To succeed, the fight against malnutrition must be waged on many fronts.

Actions as diverse as improving women’s access to education, fortifying staple foods with essential nutrients, enhancing the spread of practical information and increasing government social-sector spending have all led to improved nutrition in a number of countries. The challenge is in devising overall strategies that address specific nutrition problems.

The range of factors necessary for nutrition improvement was explored in a recent study by the United Nations,1 which confirmed that there is no one formula to follow but that certain elements are essential.

For example, the empowerment of women is of central importance to improving nutrition of both women themselves and their children. This includes legislative and political efforts to combat discrimination against and exploitation of women and measures to ensure that women have adequate access to resources and care at all levels of society. Improving education for girls and women is also vital.

The United Nations report had this to say about the following specific factors involved in improving nutrition.

- **Nutrition and economic growth:**
  
  Most countries in which nutrition has improved over the last two decades also enjoyed relatively high rates of economic growth over a sustained period. Nonetheless, the relationship is not completely straightforward.

  In countries where economic growth has resulted in increased household income and resource access for the poor, the nutritional payoff has been large. In Indonesia, for example, economic growth from 1976 to 1986 was accompanied by a 50 per cent rise in the income of the poorest 40 per cent of the people. Improvements in nutrition have been relatively constant throughout the economic boom, although they could have been even better.

  Household food insecurity — one of the key underlying causes of malnutrition — is often the pivotal point in the relationship between economic growth and nutritional status. Poor households spend a large proportion of their income on food. While poor households do not always use income increases to raise their calorie consumption significantly, in many countries greater income has led to in-
The World Food Programme (WFP), the food aid organization of the United Nations system, began operations in 1963 and is now the largest such organization in the world. WFP responds to food needs associated with emergencies and development, often working with the other two Rome-based agencies, the Food and Agriculture Organization of the United Nations (FAO) and the International Fund for Agricultural Development (IFAD).

WFP provides three broad categories of food aid: emergency rations for victims of natural and man-made disasters (Food-For-Life); food aid distributed through health clinics, schools and other community centres to particularly vulnerable groups (Food-For-Growth); and food rations provided in exchange for work on development projects (Food-For-Work). In all three categories, much of WFP’s work is linked to the priorities and efforts of UNICEF.

The link between the two sister agencies goes beyond organizational coordination. Their work is complementary, and they share common goals. Both recognize that children are at once the most vulnerable group in society — and yet the future of every community. Together, the two agencies have the tools to attack malnutrition, helping to ensure access to adequate nutrition, with food, health and care, and to fight with a unified voice for the elimination of hunger.

In crisis situations requiring Food-For-Life assistance, UNICEF and WFP collaborate to provide therapeutic and supplementary feeding to save the lives of young children during emergencies, as occurred in the recent past in the countries of former Yugoslavia. They also share logistics capacity, for example in Uganda, where WFP stored UNICEF’s health kits and supplementary feeding supplies, subsequently transporting them to Rwanda during the sudden return of refugees in late 1996. And they cooperate in making joint assessments of the problem of inadequate nutrition and priority needs for addressing it, as in the case of the Democratic People’s Republic of Korea, where a nutrition assessment was completed in September 1997. In southern Sudan, the two agencies, together with NGOs and counterparts, lead an annual needs assessment mission, which not only examines food security but also ‘health security’, based on nutritional status and access to health services.

UNICEF and WFP also work together on post-conflict projects, such as the demobilization of child soldiers. In Bukavu, in eastern Democratic Republic of the Congo, WFP provides food to a centre set up by UNICEF to help children who fought in the civil conflict reintegrate in society.

Food-For-Growth, the cornerstone of one of WFP’s major priorities, is particularly close to the concerns of UNICEF. This type of food aid is designed to provide assistance to mothers and children and other vulnerable groups at critical times in their lives. In Zambia, UNICEF worked closely with WFP in 1994 to ensure that a food supplement, aimed at preventing malnutrition in young children during prolonged drought, was appropriately formulated and fortified. The high-energy protein supplement was used as part of a coordinated programme to provide both food and health care to children judged to be at particularly high risk of malnutrition.

In Madagascar, UNICEF and WFP work together to rehabilitate schools in the poorer regions of the south. UNICEF provides school kits and equipment, and WFP contributes school meals.

The two agencies also work together on Food-For-Work projects when such aid dovetails with UNICEF mandates. In Malawi, for example, following the introduction of free primary education in 1994, WFP and UNICEF later designed a school feeding programme with the aim of ‘Keeping kids in school’. Mothers of schoolchildren are ‘paid’ a food allocation in exchange for the preparation of school meals.
creased consumption of higher-quality foods that tend to be rich in protein and micronutrients — the vitamins and minerals needed in very small but regular amounts to assure nutrition.

But while economic growth must be understood as a frequent contributor to nutrition improvement, it is not a necessary condition for it. A number of countries, such as the United Republic of Tanzania in the case described below, have achieved widespread nutrition improvement without significant overall economic growth.

**Nutrition and the status of women:** A major conclusion of the United Nations report is that in countries where nutrition improvement has lagged behind economic growth, social discrimination against women is common. In Pakistan, for example, widespread discrimination against girls and women is behind high levels of illiteracy among women and girls, a very high fertility rate and lower female life expectancy. Child malnutrition rates in Pakistan are among the highest in the world, as is the proportion of low-birthweight infants, at 25 per cent.

Some experts place the major blame for the very high child malnutrition and low birthweight throughout much of South Asia on such factors as women’s poor access to education and low levels of employment, compared with other regions.

On the other hand, women in Thailand, where nutrition has improved remarkably in the last two decades, have very high literacy, high participation in the labour force, and a strong place in social and household-level decision-making.

**Nutrition and social-sector spending:** Investment in health, education, sanitation and other social sectors — especially with emphasis on access of women and girls to these services — is among the most important policy tools for improving nutrition.

As a child survival and development measure, UNICEF has championed the 20-20 Initiative — the allocation of at least 20 per cent of government spending to basic social services to be matched by 20 per cent of donor funding in these areas. The value of such investment is becoming increasingly apparent. For example, there is evidence from Sri Lanka and a number of other countries that increases in spending on public health services are more strongly associated with reduced infant mortality and better nutrition than are overall increases in income.

After Zimbabwe achieved independence in 1980, explicit policies were followed to redress the lack of access of many communities to basic services. As a result, there were vast improvements in health services and immunization, family planning and a range of educational services for the poor — all of them important determinants of the improvements in nutrition that the country has enjoyed.

The approaches described above are all essential — and driven by the right of children and women to adequate services and resources.

Actions that are more directed to nutrition improvement as a principal outcome — improving the quality of staple foods through fortification, improving local-level nutritional surveillance capacity, protecting women’s right to breastfeed, sharing information on better complementary foods — may have a more rapid and focused effect on nutrition.

A number of these more direct approaches that have worked are described below.
Over the last 27 years, Oman has made great strides in child survival and development. Child mortality dropped from 215 per 1,000 live births in 1970 to 25 in 1995. School enrolment, particularly among girls, has increased dramatically. Revenues from oil have provided an economic foundation—Oman’s GNP per capita in 1995 was $4,820—but these gains would not have been possible without the Government’s commitment to improving people’s lives.

Progress has been slower, however, in terms of child nutrition. The Ministry of Health, with support from UNICEF, has been working to address this challenge since 1993. To improve children’s nutritional status, a community-based programme of growth monitoring, counselling and nutrition education was devised. A particular focus is 105 villages of Al Dakhiliya, an arid, rocky region in upper-central Oman where a 1995 survey found that nearly one third of the children under the age of five were underweight.

The results to date are impressive. Since the project’s inception, there has been a significant drop in the number of underweight children, according to an appraisal in 1996. Later the same year another appraisal described the project as well focused, effectively managed and clearly building a momentum towards nationwide nutritional improvement. Motivation, commitment and participation were high among mothers and community volunteers. And women enjoy the opportunity the programme offers to meet together and find common ground in helping their children grow better.

The driving force of the programme is called ‘triple A’: three consecutive steps in a problem-solving cycle of Assessing the problem, Analysing its causes and initiating Actions to improve children’s nutrition. Triple A is an iterative process that repeats the cycle of reassessment, re-analysis and re-action, leading to regular modifications and improvements in the approaches taken.

True to this model, the people of the small villages and nomadic or semi-nomadic settlements of Al Dakhiliya were involved from the very start, attending meetings to identify the problems, discuss solutions and select from among themselves the volunteers who would be central to the effort.

Every month throughout the region, at public meetings or during visits to homes, these volunteers weigh children and chart their growth, referring severely underweight children to health care centres. They advise families on how to feed children and to improve caring practices, on how to keep children healthy and manage illness when it occurs and on how to space births. They also reinforce other public health activities, encouraging pregnant women to register early for antenatal care, for example, and helping in community immunization campaigns and national health days.

Regional trainers were brought in to teach the volunteers about the incidence and causes of malnutrition, and how to improve and support appropriate feeding and caring practices, using the triple A methodology to solve problems. A programme coordinator at the regional level links the communities with programme support structures at the national level and supervises, monitors and trains trainers. There are programme coordinators at the district level as well. Finally, back-up support for the volunteers is provided by teams of health staff from nearby health centres.

A nutritional monitoring system has also been created: At the monthly weighing sessions, the volunteers fill out forms for all children, recording their age and weight. The information on the nutritional status of all the children in a village goes on the form volunteers send every month to the district health supervisor, who then reports the status of the district’s children to the regional coordinator.

The tangible change for families and children in Al Dakhiliya has been so positive that the programme is being expanded to additional villages in the region and has been introduced in another five regions of the country.

Photo: A woman reviews her child’s growth chart with a volunteer nutrition adviser, part of a community-based effort to promote better child nutrition in Oman.
Dramatic results from small beginnings

In villages across Tanzania, a seemingly modest process began in the early 1980s when villagers, many of them in poor and remote areas, began to track the weight of their children. With financial support from the Government of Italy and day-to-day technical support from UNICEF, the Child Survival and Development (CSD) Programme began in five districts in the Iringa region, eventually reaching more than half the population of the country.

The result was the virtual disappearance of severe malnutrition — and striking reductions in mild and moderate malnutrition. The lives of thousands of children were saved. These improvements were accomplished against the backdrop of previously high mortality and malnutrition rates among young children that began to climb in Tanzania following the economic decline in the 1970s and 1980s. Of crucial importance was the Government’s continued commitment, even during this difficult period, to policies worked out with the full participation of communities and families. This approach that was to prove one of the greatest strengths of the CSD Programme.

A community-wide picture

A major feature was community-based growth monitoring, which allowed the parents and other community members to assess the nutritional well-being of their own and other children in the village. The results could then be compared with figures for neighbouring villages and those throughout the country.

These assessments provided a baseline at the start of the programme and were repeated every three months thereafter to follow the progress of individual children. When the results for all the children in the village were added together, they provided a concrete measure of nutritional well-being and development for the whole community. These quarterly weighing sessions sparked the participation not only of fathers and mothers, but also of the whole community in analysing why children were malnourished and why some seemed to thrive while others did not.

An improved understanding of the factors involved in the nutritional well-being of their children in turn helped the villagers to plan and initiate actions that would contribute to better growth and overall child health.

Subsequent weighing sessions helped parents and villagers evaluate the results and effectiveness of the actions taken and consider new or modified actions. In this way, continuous cycles that combined assessment, analysis and action — the ‘triple A’ approach — were established, helping spark successive nutrition improvements in the programme villages (Fig. 8; Panels 9 and 10).

The steps the villagers took were aimed at increasing feeding frequency; encouraging better use of basic health services; training health workers, including skilled birth attendants and healers; improving the home treatment of diarrhoea and other illnesses; strengthening household technology to improve the porridge made for young children; reducing vitamin and mineral deficiencies; supporting activities such as small animal husbandry and home gardening; and improving sanitation.

From bystanders to participants

The simple tool of growth monitoring allowed the villagers to make better use of their own creativity and resources, to express their requests for
Residents of the Morro de Céu slum in Rio de Janeiro normally have little time for celebrations. But on a recent Saturday afternoon, 40 mothers, their children and community leaders affiliated with the Brazilian Child Pastorate gathered under the trees outside a parish hall. The community leaders set the children one by one on a scale, recording their weight in notebooks and consulting with the mothers on any nutrition or health problems. The weighing over, the occasion turned festive. Community leaders brought out trays of home-baked cakes and cookies; the yard filled with conversation and laughter and the happy shrieks of children at play.

The Child Pastorate’s success in protecting the health and development of poor children in Brazil is definitely cause for celebration. The Pastorate’s nearly 83,000 community volunteers, mainly women, are the backbone of the programme, working directly with 10 to 20 families in their neighbourhoods. “They are like shepherds, looking after their communities,” says Dr. Zilda Arns Neumann, a paediatrician and the national coordinator of the NGO since its inception. Community leaders are trained in basic child and maternal nutrition and health skills, including monitoring growth, tracking immunizations, supporting breastfeeding, treating diarrhoea with oral rehydration therapy (ORT) and preventing and detecting pneumonia.

The Pastorate makes nutrition a community issue: Families get help, encouragement and support from neighbours in improving their children’s well-being. Community leaders visit the homes of children who are malnourished, monitoring their weight frequently and referring families to local health facilities if necessary. They screen pregnant women for indications of malnutrition and refer them to medical facilities for prenatal care and delivery, and after birth, support for breastfeeding is a main priority. Families also learn how to prepare nutritious meals with low-cost ingredients that are available locally. The Pastorate promotes child development through play and activities to improve speech and motor skills; its basic education programme serves 46,000 teenagers and adults.

The Child Pastorate’s work is guided by a four-part methodology. The first three — ‘see’ (observe the situation), ‘judge’ (define the causes) and ‘act’ (take action based on the causes) — are similar to UNICEF’s triple A approach. The fourth is ‘celebrate’ (rejoice in the gains made in children’s nutrition and health).

The Child Pastorate uses its partnerships — with the Government at all levels, with other NGOs and with the media — to maximum effect, planning budget and activities to complement those of the Ministry of Health. It works through municipal councils to help maintain public services in communities, from the quality of tap water to health services to education.

The broadcast media are strong allies. Nutrition and health messages developed by the Child Pastorate are aired on a 15-minute radio programme, Viva a Vida (Enjoy Life), once or twice a week by 910 radio stations. Since 1995, the Child Pas-
terate has received about one quarter of the proceeds of the annual fund-raising television campaign ‘Criança Esperança’ (Child Hope), sponsored by UNICEF and Globo TV, to assist municipalities with high infant mortality rates throughout the country. The Pastorate estimates that in the campaign’s first year, malnutrition declined by 14 per cent in the municipalities featured on the programme.

The Child Pastorate is able to operate at low cost, in part because of the considerable efforts of its volunteers and the logistical net provided by the Catholic Church. Training, transportation and other support for the programme’s community leaders are among the main expenses. The Child Pastorate received assistance from UNICEF in its early years. Since 1987, the Brazilian Ministry of Health has provided support, with additional funds raised from the private sector.

Despite setbacks, durable progress

The Tanzanian experience was hardly perfect. When decisions are made through a repetitive, collective process, false starts and mistakes are inevitable. Gains also have been difficult to sustain in some areas. But durable progress has been made: Communities have actively taken up the fight against malnutrition, and they have collected and analysed information themselves. The sense of power and commitment gained through such a process is not quickly relinquished.
Rewriting Elias’s story in Mbeya

My name is Elias. I am two-and-a-half years old and I live on the outskirts of Mbeya with my mother, father, two older brothers and an older sister.

We are poor and our house has no toilet. My mother gets up early to fetch water from the river since our house has no tap. Then she goes to her farm plot, leaving me with my sister, Sophia, who is seven. Sophia collects firewood and does other chores for my mother, so she doesn’t have much time to spend with me.

When my mother returns from her plot, she cooks a meal, usually maize porridge. Last year my mother grew enough maize, but this year she had to sell some to get money to buy other things. Now she says she doesn’t know what we will eat when our maize stock runs out.

When I was younger, my mother breastfed me. Since she stopped, I have often been ill with fevers and diarrhoea. When I last had a fever, the nurse at the dispensary said it was probably malaria. My mother bought medicine but I didn’t get better. Now I feel very ill and I don’t have much energy.

— From a drama staged by HANDS’ community organizers

Elias’s story is a cautionary tale of how poor sanitation, the cessation of breastfeeding, disease and poverty converge all too often in malnutrition or even death for young children. The Health and Nutrition District Support (HANDS) project is helping people in Mbeya, a large urban centre in south-west Tanzania, rewrite this tale with a healthier, happier ending for their children. Launched by the Tanzanian Government in 1992 with support from the United Kingdom Overseas Development Administration, HANDS’ success has been impressive.

Moderate malnutrition in children fell to 22 per cent in 1995 from 33 per cent in 1992, and severe malnutrition dropped to 0.4 per cent from 3.3 per cent in areas where HANDS operates. In contrast, malnutrition increased by 7 percentage points among children under five in Mbeya as a whole.

In the same period, in HANDS’ areas, the percentage of pregnant women with anaemia declined from 37 per cent to 33 per cent, and the incidence of low birthweight was also reduced. Ninety-nine per cent of children between the ages of one and five were fully vaccinated, up from 86 per cent. The proportion of households with access to safe water increased from 60 to 96 per cent, and those with pit latrines from 75 to 92 per cent. In all, about 125,000 people benefited directly and indirectly.

An important strategy of HANDS lies in careful targeting: The project focuses on areas with the highest levels of child malnutrition and infectious diseases, lowest levels of domestic sanitation and most limited access to health facilities. Equally important, the community has been intimately involved, from planning through implementation and management, with evaluation. The poor identified their priorities and became partners with government staff in implementing a range of health-enhancing development activities.

Donor support has been critical in providing training, essential equipment and transport. An investment was also made in council and community development funds, enabling the council to improve health services and access to safe water, upgrade sanitation and promote household hygiene in targeted areas.

Revitalized maternal and child health services in the community now are responsible for child vaccination, antenatal and post-natal care, family planning, diarrhoeal disease

Gilles Vauclair

Revisiting Elias’s story in Mbeya

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control, treatments for common childhood illnesses and growth promotion activities. Health and nutrition education activities are stronger and focus on children’s vulnerability during the period when complementary foods are being introduced, on the nutritional needs of pregnant women and on home-based oral rehydration therapy. Outreach services now support households with malnourished children, and community-based day-care centres have improved the well-being of young children.

Four new water schemes serve over 50,000 people, and three health centres were upgraded, now reaching 80,000 people. Affordable latrines and basic hygiene are promoted, and innovative work is being done on low-cost public toilets.

Thanks to seminars, formal training and drama sessions run by Tanzanian women lawyers, the rights of women and children are higher on the public agenda. A subsequent survey found that fathers are making greater contributions to child welfare.

The HANDS project is now in a second phase: Tanzanians have replaced international staff, and project management lies with local council committees. The commitment and participation of local government staff and community members indicate that the project is sustainable.

About 10 years after the first successes in Iringa were reported, a comparable approach is now achieving very similar results in Mbeya, another part of Tanzania (Panel 11). Virtually the same community-based approach that had proven successful in Iringa and elsewhere in Tanzania was introduced in Mbeya. The improvement in the nutritional status of children there, again carefully monitored and documented, independently confirms the validity of this approach.

Nor is the community learning approach used in Tanzania by any means unique. In the heart of the Sahel, villagers in the Maradi region of Niger, with support from UNICEF and bilateral donors, have also begun to record their children’s weight on a regular basis. These villagers face many obstacles that communities in Tanzania did not have — little rainfall and a very short growing season, much less experience with participatory development, less support from the central level and a history of village-level decision-making that explicitly excluded women. But malnutrition has been significantly reduced, and the scale of their activities seems on track to rival that of Tanzania (Panel 12).

**In Thailand, another success story**

On the other side of the globe, Thailand has achieved stunning improvements in the nutrition of millions of its children through a combination of approaches, aided by a booming economy. The Thai Government estimates that malnutrition of under-five children fell from about 51 per cent in 1982 (measured as a proportion of underweight children) to about 19 per cent in 1990, and that severe malnutrition virtually disappeared during that period. At the local level, growth

*Photo: As one way to improve child nutrition and maternal health, the HANDS project has brought safe water and sanitation to thousands of people. Women and their children in Tanzania.*

***Thailand has achieved stunning improvements in the nutrition of millions of its children through a combination of approaches, aided by a booming economy.***

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Better seeds and fertilizer, a diesel-powered mill and two donkey carts: With these modest improvements, women in Kwaren Tsabre, a village in central Niger, are lessening their workloads and beginning to overcome the widespread malnutrition threatening their children.

The problems seemed intractable just a few years ago. Over half the young children in the village of 680 inhabitants were underweight, and many showed signs of serious vitamin A deficiency—which can lead to blindness and death.

Progress is being made thanks to a close partnership between the community and district-based government agents, founded on the people’s own assessment and analysis of their situation. The problems were acute: As in many villages in the heart of the Sahel region in West Africa, Kwaren Tsabre experienced chronic shortages of staple foods; diets lacked richness and diversity; women were grossly overworked and had little access to education and information; and health services were remote and often of poor quality.

Because women were most seriously and directly affected, it was necessary to put them at the centre of decision-making and have them benefit from the new initiatives. A women’s group — the Village Women’s Committee — was formed, with members trained by government agents in the district. The first step, as Zouera, the first President of the Committee, explained, was to identify actions that could bring about measurable improvements in nutrition.

“We realized that because our workdays were so long — between 14 and 17 hours — we couldn’t care for our children as well as we wanted to,” she said. Getting a loan for a diesel mill to relieve the women of the arduous task of hand-pounding sorghum and millet was one response. Another was to purchase two donkey carts to reduce the hours spent carrying wood and water. Both mill and carts save time and generate income: The villagers of Kwaren Tsabre and their neighbours from miles around agreed to pay modest fees to grind grain and use the carts.

With technical help, better irrigation and improved seeds and fertilizer, staple crop yields have nearly tripled and new vitamin A-rich foods are also being produced, including amaranth and baobab leaves. The women incorporated these vitamin A sources and small amounts of oil into their usual meals and soon began noticing a decrease in night-blindness (a symptom of vitamin A deficiency) among their children. Women in neighbouring villages have reported that night-blindness has also been reduced among pregnant women.

Zouera and her colleagues in the Committee also decided, in consultation with government technical staff, to set up a cooperative cereal bank. This bank purchases and stores grain safely after the harvest and gives poor families a place to buy grain at reasonable prices during pre-harvest seasons, when they cannot afford the market price.

In a short time, the cereal bank paid for itself and even turned a profit. “With this money we’re subsidizing other activities, such as the distribution of peanut butter as a complementary food for very young children who are still breastfeeding,” Zouera said. The Committee also gives a small cash bonus to the women who supervise the regular growth monitoring of children. The monitoring enables women to see for themselves what is happening with their children, and they can use
monitoring and promotion (GMP) coverage increased nationwide from about 1 million children to about 2.6 million.

GMP was combined with supplementary feeding activities in some locations. In addition to this increased attention to nutrition, a number of policy and programme measures contributed to reducing malnutrition and poverty. Targeted to poorer regions, these included: school lunch programmes; surveillance of ‘basic minimum needs’ indicators; village-level planning to ensure that priority needs were met; rural job creation; and support for small-scale food producers. Community participation, in varying degrees, was part of all Thai programmes.

There is general recognition that more needs to be done in Thailand, but these remarkable gains are a solid foundation for the future.

**Protecting, promoting and supporting breastfeeding**

Virtually all of the community-based programmes that have resulted in reductions in malnutrition have focused on improvements in infant feeding, especially the protection, promotion and support of breastfeeding.

While community-based support for breastfeeding is a major achievement, even the efforts of communities well aware of the central importance of breastfeeding can be foiled by larger economic and institutional pressures.

The blitz of inappropriate advertising and promotion by manufacturers of breastmilk substitutes — mostly infant formula — has been a central challenge in the fight to protect and promote breastfeeding. While infant formula is an important product for the minority of children who for some
reason are not, or cannot be, breastfed, sales and promotional activities around it have sometimes been based on untrue claims of its value compared with that of breastmilk.

Promotional activities, such as providing free or subsidized supplies of infant formula, bottles and teats in maternity wards, have also undermined the best intentions and the confidence of new mothers to breastfeed.

In 1981, the World Health Assembly, which consists of the health ministers of almost all countries, responded vigorously to inappropriate promotional efforts of the infant-food industry by adopting the International Code of Marketing of Breastmilk Substitutes, drafted by WHO, UNICEF, NGOs and representatives of the infant food industry.²

The Code establishes minimum standards to regulate marketing practices by setting out the responsibilities of companies, health workers, governments and others and provides standards for the labelling of breastmilk substitutes. Among its provisions are that health facilities must never be involved in the promotion of breastmilk substitutes and that free samples should not be provided to pregnant women or new mothers.

Progress has been relatively slow in translating the Code’s minimum provisions into national laws. As of September 1997, only 17 countries had approved laws that put them into full compliance with the Code. Training and development of model legislation are now accelerating action in this area. Support from the Government of Sweden has enabled UNICEF to provide greater technical assistance on Code implementation and other legal aspects of breastfeeding support.

A recent report, *Cracking the Code*, by the Interagency Group on Breastfeeding Monitoring, based in the United Kingdom, highlights the work that remains to be done. It documents widespread violations of the Code by multinational companies in four countries: Bangladesh, Poland, South Africa and Thailand.

**The Baby-Friendly Hospital Initiative**

As a complement to community-based efforts to protect, promote and support breastfeeding and to promulgate the Code, UNICEF and WHO in 1991 began an intensive effort to transform practices in maternity hospitals.

The Baby-Friendly Hospital Initiative (BFHI), as the effort is called, brought a structured programme to breastfeeding support and, in just six years, has helped transform over 12,700 hospitals in 114 countries into centres of support for good infant feeding. These baby-friendly hospitals are havens of protection for breastfeeding, where women and children are not subject to advertising and promotional activities for infant formula or feeding bottles, and where they can receive effective and well-informed help for a sound start to breastfeeding.

BFHI has a simple but thorough approach. Through a WHO-UNICEF training programme that has been translated into the official languages of the United Nations and into many others, the professional staffs of maternity hospitals are trained in lactation management and support. Staff members, along with the directors or managers of their health facility, make a commitment to fulfil the initiative’s ‘Ten steps to successful breastfeeding’ (see sidebar). These include pledging to ensure that women and newborns can remain together all the time and that women must be free to begin breastfeeding promptly after birth and to continue exclusive breastfeeding on demand during their hospital stay.

Step 10 calls for setting up breastfeeding support groups that new mothers
can rely on. Hospitals can be awarded ‘baby-friendly’ status only when specially trained independent evaluators have ensured that all 10 steps are met.

It is hard to overestimate the success of BFHI. More than a million people are working to implement its programme, and the overall pace of hospital certifications has not slowed. Patterns of declining breastfeeding, particularly in urban areas, have been reversed in country after country following BFHI implementation (Panel 13).

The success of the initiative can also be measured in the health of young children. In Panama, the Ministry of Health reported a 58 per cent reduction in respiratory infections and a 15 per cent decline in diarrhoea in infants in just one year in a single baby-friendly facility, the Amador Guerrero Hospital. In north-eastern Brazil, Acari Hospital credits BFHI with dramatic cost savings from decreased hospitalization of infants and reduced case fatality among them. In the first two years of BFHI implementation at the Central Hospital of Libreville in Gabon, it was estimated that there was a 15 per cent reduction in cases of neonatal diarrhoea, a 14 per cent reduction in dehydration and an 8 per cent reduction in mortality.

**Successes outside the developing world**

BFHI is not just for non-industrialized countries.

An evaluation in the Republic of Moldova, once part of the former Soviet Union near the Romanian border, showed an average reduction in all neonatal infections in four baby-friendly hospitals from about 18 per cent to 7.5 per cent in two years of the programme. The neonatal infection rate in the hospital that had been certified as baby-friendly the longest dropped from 23 per cent to 3.4 per cent. Rates of breastfeeding initiation in the country rose appreciably, and rates of continued breastfeeding at 6 and 12 months were significantly higher over the period of implementation of the programme.

Similar results are being reported from Asia and Latin America, and some countries are in the process of conducting extensive evaluations of BFHI’s impact. In the United States, there is an active BFHI programme, and 11 hospitals have been declared baby-friendly.

BFHI was conceived by a small group of experts with vision and leadership and was tested, modified and then introduced globally. But it could not have succeeded without the engagement of local institutions and communities. Local NGOs have played a significant role in the promotion and sustenance of BFHI in many countries. And an international NGO, the World Alliance for Breastfeeding Action (WABA), founded in 1991, has helped solidify actions in support of the initiative and breastfeeding beyond the hospital through its work in networking, information sharing and advocacy.

National breastfeeding committees, though often established prior to BFHI, were energized by the initiative’s concrete achievements. Paediatric and obstetric professional associations have endorsed the programme and have been educated by it.

BFHI has also helped establish breastfeeding firmly on the political agenda. The challenge for the future is to use the political energy behind BFHI to ensure that breastfeeding promotion and support extend beyond hospital walls and that breastfeeding support groups become a constant priority for communities and governments.

**Complementing breastfeeding**

Good infant feeding includes not only support for breastfeeding but also en-

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**TEN STEPS TO SUCCESSFUL BREASTFEEDING**

Every facility providing maternity services and care for newborn infants should:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within a half-hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breastmilk, unless medically indicated.
7. Practise rooming-in — allow mothers and infants to remain together — 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

In addition, facilities should refuse to accept free and low-cost supplies of breast-milk substitutes, feeding bottles and teats.

S

miling at her infant in her arms, Elba Diaz awaits Juanito’s six-month check-up at a primary health care centre in southern Santiago. Her third child draws nothing but compliments from health workers, unlike Ms. Diaz’s first two children, who were not so healthy. The difference is that Juanito — born at the Barros Luco Hospital, one of 19 baby-friendly hospitals in Chile — is the only child she has been able to breastfeed exclusively.

“Immediately after Juanito was born,” recalls Ms. Diaz, “he was laid on my body. Words can’t describe how blissful I was, feeling his warmth and looking at his flushed face so close to me. I began nursing him at the breast while we were still in the delivery room, and he was beside me always, receiving only my breastmilk.”

In Chile, breastfeeding support and counselling for mothers have led to enormous health benefits for tens of thousands of children like Juanito in little more than a decade. In 1985, only 4 per cent of infants were exclusively breastfed for the first six months of their lives. Remarkably, only a year after the Baby-Friendly Hospital Initiative (BFHI) was launched in 1991, a study of 9,200 infants nationwide showed that the rate had risen to 25 per cent. And preliminary results of a national survey in 1996 suggest that the exclusive breastfeeding rate for the first six months is now about 40 per cent.

What lies behind this transformation? Training is an important part of the answer. With support from the NGO Wellstart International and UNICEF, training materials were adapted, and in just four years over 7,500 health workers learned to help women breastfeed effectively. Strong support from the Ministry of Health was another factor, and UNICEF provided sustained advocacy. The National Breastfeeding Commission, organized in 1992, has also kept breastfeeding high on Chile’s child health agenda.

Another effective measure was expanding ‘baby-friendly’ practices into primary health care centres, where trained staff offer breastfeeding education and support. “The staff acquainted me with breastfeeding during my pregnancy,” said one mother. “The first week after delivery, I joined a group session at the clinic to share my concerns with other breastfeeding mothers. I feel very secure, having easy access to professional advice on any breastfeeding questions.”

These achievements in Chile have been replicated across the world through BFHI and related efforts. In Cuba, only about 63 per cent of newborns were breastfed exclusively at the time they left the hospital in 1990. Now, six years after BFHI was introduced, an estimated 98 per cent of newborns are exclusively breastfed when they leave the maternity ward. And more strikingly, about 72 per cent of those infants are exclusively breastfed through four months of age, up from 25 per cent in 1990. All 44 hospitals handling over 1,000 deliveries a year and 42 per cent of smaller hospitals in the country are baby-friendly. In 1996, Cuba extended the baby-friendly programme to the community level by putting it into practice at small community health centres attended by family doctors.

On the other side of the globe, China had over 6,300 baby-friendly hospitals at the end of 1996. Thanks to BFHI and some regulation of the marketing of breastmilk substitutes, 48 per cent of infants in urban areas and 68 per cent in rural areas are now exclusively breastfed for four
months, a 1994 survey found. Just two years earlier, the rates were 10 and 29 per cent respectively. Considering that about 20 million infants are born each year in China, this represents a remarkable accomplishment.

Iran, which began promoting breastfeeding in the 1980s, has held training workshops for over 30,000 health professionals each year between 1991 and 1996 after BFHI was introduced. The national support has led to a leap in the exclusive breastfeeding rate from 10 to 53 per cent in that period. An added windfall is the more than $50 million that the country saves annually, as infant formula imports dropped by 75 per cent from 48 million tins in 1991 to 12 million in 1996.

Because of the many benefits of breastfeeding since BFHI started, it is impossible to calculate the lives saved and those made better — though they certainly number in the millions. It is difficult to imagine any other way in which these results could have been achieved so effectively and in such a short time. Baby-friendly hospitals have surely made the world a friendlier place for babies and their families.

The reduction in iodine deficiency, the world’s leading cause of preventable mental retardation, is a global success story by any standard.

Tackling specific nutritional deficiencies

In assessing nutrition problems and implementing programmes to attack them, it is not possible to separate protein-energy malnutrition from vitamin and mineral deficiencies. Integrated community-based programmes that have achieved reductions in overall malnutrition have usually done so by addressing both micronutrient and protein-energy deficiencies. But among the kinds of malnutrition identified at the 1990 World Summit for Children, progress has been more rapid in reducing some deficiencies than others.

Grains of salt: Reducing iodine deficiency disorders

The reduction in iodine deficiency, the world’s leading cause of preventable mental retardation, is a global
A new project in Bangladesh is helping to reduce malnutrition among children and mothers by improving caring practices, supporting breastfeeding and empowering women and their communities.

Some 56 per cent of Bangladeshi children under five suffer from moderate and severe malnutrition, 21 per cent of whom are severely underweight, and studies show that more than 70 per cent of pregnant and breastfeeding women are also malnourished. Protein-energy malnutrition is the main problem but, as often happens, it occurs together with such conditions as iron deficiency anaemia and vitamin A deficiency. In Bangladesh, lack of food is not the main cause of malnutrition; the lack of proper caring practices for children and pregnant women is an important contributing factor.

Recognizing that malnutrition is hindering national development, the Government has formulated a National Nutrition Policy and launched a nationwide nutrition intervention programme, the Bangladesh Integrated Nutrition Project. The initiative aims to address malnutrition directly and help promote faster socio-economic development.

Community nutrition promoters are the backbone of the project. Earning about $12 a month, they are trained for two months, including one month on the job. They learn how to understand the causes and signs of malnutrition and techniques for its treatment and prevention. They canvass their communities, persuading mothers to bring their children to the Community Nutrition Centres for monthly weighing and growth monitoring, and explaining the importance of child care, including children’s needs for exclusive breastfeeding in the first six months; the need for smaller, more frequent and nutritious meals up to age three; and for extra feeding during and after illnesses to prevent malnutrition.

Marium Begum, one of the nutrition promoters, has already started to achieve results in her village. During growth monitoring sessions at her Community Nutrition Centre, situated in one of the homes in her village, Ms. Begum could see that Shewli, a one-year-old girl, was suffering from severe malnutrition. Ms. Begum explained to Shewli’s mother, Shamsun, how to give her daughter a special locally made diet supplement. She also helped Shamsun to understand that she had been unable to breastfeed because she had not been eating enough herself. Following local tradition, Shamsun was accustomed to eating last, after serving food to her family, and there was often little food left. Ms. Begum explained how to re-lactate — that is, to resume lactation after it has stopped for some time — and arranged for intensive counselling at the Community Nutrition Centre.

Improving the nutrition of adolescent girls and pregnant and lactating women is another priority of the project. The nutrition promoters urge women to use iodized salt in their households to prevent iodine deficiency disorders, and to use oral rehydration therapy when a child has diarrhoea to prevent dehydration. They discuss the use of vitamin A and iron supplementation.

Special diet supplements are provided to malnourished women and children. Village Women’s Groups, comprising up to 11 volunteers in each community, buy ingredients for the supplement — a carefully weighed mixture of rice, lentils, molasses and oil — at local markets to prepare and package them. Each member of the group earns about $10 per month.
success story by any standard. This achievement, which began to show significant results beginning in 1992, involved a coordinated international effort to change diets in a subtle but important way — an approach that has had an impact on probably more people worldwide than any previous nutrition initiative.

A diet deficient in iodine exerts its saddest and most significant effect on the developing embryo, starting at around 12 weeks after conception. Inadequate iodine results in insufficient thyroid hormone, which in turn leads to a failure of normal growth of the brain and nervous system. The result is all too often a child born with a lifetime disability.

The practice of using iodized salt as a safe, cheap and effective way to combat iodine deficiency disorders (IDD) had a long track record by 1992. It was introduced in Switzerland in 1922, in the United States in 1924, and in the Andean countries of South America in the 1950s and 1960s.

In the case of Shamsun, her diet has improved with the guidance and encouragement of Marium Begum. She was able to breastfeed her daughter, complementing the breastmilk with normal family food and the special dietary supplement. And instead of selling the eggs her six hens lay, she feeds them to her family. Shewli, although still small and thin, has resumed healthy growth.

Photo: Better caring practices, including improved personal hygiene, are essential to reducing malnutrition. In Bangladesh, a nutrition promoter helps women who are about to feed their children to wash their hands.
UNICEF estimates that nearly 60 per cent of all edible salt in the world is now iodized, and among countries in the world with recognized IDD problems, all but seven have passed appropriate legislation to ensure universal iodization.

The number of children born each year with cretinism is difficult to estimate, but in 1990 it was on the order of 120,000. It is probably about half that now.

It is impossible to measure the impact of IDD on miscarriages, which are rarely well reported in health statistics, but the improvements are surely noticeable by affected women and their families. In highly iodine-deficient areas, infant mortality was long known to be elevated, but recent research now indicates that increasing the iodine intake of young infants to adequate levels may improve their survival to a far greater degree than previously expected, probably through improvements in their immune systems.

The gains in salt iodization came about largely because of the work of an alliance of responsive and knowledgeable partners. WHO, in collaboration with UNICEF and the International Council for the Control of Iodine Deficiency Disorders (ICCIDD), not only helped raise awareness of the importance of IDD but also worked to ensure scientific consensus and information on standards for: levels of salt iodization, the safety of iodized salt in pregnancy, and indicators for monitoring and evaluation. UNICEF, WHO and ICCIDD also provided technical and financial support for many steps of the process.

Kiwani International, a global service organization, provides funding support and continues to educate its grass-roots membership about IDD (Panel 15).

The Government of Canada was a major player in all stages of this work, supporting UNICEF programmes in many countries and supporting the Ottawa-based Micronutrient Initiative, which in turn has extended technical support and funding to field programmes, including the development of monitoring guidelines. In
Fig. 9  Iodine deficiency disorders and salt iodization

Iodine deficiency disorders (IDD) were still a major public health problem in many parts of the world in 1990. Today, programmes to produce or import iodized salt are in place in most developing countries.

Global prevalence of IDD (circa 1990)


Note: The boundaries shown on this map do not imply official endorsement or acceptance by UNICEF. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan.
Hundreds of times during the past several years, the Reverend Bob Wildman, a retired Protestant pastor, has ambled into Kiwanis International Club meetings all over Illinois and eastern Iowa in the Midwestern United States. Usually, he is granted only a few minutes to win over some very tough audiences.

Many of the men and women who make up these Kiwanis clubs are business executives and professionals who have supported the organization’s service projects helping children and others in need in their own communities. The 73-year-old Rev. Wildman, a veteran Kiwanis leader, is determined to expand their notion of neighbourhood to include the global village.

He has added his preacher’s voice to the Kiwanians’ first international service project: the campaign to wipe out one of the world’s most devastating nutritional problems — iodine deficiency disorders (IDD). Kiwanis leaders have brought to this global effort the fund-raising muscle of their 600,000 members in 83 countries.

An estimated 28 million babies are born each year at risk of mental impairment due to insufficient iodine in their mothers’ diets. Hundreds of thousands of children and adults suffer the most debilitating effect of iodine deficiency: a condition known as cretinism.

Rev. Wildman’s challenge has been to make club members in his area care about villagers in remote regions of Africa, Asia and Latin America. In many developing countries, lack of iodine has taken a horrendous toll on children — from physical deformities to mental retardation. Iodization of table salt — a method of fortification now taken for granted in industrialized nations and costing less than 5 cents per person per year — can rid the world of this tragedy.

Before he speaks, Rev. Wildman places on the podium a poster-sized copy of a cherished photo of a tiny boy named Abdul Alim — whom he met in a 1994 visit to a village in Bangladesh. Abdul is an eight-year-old in a four-year-old’s deformed and malfunctioning body. He is profoundly mentally retarded and deaf and is held by a young man from the village because he cannot walk.

Rev. Wildman describes Abdul’s disabilities and the severe hardships his care places on a village economy. The picture of this small child bridges geographical and cultural divides, and soon his audiences are ready to climb on the IDD campaign bandwagon.

When Kiwanis International joined the campaign against IDD in 1994, they pledged to raise $75 million by July 1998. Since then, they have become a key part of the campaign, with over $20 million raised or pledged so far for programmes in over 50 countries through Kiwanians’ efforts. UNICEF estimates that this contribution has saved around 3 million children from irreversible mental retardation.

Kiwanis leaders like Rev. Wildman have been shrinking the distance between their home towns and places like Abdul Alim’s tiny village in Bangladesh, and the concept of thinking globally while acting locally is taking hold in creative ways around the world.

The Kiwanis Club of Ried im Innkreis in Austria staged a performance of the Chinese Dance and Acrobats Ensemble, for example, raising $9,000 for the IDD campaign. Kiwanians in Atikokan in Ontario (Canada) brought in the Jolly Ukrainians, a folk group, netting the campaign $2,000. Kiwanis Clubs in the Philippines are supporting the campaign in their own country, where iodine deficiency is still a threat, through community education pro-
1995, UNICEF estimated that over 7 million children were born free of the mental impairments of IDD largely because of the Canadian contribution.

Partly because of Canada’s early and unambiguous support to combating IDD, other donors and governments in affected countries were drawn into the battle. The approximately $20 million invested by the Government of Canada catalysed other investors. Total investment by public- and private-sector partners in this effort since 1986 is now estimated to exceed $1 billion.4

In country after country, advocacy for salt iodization legislation has brought together teachers, consumer groups, women’s groups and health professionals. Primary schoolchildren by the millions are armed with test kits that enable them to check whether the salt in their homes is iodized — and to get a valuable chemistry lesson in the process. In Indonesia, for example, the enormous challenge of salt iodization in a country of almost 14 thousand islands, with highly decentralized salt production, is being overcome by a coalition that includes millions of the country’s schoolchildren and teachers.

The elimination of IDD as a public health problem is, of course, not complete, and momentum must not be lost. But the effort has already had results beyond these tangible benefits in the lives of individuals.

The fight against IDD has brought to the attention of policy makers and communities the importance of good nutrition in ensuring the physical and mental development of children and populations. It has opened the door to accelerated work on other nutrient deficiencies with public health significance. It has demonstrated the value of public- and private-sector partnerships in pursuit of a well-defined goal in favour of children.
The success of the drive for universal iodization of salt shows that the diets of children, women and families worldwide can be changed in small but very beneficial ways in just a few years as a result of concerted global, national and local action. It is imperative that this experience be built upon in attacking some of the other nutritional deficiencies that can begin impairing the development of a child even before birth.

Capitalizing on vitamin A’s benefits

Although the value of vitamin A for protecting children against blindness has been known for decades, vitamin A’s amazing ability to strengthen resistance to infection and reduce the chances of children dying has only recently won general acceptance by the scientific and medical establishment.

Following a dramatic report from Indonesia in 1986 of a 34 per cent reduction in pre-school child mortality with vitamin A, five seven additional large studies were carried out over the next seven years. Most of these studies, involving more than 160,000 African and Asian children, reported large and significant reductions in mortality when children were given additional vitamin A through supplements or fortified food products. When these results were combined statistically in 1993, it was firmly established that vitamin A supplementation could reduce child mortality by about 23 per cent where there is a risk of deficiency. These conclusions, strengthened further by evidence that the vitamin has an even greater lifesaving effect on children with measles, brought widespread acceptance that measures to prevent vitamin A deficiency could have an enormous impact on child survival.

Adequate vitamin A status does little to prevent children from being infected but has a major effect on reducing the severity of illness, especially persistent diarrhoea, dysentery, measles and malaria (Panel 18). Vitamin A’s power to reduce the severity of illness was clearly evident in Ghana, where periodic distribution of the vitamin led to a reduction in local clinic attendance by 12 per cent and hospital admissions by 38 per cent. Vitamin A can thus have a double-barrelled effect: It not only reduces the severity of illness and saves lives but also may ease the demand on often overworked health workers and facilities.

The effect of the discovery of vitamin A as a child survival tool led to renewed global interest in updating knowledge about the extent and public health significance of vitamin A and other micronutrient deficiencies. Numerous surveys of clinical and subclinical vitamin A deficiency have led to an estimate that in 1990 there were over 100 million young children in the world at risk from the deficiency because of inadequate diets, although today the immediate risk for many of these children has been diminished by effective interventions, including regular vitamin A supplements.

Some countries still lack good assessments, but vitamin A deficiency, its underlying causes and its consequences for health and survival are much better understood now than ever before.

The age-old condition of maternal night-blindness has finally come to be recognized as a major public health problem. Long ignored by both afflicted women and the medical establishment, maternal night-blindness is now recognized to be widespread, with an estimated 1 million to 2 million pregnant women affected at any given time in South Asia alone. Women describe how they are able to see adequately during the day but after sunset are unable to move about...
and carry out their household chores. They consider it a common problem of pregnancy that goes away once the child is born. But recent work in Nepal shows that women with nightblindness during pregnancy are six times more likely to have been night blind in a previous pregnancy and that the condition is a marker for a constellation of risk factors, including dietary vitamin A inadequacy and deficiency; iron deficiency anaemia; protein-energy malnutrition; increased morbidity during pregnancy; and mortality up to two years after diagnosis (Panel 1).

**Combining a variety of approaches**

Several approaches exist to prevent vitamin A deficiency, each with its own strengths and limitations, but which can be highly effective if applied in complementary ways. These include vitamin A supplements (commonly administered in capsule form), fortification of food and gardening or other methods to improve diets.

Vitamin A can be boosted through homestead gardening or adapting food preservation or preparation methods that can enhance retention. And fortifying food with vitamin A has become increasingly feasible as fortifiable foods penetrate the markets of the poor in a number of countries. These food-based approaches combine increased vitamin A supply with nutrition education that promotes the consumption of vitamin A-rich foods by young children and women.

Periodic supplementation that provides high-dose vitamin A capsules — both to children from 6 months to 5 years and beyond, and to mothers as soon after childbirth as possible — has proved to be a very valuable intervention, offering immediate help to children who are at risk of vitamin A deficiency in situations where food-based options are limited. Experts estimate that periodic high-dose supplements for young children have the potential of eliminating 90 per cent of blindness and other ocular consequences of vitamin A deficiency and about 23 per cent of mortality in early childhood wherever the deficiency is common.

**Successes in supplementation**

It is a major global achievement that by mid-1997, some 30 years after the first vitamin A supplementation programmes began in India, the policy of providing children with periodic high-dose supplements has been adopted in all but 3 of the 38 countries where clinical vitamin A deficiency still existed, and in all but 13 of the additional 40 countries with documented subclinical deficiency.

At least 35 countries also routinely provide vitamin A supplements with immunizations during ‘national immunization days’. And many countries link vitamin A supplementation to regular immunization activities or to periodic deworming of children, as in India and Mauritania.

Overall, UNICEF estimates that more than half of all young children in countries where vitamin A deficiency is known to be common received high-dose vitamin A capsules in 1996, compared to about one third in 1994 (Fig. 10). This includes such large countries as Bangladesh, India, Nigeria and Viet Nam. Between 1993 and 1996, UNICEF purchased nearly a half-billion high-dose vitamin A capsules that were distributed in 136 countries, helping to bring or keep vitamin A deficiency under control. At roughly 2 cents per capsule and perhaps 20 to 25 cents per delivered dose, few other child health or nutrition interventions are as cost-efficient.

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**Fig. 10  Progress in vitamin A supplementation programmes**

In the 78 countries where vitamin A deficiency is a recognized public health problem, supplementation programmes are on the rise.

Source: UNICEF/MI/Tulane University, ‘Progress in controlling vitamin A deficiency 1997’ (draft)
Iron deficiency anaemia is probably the most prevalent nutritional problem in the world...and progress in reducing its prevalence and impact has been slower than might be hoped.

The success of fortification depends on a number of factors: Those at risk of the deficiency must consume the fortified food regularly and in great enough quantities to make a difference, the fortification must not alter the palatability of the product for consumers and it must not put the product out of their financial reach. If these conditions are met, this can be a very effective approach, as the Guatemalan experience has shown. Supplementation may be an important complementary strategy for fortification if fortified foods do not reach all affected individuals.

Countries also need to ensure that sugar fortification programmes do not promote increased consumption of sugar but are aimed at informing consumers that whatever sugar they do consume should be fortified.

Sugar fortification:

A sweet success

Several countries have chosen another route to improved vitamin A status of their populations: fortifying the sugar supply.

Guatemala has led the developing world in fortifying sugar with vitamin A since the mid-1970s. Despite nearly a decade of civil disturbance and a lapse in fortification for several years in the early 1980s, an evaluation of 82 villages in 1990 concluded that sugar fortification had brought vitamin A deficiency under control among Guatemalan children.

Sugar is also being fortified in parts of Bolivia, Brazil, El Salvador, Honduras and the Philippines, and Zambia is planning to begin fortification in 1998, with other countries likely to follow or to find other staple foods to fortify with vitamin A. The Philippines, for example, has successfully tested and fortified a local, non-refrigerated margarine with vitamin A and is testing the impact of fortifying the wheat flour used in its national bread, pan de sal.

Improving diets to boost vitamin A

In many countries, vegetable gardening around the home and food preservation and preparation methods that enhance the vitamin content of the diet have been promoted as a means of improving vitamin A intake. In West Africa and Haiti, for instance, drying of mangoes has extended access to this important vitamin A source beyond the months of the mango season.

In Bangladesh, home gardens of fruits and vegetables have been adopted by families of low socio-economic status in one fifth of the country in recent years, the result of systematic introduction of village nurseries, the availability of low-cost seeds, and reliable extension services. This work has been supported by the NGO Helen Keller International. Initial evaluations suggest that this programme has curbed the incidence of night-blindness, especially in families that grow and consume a variety of vegetables. This is one of relatively
few such projects where careful evaluations have made it possible to assess the impact of activities on vitamin A status.

There is evidence that eating a variety of foods rich in carotene — the precursor form of vitamin A found in fruits and vegetables — coupled with some vitamin A from animal sources — can alleviate moderate to severe vitamin A deficiency in children and women.

The absence of more evidence that gardening projects improve vitamin A status may be because of the low availability of some carotenoids in plant foods for the body, the lack of complementary fats and animal foods in the diet, or inadequate evaluation methods. In addition, it is not clear which vegetables or fruits are most effective in improving vitamin A status. This question is an important research challenge.

Promoting increased consumption of vitamin A through animal foods may be possible in some countries. A recent project in Central Java (Indonesia), supported by Helen Keller International, the Micronutrient Initiative and UNICEF, promoted the consumption of eggs, which are affordable, to reduce vitamin A deficiency. As a result, egg consumption increased and vitamin A status improved significantly among young children in this project (Panel 16). Helen Keller International also successfully promoted increased consumption of vitamin A-rich liver by children in Niger, where animal products are relatively accessible in some regions.

问卷 Responding to anaemia

Iron deficiency anaemia is probably the most prevalent nutritional problem in the world. Over half the women in developing countries and a large percentage of young children suffer from it, and progress in reducing its prevalence and impact has been slower than might be hoped. As with vitamin A, several approaches have been pursued.

The consequences of anaemia for pregnant women and their newborn children are often disastrous. The condition puts women at higher risk of death because of the greater likelihood of haemorrhage in childbirth and other factors, and their newborns face a high risk of poor growth and development. Many countries have adopted policies to ensure that women who seek prenatal care have access to daily iron supplements to help them meet the very high needs of pregnancy and childbirth. UNICEF is a major supplier of iron/folate tablets. A total of 2.7 billion were provided to 122 countries from 1993 to 1996.

However, since many pregnant women enter pregnancy already anaemic — and it is difficult to resolve pre-existing anaemia during pregnancy — more attention is being paid in some countries to improving the iron and folate status of girls and young women before their first pregnancy. There is evidence from small-scale trials that in cases where it is difficult to reach young women with daily iron/folate supplements, ensuring weekly or twice-weekly supplementation may still be effective in building iron stores. In Malaysia, weekly supplementation over several months resolved the anaemia in over 80 per cent of adolescent girls in a community where anaemia was highly prevalent. Similar results have been reported from other countries.

Fortification of foods with iron is also an effective means of addressing anaemia. Wheat flour and flour products are the most common vehicles for iron fortification in places where they are widely consumed and centrally processed, particularly in Latin America and the Middle East (Panel 17).
One of the great — and still evolving — nutritional success stories is the progress made by Indonesia towards eliminating vitamin A deficiency. Two decades ago, in this nation of islands with a population of 200 million — the fourth highest in the world — the problem was serious. High levels of vitamin A deficiency, which can cause blindness and damage the immune system, greatly increasing the risk of illness and death, affected more than 2 million Indonesians.

The Government, in cooperation with UNICEF and other international partners, tackled the problem through the distribution of high-dose vitamin A capsules to children ages one to five, reducing deficiency levels dramatically. The rate of severe vitamin A deficiency has declined by more than 75 per cent, according to a national survey in 1993, sparing the eyes, health and lives of millions of children. Blindness among children due to vitamin A deficiency was eliminated in 1994.

Indonesia has not fully solved the vitamin A problem, however. Severe deficiency remains a problem in three provinces, and the survey also found that approximately half of all children under five had inadequate levels of vitamin A. Studies among schoolchildren and breastfeeding women in West Java have shown mild and moderate deficiency to be prevalent.

In response, the Indonesian Government has set the goal of eliminating vitamin A deficiency by the year 2000, using four strategies. The first is continued distribution of vitamin A capsules to children ages one to five through posyandu (community health posts), an effort which reached 60-70 per cent of children in this age group in 1993-1994. The second strategy is distribution of high-potency vitamin A capsules to mothers after they give birth, which will require special efforts, as only 35 per cent of births occur under medical supervision. The other strategies are food fortification with vitamins and minerals, including vitamin A (which is already under way by noodle manufacturers), and promotion of increased consumption of foods rich in the vitamin.

In support of this effort, the Government, with assistance from Helen Keller International, the Micronutrient Initiative and UNICEF, has launched the Central Java Project to improve vitamin A intake among children in this region in the first two years of life.

The project undertook three major efforts beginning in 1996, with the Indonesian system of posyandu and its cadre of midwives and birth attendants at the centre. First, a supplementation programme was launched to give one high-potency vitamin A capsule to all new mothers during the first month after delivery, along with two doses of deworming pills, to improve their health and nutrition. Ensuring mothers’ adequate intake of vitamin A also ensures that babies receive the amount they need through breastfeeding.

In the first six months of the project, nearly 20 per cent of new mothers in Central Java received vitamin A capsules, almost double the rate in the previous two years. The goal of the project is to reach at least 80 per cent coverage.

A second element of the project is a large-scale social marketing campaign to promote consumption of foods rich in vitamin A, focusing on eggs and dark green leafy vegetables. Research found, for example, that while a number of vitamin A-rich foods — such as eggs, liver, spinach, cassava leaves and papaya — are available year-round, few mothers or community leaders recognized these...
In 1993, Venezuela began fortifying all wheat and maize flour with iron and B vitamins. A 1996 evaluation showed large reductions in the prevalence of anaemia in children and adolescents following the fortification, even though during this period the country was suffering from a general economic decline.11

At a meeting in 1996, countries of the Middle East and North Africa made a joint commitment to fortifying wheat flour with iron as a principal strategy for anaemia reduction in the region, where wheat is a staple.

Anaemia is made worse by some illnesses, particularly hookworm infection. Malaria is also a major cause of anaemia, although this is not directly related to iron losses. In several countries, deworming of schoolchildren has been shown to reduce the prevalence and severity of anaemia.12 Preventing malaria and improving its curative treatment, which are priorities of UNICEF and WHO for 1998 and beyond, will undoubtedly go a long way to reducing anaemia in children and adults alike.

Improving basic health services

The nutritional well-being of children around the world has benefited greatly from the enormous achievements since 1990 in improving children’s access to basic health services, both curative and preventive.

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The nutritional well-being of children around the world has benefited greatly from the enormous achievements since 1990 in improving children’s access to basic health services, both curative and preventive.
Fortification of food staples with iron, vitamin A, iodine and other micronutrients is the most cost-effective, sustainable option for eliminating micronutrient deficiencies. Salt iodization, reaching an additional 1.5 billion consumers worldwide since 1990 and sparing millions of babies from mental retardation each year, is testimony to how successful fortification programmes can be.

But as positive as the end results are, fortification is a complex undertaking that requires government and industry to commit to working together as partners. Recent experience shows that fortification succeeds when producers are involved from the start in formulating regulations and in resolving the marketing and technical issues that can make or break a programme.

It's the law: Effective legislation is a basic requirement, helping to set goals and define roles of food producers, the health and nutrition authorities and scientific institutions. Without such a framework, a programme is more vulnerable to weak implementation, uneven results and possible failure. That was the experience of South Africa, where a maize-enrichment programme launched in 1983 without compulsory legislation was pronounced a failure after 10 years. Efforts are now being made to review the programme, with a focus on legislation and the role of the food industry.

Even then, legislation must be enforced and supported by policies. Guatemala passed a law in 1975 mandating that sugar be fortified with vitamin A. Not only was the law unenforced but the programme also quickly fell apart for lack of the foreign exchange needed to purchase the vitamin and because producers were not convinced of the programme's effectiveness. A decade passed before fortification was resumed, after the Institute of Nutrition of Central America and Panama (INCAP) and UNICEF worked with producers to explain the importance of fortification, provided technical assistance and helped them obtain vitamin A at below-market prices or through donation. Guatemala's Ministry of Health now enforces the law: Producers whose sugar shows low levels of vitamin A in random tests are first warned and then are either fined or shut down.

Pricing and marketing: Start-up costs of equipment and training can be high, but these are primarily one-off. Costs of the fortificant, labour and equipment maintenance are recurrent. Fortifiers' competitive position in the market place can be further eroded by price controls or taxation, and governments can play a helpful role in these areas. When Brazil's Government removed price controls and reduced a value-added tax on milk, for example, dairy production received a boost and fortification of milk became more attractive to producers.

Laws can eliminate the price advantage enjoyed by non-fortified products. In 1997, Oman banned local production and importation of white wheat flour not fortified with iron and folate, and Bolivia mandated that all wheat — local, imported or donated — be fortified with iron, folic acid and vitamin B complex.

Yet government intervention does not always succeed in lowering costs to workable levels. In Indonesia, efforts to fortify monosodium glutamate (MSG) with vitamin A were unsuccessful because technical problems of maintaining vitamin stability and colour consistency were too costly to solve. In the Philippines, it was so expensive to develop fortified margarine that only one multinational corporation carried through with it.

Questions of quality: Fortification can have commercial consequences, since any change in the way a product tastes, looks or smells can hurt sales and market share. For example, when Venezuela in the late 1980s de-
undisturbed by measles episodes will continue to help protect them from illness.

Programmes to improve hygiene and sanitation are also likely to be of crucial importance almost everywhere there is malnutrition in impoverished communities. Improved water supplies or support to food production may also be very critical, depending on local circumstances. Analyses in several countries have found that the strongest predicting factors for malnutrition are lack of safe water, inadequate sanitation and high fertility rates.

Each year over 1 million more children are saved from death through the use of oral rehydration therapy (ORT). ORT promotion includes support for continued feeding during and after diarrhoea as well as the use of oral rehydration salts (ORS) to prevent and treat dehydration. Continued progress is needed in diarrhoea prevention, treatment, nutritional management and cure to ensure that growth lost during diarrhoea episodes is rapidly caught up, but the achievements so far have been of great nutritional benefit to millions of children. Similarly, the gains already achieved in access to safe water and sanitation facilities have translated into nutritional benefits around the world. Millions more children than before have been able to avoid plunging deeper into the spiral of infection and poor dietary intake because so many illness episodes are prevented or readily cured.

An especially important advance in the health world has been the revitalization of basic health services through such measures as the Bamako Initiative, the set of policy measures launched by African governments in 1987 in response to the rapid deterioration of public health systems in Africa in the 1970s and 1980s. Now operating in other regions, the Bamako Initiative measures have meant that

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Photo: In Ghana, workers gather salt to be taken to a processing plant for iodization.
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School-based programmes in cases such as this, as well as non-formal programmes for youth and adults, such as literacy and parent education courses, are a useful complement and sometimes a principal vehicle for other activities promoting better nutrition. It is easy and usually very appropriate to ensure that curricula used in these programmes include strong nutrition components.

Schools, teachers and education programmes can serve as mobilizers of community participation in many ways, such as through village education committees and parent-teacher associations. These can also serve as a resource for nutrition and help organize relevant community-based assessment, analysis and action as well as promote good practices and share information concerning nutrition.

In the Lao People’s Democratic Republic, for example, early childhood development volunteers in the community and parents are mobilized through participatory processes to develop, among other skills, better nutrition practices, both traditional and modern. The essential role of teachers and schoolchildren in promoting the use of iodized salt and even testing its quality in Indonesia was mentioned earlier. In this case, messages about salt iodization and its importance have even been formally incorporated into teacher training courses across the country.

Eight useful lessons

What have these success stories shown? While there is no single prescription, these eight points bear noting.

1. Solutions must involve those most directly affected.

Malnutrition has many causes and manifests itself in several ways. There is no single, globally applicable solu-
tion to the overall problem, and there is no substitute for assessment and analysis done with the full and active participation of the families most threatened by nutritional problems and most familiar with their impact and causes. People who suffer or whose children suffer from malnutrition cannot be passive recipients of programmes. If they are not the main players in problem assessment and analysis, then actions to reduce malnutrition are likely to be inappropriate or unsustainable.

2. A balance of approaches is necessary.

A central challenge for nutrition programmes, as well as other development efforts, is finding a balance of approaches that work. Processes involving assessment, analysis and action — the triple A approach — are essential for formulating appropriate ‘bottom-up’ solutions, particularly with respect to the ways in which programmes are organized, managed and monitored. But there are some aspects of resolving malnutrition that can be appropriately formulated at higher levels, using wide and more ‘top-down’ application of appropriate strategies and technologies, based on the best scientific knowledge and the most effective technologies available.

UNICEF experience indicates that for many problems, a combination of top-down and bottom-up actions may be best. BFHI was formulated as a global strategy, but its success has taken many forms, depending on the engagement of national and local institutions and groups.

Vitamin A supplementation was suggested by the mortality reduction it enabled in many places and endorsed globally as a strategy, but its application has depended greatly on existing health measures and the involvement of community-based institutions.

Salt iodization has been enhanced by consumer advocacy and legislative change at the local and national levels and by the fact that communities previously affected by IDD can see and feel a difference.

The essence of a triple A approach is not necessarily to establish new cycles but, as much as possible, to build upon existing ones. Assessment-analysis-action cycles are the logical steps everyone tries to follow in order to cope with their problems better. By understanding how nutritionally useful mechanisms work and where the weaknesses are, a nutrition programme can build upon and improve existing good practices, rather than establishing new systems and procedures that may be difficult to accept and adopt, and are therefore difficult to sustain.

In the case of the Tanzanian CSD Programme, there were many components but the main focus was to improve people’s capacity to assess the problem — through growth monitoring — and thereby help them make better use of their resources.


Because malnutrition is the result of so many factors, it is not surprising that it has been attacked most effectively in situations in which several sectors and strategies have been brought to bear.

Combining improved infant feeding, better household access to food overall and improved and more accessible health services and sanitation is clearly more effective in reducing malnutrition where food, health and care are a problem than any of these measures taken alone. In support of these various approaches that work, relevant social services — health, education, communication and social mobilization — must be more clearly focused on nutrition. This is not done
by creating new ‘nutrition projects’ in these areas, but rather by incorporating nutrition components in ongoing community-based activities. Experience shows the usefulness of building such nutrition components into all programmes, wherever possible.

The impact on nutrition of health, education and other social services should also be monitored, with the results used both for a better understanding of nutrition problems and as a means to motivate policy makers, programme staff and communities themselves to increase their efforts to reduce malnutrition. Based on the monitoring of nutrition impact, viable and successful programmes should be redesigned so as to have the best effect.

Communication plays a special role in nutrition programmes in arming parents, educators and other caregivers not only with basic nutrition information but also with the ability to make informed decisions and the skills and knowledge needed to take action to support improved nutrition in their communities.

Communication should be carried out simultaneously at various levels to include parents, other family members, teachers, volunteers and community leaders who can in turn teach and support good practices. In addition, personnel of provincial and district health offices, staff in agriculture, rural development and education itself, media representatives, researchers and persons in positions of power of any kind must be reached and their help enlisted.

4. Progress hinges on continuing research.

All of these gains against malnutrition have depended upon programmatically relevant research, but more is needed. Both motivated researchers and processes to support such research are needed. For example, it took the urging of United Nations agencies and financing from the Government of Canada to ensure an analysis of the mortality impact of vitamin A deficiency.

There is a need for more research to improve programmes that affect the hardest-to-reach people, and for determining the effectiveness of feasible interventions — for example, how to encourage increased consumption of green leafy vegetables. Research institutions, both industry-based and academic, need to include the poor and their day-to-day nutrition problems on the research agenda.

5. Food production is important but not enough.

As was demonstrated in the Tanzanian programmes of Iringa and Mbeya, nutrition can be improved even in rather poor communities without increasing overall food availability. Increasing food production is often necessary, but it is never enough to ensure improvement in nutrition.

Programmes that aim to increase food production countrywide or in parts of countries should not claim that nutrition will be improved in young children and women unless other specific and focused measures are implemented to better their situation.

6. Everyone has an obligation to child rights.

Children have a valid claim to good nutrition. The government has an obligation and many other members of society and the community, including parents, have duties to realize the child’s right to good nutrition. All of these groups need to become aware of the nutrition problem, its causes and consequences, the possibilities of solutions, and their obligation to respect, protect, facilitate and fulfill child rights. They need to know what to do and how to do it. Advocacy, information, education and
training are all important strategies to create or increase this necessary awareness.

7. **Community and family-based involvement is vital.**

Children’s rights give them valid claims on society. In order for poor people to carry out their duties towards children, the poor must be recognized as key actors rather than as passive beneficiaries.

All available resources, even those controlled outside the community, should be used to support processes within households and the community that contribute to improved nutrition. Such processes involve decisions about the use of resources and the monitoring of the impact of these decisions.

As described above, households and communities learn how to search for better solutions through the process of assessing the existing situation, analysing the causes and acting as available resources permit. Community-based monitoring is important in the repeated assessment of the evolving situation. Analyses by the community and by all supporters outside the community are facilitated by an improved understanding of the causes of the nutrition problem.

Outside support includes advocacy, information, education, training and direct service delivery. Government and NGO staff may work outside the community, but should be in frequent contact with the community, functioning as facilitators. They should focus their support and dialogue on community mobilizers: people who are a part of the community and enjoy its trust and respect.

There is no pre-defined package of inputs or services that can work. Instead, the community is constantly learning about the best mix of interventions, a mix that can change significantly over time. Community development means that desirable outcomes, such as good nutrition, are achieved through participatory and sustainable processes. A combination of top-down advocacy and mobilization and a bottom-up demand for support will ensure that both community and government feel ownership of successful changes.

8. **Government policies must reflect the right to nutrition.**

Some national policies affect nutrition directly, such as salt iodization or immunization programmes, for example. Others, like income and price policies, affect nutrition indirectly.

With the ratification of the Convention on the Rights of the Child, governments have the obligation to respect, protect, facilitate and fulfil the rights enshrined in the Convention. All policies should therefore be analysed in terms of their real and potential impact on the right to good nutrition.

The most important strategies for nutrition include those for food, health, breastfeeding, education, and water and sanitation, and national nutrition information systems should be established to provide valid data about their impact. Policies should be based on knowledge from relevant research and be constantly evaluated for their real impact on nutrition in communities. Nutrition information systems should be as decentralized as the existing administrative systems, starting with community-based monitoring.