Exclusive breastfeeding

Breastfeed infants exclusively for up to 6 months. (Mothers found to be HIV positive require counselling about possible alternatives to breastfeeding).

The current WHO public health recommendation, on a population basis, is to breastfeed infants exclusively up to 6 months, with introduction of nutritionally adequate, safe and appropriate complementary foods and continued breastfeeding thereafter (The optimal duration of exclusive breastfeeding – Results of a WHO systematic review, WHO Geneva 28–30 March 2001).

This recommendation had earlier been made also by the Forty-Seventh Session of the Regional Committee for the Eastern Mediterranean in resolution EM/RC47/R.10 (2000) and endorsed by the Fifty-fourth World Health Assembly (WHA 54/2).

The recommendation is supported also by a recent systematic review of the evidence (Optimal duration of exclusive breastfeeding (Review), The Cochrane Library, 2009, Issue 4).

The benefits of exclusive breastfeeding are widely established and associated with reduced childhood mortality, morbidity and enhanced cognitive development.

Despite this, exclusive breastfeeding rates are still low.

A review on child survival interventions published in The Lancet estimated that with universal coverage of exclusive breastfeeding (i.e. 90% of children under 6 months of age), 13% of under-five deaths could have been prevented in the 42 countries which contributed to 90% of worldwide under-five deaths, i.e. over 1.3 million deaths saved a year (Lancet 2003; 362:65-71).

Interventions to promote exclusive breastfeeding have included regulatory measures (legislation, policies), addressed hospital practices, used community support groups and health education and communication.

The potential impact, feasibility and sustainability of interventions on a large scale should be carefully considered when planning to embark on breastfeeding promotion. This should follow a comprehensive plan, including a combination of legislative and non-legislative regulatory initiatives, policies, guidelines, training, health education and communication interventions, based on a thorough situation analysis highlighting existing barriers and enabling factors for breastfeeding in the given context.

Related links:

The optimal duration of exclusive breastfeeding – Results of a WHO systematic review

Family and community practices that promote child survival, growth and development – A review of the evidence

Regional Committee for the Eastern Mediterranean resolution on exclusive breastfeeding (EM/RC47/R.10)

The Lancet Child survival series

World Health Assembly resolution on exclusive breastfeeding (WHA 54/2)

Complementary feeding

Starting at about 6 months of age, feed children freshly prepared energy and nutrient rich complementary foods, while continuing to breastfeed up to two years or longer.

Complementary feeding refers to feeding solid or semisolid foods in addition to—and not in

replacement of—breastmilk to meet child's increased nutritional requirements. Breastfeeding should continue as an important source of nutrients up to two years of age or longer.

Solid or semi-solid foods are often introduced in the infant's diet too early, i.e. before 6 months of age, but in some cases complementary feeding may also be delayed for many months.

Complementary feeding practices are often inadequate in developing countries.

Complementary feeding is not only about what to give, how much and how often, but also about food hygiene and, more in general, a number of appropriate feeding behaviours.

Large-scale interventions have usually adopted comprehensive approaches on feeding promotion, often using mass media communication and face-to-face counselling.

The use of a nutrition counselling protocol derived from IMCI (Integrated management of childhood illness) in a randomized trial in Brazil resulted in better provider nutrition counselling and caretaker recall of feeding messages, caretaker satisfaction with the consultation and improved feeding practices, and improved diet and weight gain in children 12 months of age or older. These findings were confirmed by a cluster-randomized controlled trial carried out in Pakistan more recently. A large-scale community-based project, in addition to improving complementary feeding practices, resulted in increased utilisation of government health services. The Lancet series on maternal and child undernutrition (2008) confirmed that counselling on complementary feeding is effective at reducing stunting.

Major challenges to caretakers, which have been identified in complementary feeding programmes, are represented by time and resource constraints.

Interventions to improve complementary feeding practices in infants 6-12 months of age have resulted in improved energy intake and growth, corresponding to a decrease in the prevalence of malnutrition by 20% and in malnutrition-associated deaths from 6 months of age by an estimated 2% 13%. A reduction in diarrhoea-associated mortality of similar magnitude and a reduction in ARI (acute respiratory infections)-associated mortality have also been suggested

(Family and community practices that promote child survival, growth and development: a review of the evidence).

A review on child survival interventions published in The Lancet estimated that with universal coverage (99%) of this intervention, 6% of under-five deaths could have been prevented in the 42 countries where 90% of worldwide under-five deaths occurred (Lancet 2003; 362:65-71), while observational studies suggested that “improving feeding practices could save 800 000 lives per year” globally (The Review). Promoting continued breastfeeding and complementary feeding from age 6 months has been confirmed more recently as one of the key evidence-based interventions to reduce child mortality.

Related link:

Family and community practices that promote child survival, growth and development – A review of the evidence

The Lancet Child survival series

Micronutrients

Ensure that children receive adequate amounts of micronutrients (vitamin A, iron and zinc, in particular), either in their diet or through supplementation.

Vitamin A. In Vitamin-A-deficiency areas, vitamin A supplementation has been shown to reduce child mortality by over 20% in children 6 months to 5 years old (Family and community practices that promote child survival, growth and development: a review of the evidence). The benefits of vitamin A supplementation may apply also to areas with significant biochemical deficiency and no clinical manifestations.

Supplementation approaches have included supplementation—usually a high dose every 4-6 months—and food fortification.

Vitamin A supplementation from 6 months of age has been recommended as an intervention that reduces child mortality (The Lancet series on maternal and child undernutrition, 2008) and has been confirmed as one of the key evidence-based interventions to reduce child mortality.

A summary of additional, recent evidence on vitamin A supplementation in children is provided in this document:

Vitamin A supplementation for infants and children 6-59 months of age

Iron. Iron supplementation in children with reduced iron stores has been shown to restore iron stores and improve haemoglobin levels, attention and appetite.

Public health interventions in this area include among others intermittent iron supplementation, dietary diversification and food fortification. Intermittent iron supplementation has been recommended in pre-school and school-age children in areas where the prevalence of anaemia in these age groups is 20% or higher as an intervention to improve iron status and reduce the risk of anaemia.

In malaria-endemic areas, iron supplementation should be provided in conjunction with adequate measures to prevent, diagnose and treat malaria.

“Iron sprinkles”—powdered micro-encapsulated ferrous fumarate sprinkled on semi-liquid food—have been shown to be “as efficacious as … iron drops for the treatment of anaemia in young children” (The Review). In The Lancet series on maternal and child undernutrition (2008), an analysis of studies of these preparations found an increase in haemoglobin concentration and a reduction in iron-deficiency anaemia in children younger than 2 years with the use of dispersible micronutrients.

Food fortification—effective in reducing iron deficiency in developed countries—has targeted wheat flour, sugar and salt.

Intermittent iron supplementation in pre-school and school-age children

Use of multiple micronutrient powders for home fortification of foods consumed by infants and children 6–23 months of age

Zinc. The recommendation on micronutrients currently includes also zinc, as zinc deficiency is highly prevalent in children in developing countries and in view of research findings showing that zinc supplementation reduces diarrhoea and pneumonia incidence, and improves growth in children.

Zinc supplementation given during an episode of acute diarrhoea (10 mg/day for children less than 6 months old and 20 mg/day for children 6 to 59 months) reduces the severity and duration of the episode. When given for 10-14 days, it lowers the incidence of diarrhoea in the following 2-3 months (WHO/UNICEF joint statement on clinical management of acute diarrhoea).

A review published in The Lancet estimated that Zinc administration as a treatment measure could have prevented 4% (about 400 000) of under-five deaths in the 42 countries which totally contributed to 90% of global under-five deaths (Lancet 2003; 362:65-71).

As observed for iron, it appears difficult for infants and young children to meet their zinc requirements from food alone. Research to increase the bioavailability of zinc from food staple crops is under development.

Related links:

Family and community practices that promote child survival, growth and development – A review of the evidence

WHO/UNICEF joint statement on clinical management of acute diarrhoea

Implementing the new recommendations on the clinical management of diarrhoea

The Lancet Child survival series

Hygiene

Dispose of faeces, including children's faeces, safely, and wash hands after defecation before preparing meals and before feeding children.

It has been estimated that 88% of the diarrhoeal disease burden is attributable to unsafe water supply, sanitation and hygiene, and mostly falls on children in developing countries.

Faecal disposal. Improved sanitation has been associated with a median reduction in all-cause child mortality by 55%, diarrhoea mortality by 65%, and diarrhoea morbidity by 26% (Family and community practices that promote child survival, growth and development: a review of the evidence).

Interventions to improve sanitation should include also hygiene education.

Handwashing. Handwashing practices are often poor.

Although the impact on diarrhoea morbidity varies considerably between studies, there is evidence that interventions successfully promoting handwashing have resulted in significant

reductions in diarrhoea incidence, by a median of 33% according to a review (Family and community practices that promote child survival, growth and development: a review of the evidence). The impact has been higher for interventions focussing only on handwashing and no other practice.

Of interest is the use of marketing approaches to involve soap industry in promoting handwashing with soap.

When designing handwashing interventions on a large scale, a number of factors should be taken into consideration, including among others their feasibility and cost, family resources, community involvement and cultural beliefs, and access to water and to cleansing agents.

Related link:

Family and community practices that promote child survival, growth and development – A review of the evidence

Immunization

Take children as scheduled to complete a full course of immunizations (BCG, DPT, OPV and measles) before their first birthday.

The benefits of immunization have been demonstrated widely. Increases in immunization coverage in the past decades have contributed substantially to decrease under-five mortality. Yet, more efforts are needed to further improve immunization coverage, also with the new vaccines: routine immunization could have averted 1.5 million deaths due to vaccine-preventable diseases in 2008.

Programmes on immunization have in recent years expanded the vaccine schedule for children further to add more immunizations, based on WHO recommendations on vaccines on Hepatitis B, Haemophilus influenzae type b, pneumococcus, rotavirus and meningococcus.

Interventions need to improve access to immunization services and, particularly, reach the unimmunized children, who are often the poorest.

Implementation of strategies such as IMCI (integrated management of child health) to identify and immunize or timely refer to immunization sessions children needing immunization during any encounter with the primary health care provider have the potential to contribute to reduce the high proportion of children who miss opportunities for immunization during consultations at health facility.

Social mobilization interventions to inform families about immunization services and motivate them to use them have succeeded in increasing immunization coverage (Family and community practices that promote child survival, growth and development: a review of the evidence).

Related links:

Family and community practices that promote child survival, growth and development – A review of the evidence

Vaccine position papers

Malaria - use of bednets

Protect children in malaria-endemic areas, by ensuring that they sleep under insecticide-treated bednets.

Use of insecticide-treated bednets has been associated with a reduction in child mortality (by 17%) and malaria morbidity (by 48% in stable malaria areas), according to “Family and community practices that promote child survival, growth and development – A review of the evidence”.

The effect of the insecticide adds to that of the physical barrier of the bednet. Long-lasting insecticidal nets—where the insecticide is ingrained in the bednet fibres or coated around them— are currently recommended by WHO. They provide personal protection and must retain efficacy for at least 3 years under field conditions and resist to repeated (at least 20) washings. WHO's position is that "long-lasting insecticidal nets should be considered a public good for populations living in malaria-endemic areas".

Sleeping patterns of children, vector biting patterns and bednet use patterns throughout the year affect the impact of insecticide-treated bednets.

Related links:

Family and community practices that promote child survival, growth and development – A review of the evidence

Insecticide-treated mosquito nets: a position statement

Psychosocial development

Promote mental and social development by responding to a child's needs for care and through talking, playing and providing a stimulating environment.

Psychosocial interventions can improve child psychological development ; they should start very early in life. Likewise, successful nutrition interventions can improve not only physical growth but also child development if implemented earliest in life.

When implemented together, psychosocial and nutrition interventions have a greater effect than when implemented individually.

The benefits apply also to the disadvantaged children who live in a poor environment and are at higher risk of malnutrition, illness and poor development.

The main source of physical and emotional care for young children is the family. Counselling parents is an effective approach to help them acquire the necessary skills to feed their children adequately, stimulate their development and be responsive to their emotional and psychological needs.

Large-scale early childhood care and development (ECCD) interventions in developing countries have resulted in improved short- and long-term educational outcomes. To have long-term effects on development, interventions should be intensive and protracted for several years.

Related links:

A critical link – Interventions for physical growth and psychological development. A review

Family and community practices that promote child survival, growth and development – A review of the evidence

The Lancet child development in developing countries series

Home care for illness

Continue to feed and offer more fluids, including breastmilk, to children when they are sick.

Continuing feeding —including breastfeeding—and offering more fluids to a child when he/she is sick aims at preventing malnutrition and dehydration.

It is reasonable to stimulate child feeding actively also during the recovery period (convalescence), when catch-up growth may occur.

This approach has been the cornerstone of the home management of acute diarrhoeal episodes in under-fives, later recommended as standard home care for child illness.

The anorexia pattern in child illness is peculiar in that it is more pronounced for non-human milk and solid fluids than for breastmilk: breastmilk therefore remains a key food item also during illness.

Studies have shown an improvement in home care for diarrhoea episodes in under-fives after national CDD (control of diarrhoeal diseases) programme interventions (see also ORT, practice 9).
Other interventions have also been able to improve feeding behaviours.

Of particular interest is the evidence that nutritional counselling—through an IMCI (integrated management of childhood illness)-derived counselling protocol—can improve caretaker feeding behaviour and child nutritional status (increase in weight gain) (see also complementary feeding).

Related links:

Family and community practices that promote child survival, growth and development – A review of the evidence

Diarrhoea: Why children are still dying and what can be done

Home treatment for infections

Give sick children appropriate home treatment for infections.

Three practices are summarised here:

oral rehydration therapy for acute diarrhoea;

community case management of malaria;

management of pneumonia in community settings.

Only the first practice is carried out by household themselves, while the other two practices are carried out through community health providers.

Oral rehydration therapy for acute diarrhoea

ORT remains one of the most effective treatment interventions available both at health facility and the community.

ORT was initially defined as the administration of oral rehydration salts (ORS) and/or recommended home fluids—which became known as the pre-1993 definition. The importance of continued feeding was also recognised. The emphasis then shifted to the administration of increased fluids—“ORT (increased fluids)”— with continued feeding as appropriate management of diarrhoea. More recently, the focus of ORT has been on the administration of ORS (oral rehydration salts) or recommended home-made fluids or increased fluids, and continued feeding.

A review published in The Lancet estimated that ORT could have saved 15% of under-five deaths occurring in the 42 countries where 90% of worldwide under-five deaths occurred (Lancet 2003; 362:65-71).

WHO recommends a reduced osmolarity ORS formulation (245 mOsm/l), with lower glucose (75 mmol/L) and sodium (75 mEq/L) concentrations than the standard ORS used in the past (311 mOsm/L).

This new ORS formulation is capable of reducing stool output, incidence of vomiting and unscheduled intravenous fluids.

ORT has been promoted on a large scale and successfully in many countries in the past, especially through national Diarrhoeal Disease Control Programmes and their partners, showing that it is a feasible and cost-effective intervention with substantial impact on mortality.

Within the context of ORT, ORS promotion requires not only encouraging its use, but also teaching its correct preparation and proper use, and ensuring a regular and adequate supply.

WHO/UNICEF joint statement on clinical management of acute diarrhoea

Implementing the new recommendations on the clinical management of diarrhoea

Diarrhoea: Why children are still dying and what can be done

The Lancet Child survival series

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Community case management of malaria.

Community case management of malaria with antimalarials in children under five years of age is a promising strategy to prevent progress to severe malaria and death in areas with limited access to health facility-based child care services.

Prompt availability of medicines—preferably pre-packed—and rapid diagnostic tests (RDTs), appropriate training, health education, supervision and community involvement are some important elements of the interventions.

Community case management of malaria and childhood illnesses

Top

Management of pneumonia in community settings

Effective treatment for pneumonia in young children should be available promptly since the start of illness, bringing it as close as possible to the community.

Community-based interventions in which adequately trained and supervised community health workers have provided case management have had a significant impact on both overall and pneumonia specific under-five mortality, with a reduction estimated at 20% and 24%, respectively (Family and community practices that promote child survival, growth and development – A review of the evidence). A meta-analysis of seven community-based trials of case management of pneumonia presented in a WHO report on “Evidence base for the community management of pneumonia”(2002) showed a 26% reduction of child mortality and a 37% reduction in mortality from pneumonia.

A supporting environment, including enabling policies, government commitment, acceptance by the academia, strong links with the health system and a functioning referral system, is needed to deliver and sustain the intervention in the community effectively, in addition to quality training, medicines and supervision.

Large-scale community-based interventions by community health providers are feasible and sustainable.

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Related links:

WHO/UNICEF joint statement on management of pneumonia in community settings

Evidence base for the community management of pneumonia

Family and community practices that promote child survival, growth and development – A review of the evidence

Care-seeking

Recognize when sick children need treatment outside the home and seek care from appropriate providers.

It is remarkable that many of the children who die or develop severe illness have not been taken to a health facility—often without seeking any advice from an appropriate provider—or have been taken with much delay. An IMCI (Integrated management of childhood illness) health facility survey conducted in Sudan in 2002 found that 68% of caretakers who had taken their children to a health facility had waited more than 24 hours before seeking care, from the time they had recognised that their child had a breathing problem. Caretaker knowledge about the signs that should prompt them to seek consultation was low.

Various factors determine health seeking behaviour and are likely to interact with each other in the family decision-making process, eventually resulting in the choice of care and providers.

These factors are related to the characteristics of the:

a) child (e.g. age, sex, birth order);

b) child caretakers (e.g. education, ethnic group, religion, family role and marital status, economic resources, social bonds with the community and providers);

c) child illness (e.g. caretaker recognition of symptoms and perceived severity of the illness and its causes—cultural “illness categories”);

d) health services (e.g., geographical accessibility, perceived quality of services and communication between caretakers and providers, costs).

When care is sought and sought timely, the outcome is influenced by health care providers’ skills to correctly identify severe illness and provide appropriate care timely, including emergency care, whether at the referring primary health care unit or referral facility.

Before increasing the demand for services by promoting care-seeking, efforts should be made to improve access to and quality of child health services, for these to be responsive to the needs and expectations of the community.

The determinants of health seeking behaviour and sources of care most commonly sought should be considered when designing interventions to improve care-seeking.

The rich mine of information from the many focussed ethnographic studies and household surveys available in most countries should guide those interventions.

Health communication efforts should emphasise those key signs, symptoms and illness entities

that caretakers are able to recognise but of which they fail to appreciate the severity or importance.

Related links:

IMCI health facility survey, Sudan, 2002

Family and community practices that promote child survival, growth and development – A review of the evidence

Compliance with advice

Follow the health worker's advice about treatment, follow-up and referral.

Caregiver compliance with advice on treatment, follow-up and referral is often low.

This may be related to caretakers' lack of knowledge or motivation, access (both geographic, economic and time-related) and other factors (e.g., drug side effects or improvement in child's conditions, health provider support when giving advice, quality of referral services) (Family and community practices that promote child survival, growth and development – A review of the evidence; IMCI health facility surveys in the Region).

Compliance with advice on treatment

Compliance with advice on follow-up

Compliance with advice on referral

Compliance with advice on treatment

Household surveys supported by WHO have often shown that caretakers properly advised by health facility-based providers had better knowledge about treatment (“how much”, “how often” and “for how long”) than those inadequately or not advised (unpublished data - see also the link below to IMCI health facility surveys in the Region).

CDD (control of diarrhoeal diseases), ARI (acute respiratory infections) and IMCI (integrated management of childhood illness) health facility surveys have shown that health provider’s advice on duration of treatment is often the weakest part of the advice on treatment—i.e. advice given incorrectly or omitted—compared with the advice on the dose.

Likewise, these surveys have found that caretakers’ knowledge of the duration of treatment is usually less good than their knowledge of the amount of drug to give to the child and that there is a direct relationship between health provider’s correct advice and caretaker’s correct recall (unpublished data).

Furthermore, studies have usually found a low level of caretaker compliance with treatment.

This means that a sick child’s chances of receiving correct treatment at home can be low.

IMCI training has been associated with improved outcome: children seen by IMCI-trained health providers were more likely to receive correct treatment and their caretakers to recall the instructions correctly than those seen by health providers not trained in IMCI (IMCI health facility survey, Sudan, 2003).

Interventions have shown improved compliance with treatment as a result of improved counselling (Family and community practices that promote child survival, growth and development – A review of the evidence).

Pre-packaging of medicines has also been shown to improve compliance.

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Compliance with advice on follow-up

Compliance with follow-up can improve with proper advice. An IMCI research study on compliance with referral and follow-up recommendations in Gezira State, Sudan, 2000, found that receiving the first dose of drug treatment at the facility was strongly associated with a higher compliance with follow-up, although the practice of delivering treatment at the facility was found not to be very common in a subsequent health facility survey. The study in Gezira reported that 45% caretakers, advised by IMCI-trained health providers, complied with follow-up advice and took their children back to the facility for the follow-up visit.

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Compliance with advice on referral

According to some ARI health facility surveys supported by WHO in the past, intention to comply with referral was more likely to be reported in exit interviews by those caretakers who had received support and explanations about the urgent need for referral than those simply told to take the child to a hospital—although the sample size of cases needing urgent referral was usually small (unpublished data).

In the above-mentioned study on compliance with referral and follow-up recommendations in Gezira State, Sudan, 2000, a third (33%) of children needing urgent referral were actually taken to the hospital on the same day of referral. Cost was a commonly cited reason for not going to the hospital. Risk of mortality in these children taken promptly seemed to be lower than those taken later or not taken at all, although the difference was not statistically significant. Most providers reported that they were referring fewer children since they had received training in IMCI than before.

Interventions to improve adherence to treatment are feasible and have a positive impact on compliance.

They should take into consideration the many factors affecting caretaker compliance with

instructions—e.g. caretaker's comprehension of the instructions, expectations, physical and economic access to drugs, side effects or child's early improvement, etc.—and provider's prescribing practices—knowledge and clinical and communication skills, client demands and drug companies' pressure, administering treatment at the facility, drug availability to give the first dose, benefits.

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Related links:

Family and community practices that promote child survival, growth and development – A review of the evidence

IMCI health facility surveys in the Region

Antenatal care

Ensure that every pregnant woman has adequate antenatal care. This includes having at least four antenatal visits with an appropriate health care provider and receiving the recommended doses of the tetanus toxoid vaccination. The mother also needs support from her family and community in seeking care at the time of delivery and during the postpartum and lactation period.

Maternal health affects child health; maternal nutrition has an effect on child's birth weight and mortality.

To underline the effects of maternal health on child health, "Family and community practices that promote child survival, growth and development – A review of the evidence" reports also the findings of a study in Yemen where a high proportion of infants—almost two thirds—died within a year of their mothers' death.

Lower rates of use of antenatal care have been related to women's residence (rural), education (low), age (young), socio-economic status (low), parity (high), no history of obstetric complications, access (low), perception of quality of care (low), and a few other factors (The Review).

Examples of antenatal care elements potentially having an impact on child health include tetanus toxoid vaccination—two doses in pregnancies significantly protect against neonatal tetanus and reduce deaths, iron and folic acid supplementation, intermittent treatment for malaria, home visits for women and children across the continuum of care.

WHO recommendation for a minimum of four "focused" antenatal visits is supported by evidence from a multi-site study that a group of women receiving four antenatal visits did not have increased risks compared with a group receiving a higher number of visits (The Review).

Related link:

Family and community practices that promote child survival, growth and development – A review of the evidence

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