

nutritional surveillance, immunization, IMCI, a family planning programme and micronutrient supplementation.

The NCHS and the CDC growth charts are used. Weight-for-age (one chart for all under-fives) and weight-for-height (one chart for under-twos and another for three-to-fives) are recorded. The child health booklet is used for all children under 18. Under the IMCI strategy, if the child is found to be underweight, a clinical and food assessment is made. Nutritional education is given and followed up.

Constraints include: inadequate equipment; interpretation difficulties for health workers; and non-uniformity in the use of reference charts. It is recommended that health workers receive training and that the number of growth assessments in the second year is increased. National universities should be involved and there should be coordination with the private sector.

3.9 Oman

Ms Hanadi J. Al Rajab

The 1999 national PEM survey found that 17.9% were underweight, 7% exhibited wasting and 6% showed stunting.

Child growth is monitored through the child health register, PEM programme, routine immunization programme, IMCI and Triple A activities. The NCHS references are used. Weight-for-age is plotted for children from 0–72 months. There are separate charts for boys and girls.

Constraints include inadequate equipment, lack of training of personnel, high staff turnover and insufficient time during monitoring sessions.

It is recommended that the new charts include birth details, immunization records, clinic visits, feeding practices, supplementation and development milestones. There should be clear guidelines for management and action. Health workers should receive training on anthropometry. Parental understanding of the curves should be improved.

3.9 Oman: experience of MGRS

Dr Sahar Abdou Helmi

The multicentre growth reference survey (MGRS) in Oman consisted of longitudinal and cross sectional studies with functional components including motor development. During the planning phase, longitudinal screening teams and follow-up teams were trained on anthropometry. All teams were trained to administer the oral interviews and complete the questionnaire. An adapted version of the MGRS *Manual of*

Operations was developed and all questionnaires interviewer guidelines were translated into Arabic.

A random sample of 8000 infants were selected from a master list of 24 000 children drawn from the child health register. Of these, 1400 children were selected to be included in the study, according to the social economic status of the family, intention to breastfeed by the mother, willingness to participate and so on.

Using observations, interviews and questionnaires, data were collected on morbidity, feeding patterns and use of supplements. Anthropometric measurements of mothers and children were taken.

Quality control procedures included: a daily review of questionnaires for completion and accuracy of coding; data entry by two persons acting independently; bi-monthly standardization sessions for anthropometry; and regular team and steering committee meetings.

3.10 Pakistan

Dr Zafar Iqbal Naeem and Dr Malik M. Safi

A 2001–2002 study found that 38% of under-fives were underweight, 36.8% were stunted and 13.1% exhibited wasting. Under-five mortality was 101 per 1000 live births.

Growth charts are implemented through the maternal and child health programme in public health facilities; in the national programme for family planning; and in PHC. The target population is children under three years. The same card is used for both sexes.

There are a number of existing constraints. National and regional references are not defined. There is little community awareness of the importance of growth monitoring. Data from public hospitals are not available. Training and supervision are inadequate and health care providers lack counselling skills. There are insufficient weighing scales. The private health sector is not involved.

Data regarding growth monitoring should be gathered from public and private hospitals and analysed through the health management information system. Scales should be provided to community health workers. Health staff and community health workers require continuous capacity building and training on counselling. Supervision should be improved.

3.11 Palestine

Dr Mohammed Jobran

Growth charts are implemented by the Palestinian Ministry of Health at maternal and child health centres. In 2004, coverage was 53.35% of total deliveries. Height-for-age, weight-for-height, head circumference-for-age and weight-for-age are plotted on growth charts using the CDC references. The target population is under-threes. Other health providers, such as UNRWA, nongovernmental organizations and the private sector, also use growth charts.

There is no effective referral system and no feedback. Measurements are not standardized, there is no computerization and equipment is inadequate. Data are not fully analysed and interpreted. Follow-up and monitoring need to be addressed more thoroughly.

Recommendations are: capacity building for staff in relation to proper use of equipment; improved computer skills, including the use of health statistics programs; community mobilization; health education and promotion; and improved supervision, monitoring and evaluation.

3.12 Qatar

Dr Hamda Qotba

Growth charts are implemented in Well-Baby clinics (PHC), school health clinics (PHC) and paediatrics departments (secondary health care). The NCHS and the CDC references are used. Height-for-age, weight-for-height and head circumference-for-age and weight-for-age are plotted.

There are a number of constraints. Some staff lack training on measuring and interpretation. Since data are collected at different sites (school and PHC clinics) it is not always recorded in all of the child’s files. Electronic files are needed. Growth charts that are appropriate for children in the region are also necessary.

3.13 Somalia

Ms Noreen Prendiville

FSAU/FAO is the primary source of information on food security and nutrition in Somalia. The organization carries out operational research, guideline development, technical support and capacity building in the country. The nutrition information component focuses on evidence-based analysis of nutritional health and food security.

Partly due to repeated crises – both natural and man-made – there have been no significant improvements in the levels of acute malnutrition in the greater Horn of Africa. Acute malnutrition rates in Somalia are between 17% and 30%. The crude mortality rate reaches 2/10 000/day in some areas and under-five mortality is up to 3.7/10 000 per day.

Nutritional information about Somalia can be collected by conducting surveys and rapid assessments, looking at food consumption patterns and coping strategies and communicating with health facilities.

Recommendations for addressing nutritional problems in emergency/crisis scenarios include having adequate information systems in place before the crisis occurs to ensure that historical data are available to decision makers. It is also important that experienced persons are making decisions. Humanitarian access should be made possible even in the presence of security constraints.

3.14 Sudan

Dr Siham A. Balla and Dr Lamia Eltigani

The Federal Ministry of Health introduced growth monitoring cards in the early 1970s. In 1981, the National Nutrition Directorate initiated a community-based nutrition surveillance project in the Kordofan zone, which included growth monitoring. In 1983, the Ministry recommended that the WHO Growth Chart be used in PHC, targeting children under three years of age.

Growth monitoring currently targets all under-fives and is implemented through the nutrition, immunization, IMCI and Basic Development Needs programmes. The growth card targets under-fives. The growth curves are the NCHS/WHO references and weight-for-age is plotted.

However, card is primarily used for recording the vaccination schedule and is not fully utilized by the nutritional care provider. Training for health care providers is inadequate and staff are overburdened. There is a shortage of functioning scales in health facilities. Mothers have not been adequately informed about the benefits of monitoring.

The growth monitoring programme should be improved by: identifying more sentinel sites; updating training manuals and other support materials; and strengthening monitoring and evaluation. Adequate scales should be provided.

3.15 Syrian Arab Republic

Dr Mayas Altaweel

Monitoring is included in IMCI and nutrition programme activities. The growth charts used are NCHS/WHO references: weight-for-age (combined male and female), height-for-age (separate charts for males and females) and head circumference-for-age (separate for males and females). The target population is under-fives.

Constraints include inadequate equipment, inadequate training for personnel and failure to address obesity. There should be improved management and technical training for the staff. Better infrastructure and equipment is needed. Attention should be given to overweight and obese children. The programme should be expanded to cover all provinces.

3.16 Tunisia

Dr Larbi Hamzaoui

Tunisia's national nutrition programme was launched with a routine immunization programme in 1980. In 1990, immunization was integrated into the maternal and child health programme. Guidelines and training for health workers were reviewed and a breastfeeding programme was introduced. From 2002–2003, IMCI was implemented. As a result, underweight prevalence decreased from 10.4% in 1988 to 4% in 2000. During the same period, stunting decreased from 18.2% to 12.3% and wasting decreased from 3.1% to 2.2%.

The growth charts used are weight-for-height and height-for-age. Curves are plotted for 0-6 months, 6–24 months and 2–6 years, for both boys and girls. Measurements are taken at 3, 4, 5–6, 9–10, 15, 18–24 months and every 6 months after.

3.17 United Arab Emirates

Ms Asli Aden Ashkir

Three combined child growth charts, based on the WHO references, are used: weight-for-age, height-for-age and head circumference-for-age. The target population is under-fives.

Existing problems in the use of the growth charts include difficulties for health workers in interpreting the curves. Mothers that breastfeed exclusively feel that their children's growth is slower.

Recommendations include replacing the old WHO growth charts with more appropriate charts. BMI measurements should be included for 2–20 years as an indicator

of both obesity and underweight status. Accurate weights and measures should be used. Guidelines on all aspects of growth monitoring should be developed. In particular, health workers should be trained on how to determine the percentile rank; determine percentile ranks indicating nutritional risk according to the percentile cut-off value; and compare present measurements with the previous and identify any major shifts.

3.18 Yemen

Dr Arwa Hamoud Baydar and Mr Nageeb Abdul Baqi

In 2003, stunting prevalence was 53.1%, underweight prevalence was 45.6% and wasting was 12.4%. The child mortality rate was 102 per 1000 live births. Low birth weight was 22%. 11.5% of children were exclusively breastfed for 0–6 months.

Growth monitoring is implemented through community-based nutrition, IMCI and WFP food donation programmes. Both weight and height are measured and the NCHS/WHO references are used. From 0–59 months, children are monitored under the IMCI programme. The WFP food donations programme target age is 6–59 months, with the growth chart used to decide whether the child deserves the monthly commodities. For community-based nutrition, both health workers and volunteers are trained on using and interpreting growth curves, and advising and reporting.

Constraints include inaccurate plotting of, and difficulties in interpreting, the charts. Criteria for use of the growth chart should be developed. The charts should be divided into coloured zones for easier interpretation and printed on a material that cannot be easily torn. Developmental indicators should be included. WHO should look into the feasibility of using the Bubble growth chart.

4. CONCLUSIONS

The following conclusions and recommendations were formulated during the two days of group work and presentations.

- Major constraints of the present growth monitoring system include: inadequate standardization of the monitoring tools; the need for increased capacity; rapid turnover of staff; a need for increased training; and inadequate equipment. In addition, information obtained from growth monitoring is not being used adequately in making decisions on policy, planning, education and advocacy (including through the media).

- The majority of participating countries appreciated MGRS curves. While many countries expressed willingness to adopt the new growth curves, some were concerned about the practicalities of implementation.

- Other United Nations agencies recognized the importance of the adoption of the new curves and pledged support.

5. RECOMMENDATIONS

To Member States

1. Provide regular training on the management of malnutrition for health workers and care-givers.

2. Ensure that data are recorded at local and central levels of primary health care and used for activities promoting nutritional status.

3. Ensure that the private sector is included in data collection activities and in implementation of the new growth curves.

4. Involve universities and other relevant institutions in giving training.

5. Strengthen monitoring and evaluation.

To WHO

6. Develop guidelines for training on the new growth curves.

7. Provide financial and technical support to countries for implementation of the new growth curves.

8. Consider designating Oman as the regional focal point for training in anthropometry.

Annex 1

AGENDA

1. Registration
2. Welcome and opening addresses
3. Regional experiences in growth charts and growth monitoring
4. Country experiences in the use of growth charts
5. Group work and presentations
6. Conclusions and recommendations
7. Closing ceremony

Annex 2

PROGRAMME

Monday 12 September 2005

09:00–10:00	Inauguration Message from Dr Hussein A. Gezairy, Regional Director, WHO/EMRO Speech by Dr. Mahendra Sheth, UNICEF Regional Health Advisor for Middle East and North Africa Region Message from Mr Amir Abdallah, Regional Director, World Food Programme, Regional Bureau for the Middle East, Central Asia and Eastern Europe Address by His Excellency Dr Ali Bin Moosa, Minister of Health, Oman
10:30–10:40	Election of officers
10:40–11:45	Key note address: Impact of early growth on health over the lifecourse, Dr Ali Jaffer, Director General of Health Affairs, Ministry of Health, Oman
11:45–12:00	Background and workshop objectives, Dr Kunal Bagchi, WHO/EMRO
12:00–12:45	New child growth standards: Why? How? What next? Dr Mercedes de Onis, WHO/HQ
12:45–13:00	Current use of child growth charts in the Region: results of a questionnaire survey, Dr Kunal Bagchi, WHO/EMRO
13:30–16.00	Country experiences in the use of growth charts: Bahrain Egypt Islamic Republic of Iran Jordan Libyan Arab Jamahiriya Sudan United Arab Emirates Somalia

Tuesday 13 September 2005

09:00–10:00	Growth monitoring: an instrument in the context of child survival and Millennium Development Goals, Dr Mahendra Sheth, UNICEF/MENARO
10:00–10:30	Country experiences in the use of growth charts (continued) The growth charts: Oman's experience The MGRS: Oman's experience
10:30–11:00	Pakistan

	Palestine
11:30–12:30	Qatar
	Syrian Arab Republic
	Tunisia
	Yemen
	Morocco
	Iraq
	Djibouti
13:30–14:30	Use of growth charts in emergencies, Dr Pushpa Acharya, WFP
14:30–14:45	Group work.
	Directions/guidance on group work, Dr Kunal Bagchi, WHO/EMRO
14:45–16:00	Group work

Wednesday 14 September 2005

08:30–11:00	Group work (continued)
11:30–12:30	Presentation of group work:
	Group A
	Group B
	Group C
	Group D
12:30–12:45	Briefing on the meeting CD contents, Mr Hazem Sakr, WHO/EMRO
12:45–13:00	Meeting of drafting committee
14:00–15:00	Conclusions and recommendations
15:00–15:15	Closing ceremony

Annex 3

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