VITAMIN & MINERAL DEFICIENCY

Vitamin and mineral deficiency affects a third of Sub-Saharan Africa's people—affecting minds, bodies, energies, and the economic prospects of nations. But this is a problem that Sub-Saharan Africa could solve within a few years and at a very low cost.

A Partnership Drive to End Hidden Hunger in Sub-Saharan Africa

L'Initiative pour les micronutriments

The Micronutrient Initiative

unicef

gain Global Alliance for Improved Nutrition

NEPAD

DBSA Development Bank of Southern Africa

"It is no longer a question of treating severe deficiency in individuals. It is a question of reaching out to whole populations to protect them against the devastating consequences of even moderate forms of vitamin and mineral deficiency."

Carol Bellamy, Executive Director, UNICEF

"Micronutrient malnutrition is recognized as a major obstacle to human development and survival in West Africa. The West African Health Organization (WAHO) is helping to encourage Member States to develop a new paradigm in health co-operation and collaboration, thereby adding value to everything they do collectively. Combating vitamin and mineral deficiencies is at the forefront of WAHOs agenda. Member States have demonstrated that with political will and strong partnerships, micronutrient malnutrition can be controlled even in the most resource-poor environments."

Kabba T. Joiner, Director General, West African Health Organization

"Micronutrient deficiency also has many invisible economic effects that are widely underestimated because they sap the energy of working-age people and hurt the learning ability of children, causing billions of dollars in lost productivity in developing countries who can least afford it."

Jay Naidoo, Chairperson, Development Bank of South Africa

"Resources and technology to bring vitamin and mineral deficiencies under control do exist. What we need is the will, the effort and the action to fix this problem."

Venkatesh Mannar, President, The Micronutrient Initiative

"In our poor developing countries, where public health priorities compete for resources, partnership with the private sector to address devastating health problems brings hope for sustainable delivery of essential services."

Louise Sserunjogi, Makerere University, Uganda

"Fortifying foods with basic vitamins and minerals is both essential and affordable."

Bill Gates, Co-founder, Bill and Melinda Gates Foundation

"The case for the elimination of vitamin and mineral deficiency is compelling beyond description. The return on investment is without equal."

Rolf Carriere, Executive Director, Global Alliance for Improved Nutrition

"Probably no other technology available today offers as large an opportunity to improve lives and accelerate development at such low cost and in such a short time."

The World Bank

VITAMIN AND MINERAL DEFICIENCY— A Global Overview

Few outside specialist circles are aware of the scale and severity of vitamin and mineral deficiency (VMD), or of what it means for individuals and for nations.

It means the impairment of hundreds of millions of growing minds and the lowering of national IQs.

It means wholesale damage to immune systems, and the deaths of more than a million children a year.

It means several hundred thousand serious birth defects annually, and the deaths of tens of thousands of women a year during pregnancy and childbirth.

And, it means the large-scale loss of national energies, intellects, productivity, and growth.

The vitamin and mineral deficiency problem was largely controlled decades ago in industrialised nations. It could now be controlled world-wide by means that are tried and tested, available and affordable. That is why the World Bank says that, *"The control of vitamin and mineral deficiencies is one of the most extraordinary development-related scientific advances of recent years. Probably no other technology available today offers as large an opportunity to improve lives and accelerate development at such low cost and in such a short time."*

Within a very few years, the control of vitamin and mineral deficiency could be hailed as a major and measurable achievement for the people of Sub-Saharan Africa.

VITAMIN AND MINERAL DEFICIENCY in Sub-Saharan Africa

For a number of economic, social, geographic and cultural reasons, millions of people in Sub-Saharan Africa are affected by vitamin and mineral deficiency. This report has been prepared for political leaders and major media in the belief that controlling vitamin and mineral deficiency is an affordable opportunity to improve the lives of millions in Sub-Saharan Africa and to strengthen the pulse of its economic development.

Sub-Saharan Africa is home to some of the most nutritionally insecure people in the world. Conflict, HIV/AIDS, declining economies, debt and poor access to health services are only some of the factors that contribute to the high levels of vitamin and mineral deficiency in the region.

However, despite conflicting priorities and scarce resources, some countries in Sub-Saharan Africa are making significant strides towards reaching women and children with essential vitamins and minerals. Many of Sub-Saharan Africa's nations have iodized salt and reached children with vitamin A supplements with fewer resources and under more difficult circumstances than countries with more resources and better infrastructure.

This progress however, has not been region-wide. Competing priorities and insufficient capacity have caused progress towards controlling vitamin and mineral deficiency to be even sporadic in some instances. Much remains to be done to improve the nutritional status of the people of Sub-Saharan Africa and help its children to reach their full physical and mental potential

This report on vitamin and mineral deficiency in Sub-Saharan Africa, the damage it causes and the potential that exists to control it, is an extension of the *Global Progress Report* recently released by The Micronutrient Initiative and UNICEF. *National Damage Assessment Reports* are also being released for 80 countries, including 38 in Sub-Saharan Africa. Each report includes a *National Protection Audit* documenting the efforts of individual nations to protect their populations against vitamin & mineral deficiency.

While the Damage Assessment Reports for countries in the region sometimes appear bleak, the stories of success despite major constraints show that with decisive action, the picture could rapidly become brighter. And if such progress can be achieved, Sub-Saharan Africa will have another story to tell world—about building a better future for children everywhere.

Pages 4 and 5 of this report present the basic statistics on vitamin and mineral deficiency for each Sub-Saharan country.

Old thinking

The information on pages 4 and 5 make it clear that vitamin and mineral deficiency is an issue of enormous importance for the region. But it is a problem that is as yet little recognised.

In large part, this is because vitamin and mineral deficiency is a 'new' problem:

It has long been known that micronutrient deficiency—the lack of key vitamins and minerals—inflicts anaemia, cretinism and blindness on tens of millions of people. But the news of the last decade is that this is but the tip of a very large iceberg. Levels of mineral and vitamin deficiency that have no clinical symptoms can and do impair intellectual development, compromise immune systems, provoke birth defects, and consign millions of people in Sub-Saharan Africa to lives lived below their physical and mental potential. Vitamin and mineral deficiency therefore debilitates, in some significant degree, the energies, intellects, and economic prospects of the whole region.

The implications of these findings are obviously far-reaching. Most fundamentally, as UNICEF Executive Director, Carol Bellamy, has said, *"We have to leave behind the old thinking and act in the light of new knowledge. It is no longer a question of seeking out symptoms of severe deficiency in individuals and treating them. It is a question of reaching out to whole populations to protect them against the devastating consequences of even moderate forms of vitamin and mineral deficiency."* Ending VMD will significantly contribute to lifting successive generation of Africans from poverty.

Known solutions

The solutions to the vitamin and mineral deficiency problem are readily available and affordable:

DIET: Improving dietary intake of particularly vulnerable population groups. In much of Sub-Saharan Africa, controlling vitamin and mineral deficiency requires improving the diets of groups at high risk of deficiency: infants, young children, pregnant women and lactating mothers. Experience in this region shows that promoting exclusive breast-feeding, adequate complementary feeding for children, and improving diets and care for pregnant women and lactating mothers is possible through programs aimed at improving individual and family behaviours, and community norms.

FORTIFICATION: Adding essential vitamins and minerals to foods that are regularly consumed by a significant proportion of the population (such as wheat flour, maize meal, salt, sugar, cooking oil and margarine). The cost of providing accessible and affordable fortified foods can be as little as a few cents per person per year. Most countries in Sub-Saharan Africa already iodize their salt. Focusing on key salt-producing and exporting countries will enable the remaining few to benefit. Large-scale fortification of flour, cereals and oils is possible in several countries. In others, small-scale, community, or home level fortification is appropriate. Adding affordable multi-micronutrient "sprinkles" to the foods of young children also offers great potential in the region.

SUPPLEMENTATION: Reaching out to vulnerable groups (particularly children and women of childbearing age) with multiple vitamin and mineral supplements in the form of tablets, capsules, and syrups costing only a few cents per person per year. Provision of vitamin A for children 6-59 months old and women in the early post-partum period, and multiple micronutrient supplements for women of reproductive age (including pregnant women), should be included in national budgets and better integrated into existing health care service delivery systems.

DISEASE CONTROL: Controlling diseases like malaria, measles, diarrhoea, and parasitic infections can also help the body to absorb and retain essential vitamins and minerals. Well-nourished individuals also are better equipped to fight disease.

EDUCATION: Informing communities about the kinds of foods that can increase the intake and absorption of vitamins and minerals and helping them to produce such foods.

These are the methods that have brought vitamin and mineral deficiency under control in many nations and that could now be deployed to control the problem across the region in a relatively short time and at a relatively low cost.

The *Global Progress Report* on vitamin and mineral deficiency (recently released by UNICEF and the Micronutrient Initiative) shows that: each of the available solutions contains its own difficulties; none is a complete solution in itself; and all need to be pursued simultaneously and according to the particular needs and opportunities of each country.

Progress

In May 2002, the General Assembly of the United Nations agreed that the elimination or reduction of vitamin and mineral deficiencies should be one of the principal development goals to be achieved in the early years of the new millennium. Specifically, the UN has called for the sustained elimination of iodine deficiency by 2005; the elimination of vitamin A deficiency by 2010; and a reduction, of at least 30%, in the global prevalence of iron deficiency anaemia by 2010.

VMD: NATIONAL DAMAGE ASSESSMENT

	IRON DEFICIENCY			IODINE DEFICIENCY		VITAMIN A DEFICIENCY	
	Estimated prevalence of iron deficiency anemia in children under 5 years (%)	Estimated prevalence of iron deficiency anemia in women age 15-49 (%)	Estimated Annual no of maternal deaths from severe anemia	Estimated annual no of children born mentally impaired	Total Goitre Rate (%)	Estimated annual no of child deaths	Estimated % of children under 6 with sub-clinical vitamin A deficiency
Angola	72	59	-	235,000	33	34,000	55
Benin	82	65	380	10,000	<5	9,000	70
Botswana	37	31	100	9,000	17	500	30
Burkina Faso	83	48	490	180,000	29	20,000	46
Burundi	82	60	-	125,000	42	8,500	44
Cameroon	58	32	360	65,000	12	10,500	36
Central African Rep.	74	49	250	16,000	11	5,000	68
Chad	76	56	550	10,000	24	12,500	45
Congo	55	48	-	59,000	36	1,500	32
Congo, Dem. Rep.	58	54	4,750	-	-	96,000	58
Eritrea	75	53	270	16,000	10	1,750	30
Ethiopia	85	58	4,390	685,000	23	51,000	30
Gabon	43	32	<100	11,500	27	450	41
Gambia	75	53	-	10,000	20	1,000	64
Ghana	65	40	230	120,000	18	12,000	60
Guinea	73	43	360	83,000	23	8,000	40
Guinea-Bissau	83	53	100	12,500	17	1,750	31
Kenya	60	43	930	105,000	10	23,500	70
Lesotho	51	43	-	11,000	19	1,100	54
Liberia	69	44	170	29,000	18	5,000	38
Madagascar	73	42	520	43,000	6	13,000	42
Malawi	80	27	380	115,000	22	17,500	59
Mali	77	47	590	270,000	42	24,000	47
Mauritania	74	42	140	24,000	21	1,500	17
Mozambique	80	54	1,470	134,000	17	14,000	26
Namibia	42	35	<100	12,000	18	500	59
Niger	57	47	890	130,000	20	26,000	41
Nigeria	69	47	11,000	370,000	8	82,000	25
Rwanda	69	43	690	46,000	13	9,500	39
Senegal	71	43	310	86,000	23	9,500	61
Sierra Leone	86	68	780	40,000	16	13,250	47
South Africa	37	26	-	160,000	16	6,000	33
Swaziland	47	32	<100	4,000	12	600	38
Tanzania	65	45	-	-	16	-	37
Togo	72	45	150	25,000	14	3,250	35
Uganda	64	30	890	111,000	9	29,000	66
Zambia	63	46	480	115,000	25	19,000	66
Zimbabwe	53	44	440	35,000	9	4,900	28
Total			**32,000**	**3,512,000**		**576,550***	

Note: Data on vitamin and mineral deficiency are imperfect. The figures given in this table are drawn from the best information currently available. Prevalence data are based on a global review of existing surveys of vitamin and mineral deficiencies. Functional consequences of VMD are calculated using a specially-designed 'Profiles module'. See page 7 (Monitoring Progress) for an explanation of sources of data.

VMD: NATIONAL PROTECTION AUDITS

FOLATE DEFICIENCY	ECONOMIC IMPACT	FLOUR FORTIFICATION			SALT IODIZATION	VITAMIN A SUPPLEMENTS	
Estimated number of nural tube birth defects	Estimated % of GDP lost to all forms of VM deficiency	Type of programme	IRON PPM	Folic Acid PPM	Estimated % of household salt iodized	Estimated % of children receiving at least one dose of vitamin A per year	
1,400	2.1	-	-	-	35	75	Angola
550	1.1	-	-	-	72	95	Benin
100	0.6	-	-	-	67	85	Botswana
1,230	2.0	-	-	-	22	97	Burkina Faso
600	2.5	-	-	-	96	95	Burundi
1,100	0.8	-	-	-	84	99	Cameroon
300	-	-	-	-	86	90	Central African Rep.
800	1.2	-	-	-	58	91	Chad
300	1.9	-	-	-	-	100	Congo
5,250	0.8	-	-	-	93	80	Congo, Dem. Rep.
300	1.1	-	-	-	97	67	Eritrea
6,000	1.7	-	-	-	28	16	Ethiopia
<100	1.1	-	-	-	15	89	Gabon
100	1.3	-	-	-	8	91	Gambia
1,300	1.1	-	-	-	50	100	Ghana
700	1.4	-	-	-	60	93	Guinea
150	1.5	-	-	-	1	100	Guinea-Bissau
2,000	0.8	-	-	-	91	90	Kenya
100	0.8	-	-	-	69	-	Lesotho
330	1.2	-	-	-	-	100	Liberia
1,400	0.8	-	-	-	52	83	Madagascar
1,100	1.4	-	-	-	36	75	Malawi
1,300	2.7	-	-	-	74	80	Mali
250	1.3	-	-	-	2	98	Mauritania
1,500	1.2	-	-	-	62	71	Mozambique
100	0.8	-	-	-	64	84	Namibia
1,300	1.7	M	40.7	-	15	89	Niger
9,500	0.7	-	-	-	98	77	Nigeria
700	1.1	-	-	-	90	94	Rwanda
750	1.3	-	-	-	16	85	Senegal
500	1.4	-	-	-	23	91	Sierra Leone
1,500	0.4	M	35	1.43	62	-	South Africa
<100	0.6	-	-	-	59	-	Swaziland
-	-	-	-	-	67	93	Tanzania
350	1.0	-	-	-	67	77	Togo
2,600	1.0	-	-	-	95	37	Uganda
900	1.3	V	28.9	-	68	83	Zambia
800	0.7	-	-	-	93	-	Zimbabwe

* This total may not yet reflect recent increases in the proportion of children receiving vitamin A supplements. Many nations have boosted vitamin A coverage by distributing capsules on National Polio Immunisation Days. Vitamin A supplementation is now estimated to be saving more than 200,000 young lives each year, though there is a question mark over whether present levels of coverage can be maintained once polio is eradicated and National Immunisation Days are discontinued.

Action towards achieving these goals will contribute directly towards the achievement of the broader Millennium Development Goals of eradicating extreme poverty and hunger, improving maternal health, and reducing child mortality by two-thirds by 2015. Efforts to eliminate vitamin and mineral deficiency will also contribute to the attainment of the other Millennium Development Goals of universal primary education, promoting gender equality and empowering women, and potentially combating HIV/AIDS, malaria and other diseases—all through a global partnership for development which includes the private sector, media, and civil society.

Efforts to achieve these goals are already underway. Throughout the 1990s, and with very limited resources, many countries in Sub-Saharan Africa made remarkable advances in extending the outreach of vitamin A supplements and iodized salt to protect millions of their children from mental impairment, blindness, illness and early death. Eritrea, the Democratic Republic of Congo, Kenya and Nigeria are only a few examples of how rapid progress can be achieved under very difficult circumstances.

Although significant achievements have been made over the past decade, a more ambitious, concerted, and systematic effort is needed to tackle the challenges that still face many countries in Sub-Saharan Africa.

It can be done

Because effective low-cost solutions are already available, rapid progress can be made against vitamin and mineral deficiency. Indeed rapid progress across Sub-Saharan Africa in recent years shows that it can be done:

- Several countries in Sub-Saharan Africa including Benin, Burundi, Cameroon, Central African Republic, the Democratic Republic of Congo, Kenya, Mali, Nigeria, Rwanda, Uganda, and Zimbabwe have attained high levels of iodized salt coverage, thereby protecting approximately 70% of their new-borns every year against mental impairment caused by iodine deficiency.

- Twenty-five countries in Sub-Saharan Africa reached 70% or more of their young children with one vitamin A capsule every year saving the lives of more than 200,000 young children annually and reducing the severity of childhood illnesses. These countries include Angola, Benin, Gambia, and Guinea to name a few. This progress must be sustained and expanded to include the two annual doses necessary to fully protect children. Burkina Faso, Ghana, Sierra Leone, and Tanzania have been reaching their young children with two high-doses of vitamin A annually.

- A global initiative to fortify wheat flour with iron and folic acid (as in the United States and Canada) is gaining momentum. Nigeria, Morocco, and South Africa have recently acted, bringing to 49 the total number of countries adding iron to flour. Other countries, including Cape Verde, Côte d'Ivoire, Guinea, Ghana, and Kenya are all in the early stages of planning of fortification programs.

- Many countries including Côte d'Ivoire, Nigeria, and Mali have begun the process of fortifying other staple foods including sugar, cooking oils, and margarine with essential vitamins and minerals. Kenya and Nigeria are adding iron in addition to iodine to salt.

The case for anything less than rapid progress would be unconscionable. Decisive action in Sub-Saharan Africa to address the vitamin and mineral deficiency problem in effective and cost-efficient ways can show the way forward towards achieving other, more difficult, development targets.

The challenge for 2004–10

Despite the achievements, the fact remains that few nations have moved to implement the full range of known solutions on a systematic, nation-wide scale.

The major challenges are:

SUSTAINING RECENT ACHIEVEMENTS: The first priority is to maintain what has been achieved. There is nothing automatic about sustainability. Salt iodisation levels, for example, have recently slipped back in Ethiopia and Sierra Leone. Other countries like the Democratic Republic of Congo have been able to sustain their achievements despite political instability and civil unrest.

BUILDING A NEW AWARENESS: Action on the necessary scale will not happen unless vitamin and mineral deficiency is seen for what it is—a hindrance to the mental and physical development of nations.

MEETING THE IRON CHALLENGE: There has been virtually no progress at all towards ending iron deficiency, with the consequent losses to productivity and cognitive development that no nation can afford. With this new knowledge about the problem must come a new determination to act. Solutions are available, but need a new political determination to translate them into operational programs.

> **"Reducing the prevalence of iron-deficiency anaemia by means of food supplements, in particular, has an exceptionally high benefit to cost ratio."**
>
> *The Copenhagen Consensus Project, 2004*

FORMING NATIONAL AND REGIONAL ALLIANCES: The best hope of sustained progress against vitamin and mineral deficiency in Sub-Saharan Africa resides in the idea of national and regional alliances to press for, plan, implement and monitor specific solutions, as well as facilitate trade in fortified foods. Such alliances are most effective when they represent the full range of those who have the expertise, the authority, and the means to put particular solutions into effect on a national and regional scale. Alliances need to embrace, for example, not only government departments but also food companies, scientists and researchers, health and education professionals, print and broadcast media, consumer associations and non-governmental organisations.

PARTNERING THE FOOD INDUSTRY: The food industry is best equipped to develop, market, and distribute fortified food products for daily consumption by a significant proportion of the population. But if fortification is to benefit the majority, then it will require public-private partnerships and government initiatives to create the legal and financial conditions and incentives that will allow the private sector to play its central role in defeating vitamin and mineral deficiency.

GETTING THE SCIENCE RIGHT: Controlling VMD also presents a challenge to the scientific and research community. Specifically, progress could be accelerated by: multi-vitamin and mineral tablets that can be administered less often and with higher acceptability; massively cheap and well-marketed 'home-mixes' or sprinkles to add key vitamins and minerals to daily diets; improved fortification pre-mixes and the identification of the most suitable staples for fortification in each nation; technologies to fortify salt with iron as well as iodine; techniques to fortify rice with vitamin and mineral pre-mixes; and enhancing the vitamin and mineral content of staple crops like maize, cassava, sweet potatoes and rice.

MONITORING PROGRESS: The national VMD *Damage Reports and Protection Audits* being issued have brought together the best of currently available data for each country. But those data are not nearly good enough. In some countries, they are based on partial surveys, extrapolations, and statistical modelling techniques that are, at present, the only way of estimating the extent and consequences of VMD. To monitor progress and allocate resources, more accurate and up-to-date monitoring will be needed.

These challenges are compounded by conditions that particularly affect the region. Programmes to control vitamin and mineral deficiency in the region must also address:

HUNGER AND NUTRITIONAL INSECURITY, precipitated especially by poverty, drought, conflict and other emergencies, are a major concern in Sub-Saharan Africa. These conditions reduce the ability of Africans to access foods of sufficient quantity and quality. As a result, one-third of Africans are undernourished. Innovative approaches and technologies, such as home-fortification and small-scale village-level fortification of staple foods, can play a major role in making fortified staple foods accessible to the majority of Africans. Emergency feeding programmes also need to ensure that essential vitamins and minerals are added to food rations on a routine basis.

HIV/AIDS is a significant problem in most of Sub-Saharan Africa. In many instances, HIV/AIDS is both a cause and a consequence of food insecurity, particularly among women. Moreover, increasing evidence shows that adequately nourished individuals are less susceptible to the many infections associated with HIV and are less likely to have early onset of full-blown AIDS.

INSTITUTIONAL CAPACITY is also a significant concern in the region. All would agree that investment in controlling vitamin and mineral deficiency would yield tremendous benefits, and that adequate nutrition is a human right. However, many governments and institutions in the region are faced with very real challenges—not the least of which are poverty, and declining economies and health services. Enhancing capacities in the region to address these challenges is therefore a fundamental requisite for the success of programs to address VMD.

A unique opportunity for Sub-Saharan Africa

In response to these challenges, international agencies are working with African institutions to expand existing vitamin and mineral deficiency programmes and to fast-track a number of new initiatives where visible impacts can be realized within the next five years. One of these initiatives is the African Vitamin and Mineral Deficiency Programme being developed in alliance with the New Partnership for Africa's Development (NEPAD). As part of NEPAD's Comprehensive Africa Agriculture Development Programme and Health Strategy, the AVMDP aims to bring together a number of international agencies—such as UNICEF, WHO, WFP, FAO, IFPRI, the Global Alliance for Improved Nutrition (GAIN) and the Micronutrient Initiative—to support the acceleration of efforts to end vitamin and mineral deficiency in Africa. The development of this initiative will be driven by consultations at the regional level, linked to the Regional Economic Communities, and will involve national stakeholders. Specific projects will be identified through the NEPAD consultative process at the regional level.

A critical component of this initiative will be the establishment of capacity to sustain new programmes. National and regional institutions will be identified to provide the skill and expertise to manage the AVMDP.

While this is a new initiative being planned to meet the VMD challenges faced by Africa, a number of efforts are being supported. In the area of food fortification, GAIN has recently approved grants to three National Fortification Alliances in Africa, leading to national food fortification programmes in Mali, Côte d'Ivoire, and South Africa. Another example is the recent West Africa public-private sector dialogue hosted by the West African Health Organization (WAHO), the Governments of Côte d'Ivoire and Ghana, the Micronutrient Initiative, Helen Keller International, and UNICEF. Held in October of 2002, the dialogue created a momentum to accelerate national and regional efforts to address vitamin and mineral deficiency through food fortification. This dialogue has led several West African countries to create national alliances and initiate activities leading to fortification. A further example is the recent Eastern Central and Southern Africa regional food fortification workshop, organized by the Regional Commonwealth Health Secretariat and USAID/MOST. The workshop took place in South Africa in August of 2004, and its purpose was to develop action plans for specified areas of support for food fortification.

The Network for the Sustained Elimination of Iodine Deficiency—a public private alliance led by UNICEF—is intensifying actions to reach the last 30 percent of Africans not covered by salt iodization programmmes. Many countries, from Ethiopia to South Africa, will be assisted to expand programmes. In West Africa, the Network will soon facilitate a major meeting of the Economic Community of West African States (ECOWAS) and the West African Health Organization (WAHO) member countries to expand efforts to end iodine deficiency in that region of Africa.

The Micronutrient Initiative is supporting the introduction of new innovations in the form of double fortified salt—fortified with iodine and iron. This has been piloted in Africa and Asia and is now being scaled up in Kenya and Nigeria, addressing iodine deficiency and iron deficiency anaemia through a combined intervention.

Another new innovation being used to reach micronutrient deficient populations is the introduction of bio-fortified crops—varieties that are bred for increased mineral and vitamin content. HarvestPlus, coordinated by the Center for Tropical Agriculture (CIAT) and the International Food Policy Research Institute (IFPRI), is concentrating on research related to plant breeding, impact and policy analysis. HarvestPlus will undertake pilot research in Africa on the potential for nutrient enhancement of staple and non-staple foods that are important in the diets of those with vitamin and mineral deficiencies.

In the area of vitamin A supplementation, programmes introduced over the last ten years now reach three-quarters of its children every year with *one dose* of vitamin A (one of the best records in the developing world). However, *two doses*, four to six months apart, are required to bring a high level of protection against frequent disease, poor growth, and early death. Building on existing achievements and outreach mechanisms, UNICEF and the Micronutrient Initiative will be supporting African governments in accelerating supplementation programmes so that 85 percent of Africa's young children will be covered with two high-dose vitamin A capsules every year.

Other specific interventions are also being developed to address vitamin and mineral deficiency in target populations. Similar interventions are already in place for school feeding programmes, facing emergencies, and populations with a high prevalence of HIV/AIDS.

Next steps

The NEPAD-African Vitamin and Mineral Deficiency Programme could rapidly reduce the scale and severity of the problem and provide a major success story. This program, which has been endorsed by NEPAD's Steering Committee, needs to now move towards a formal launch and implementation that will begin early next year.

There must be an expansion of National Food Fortification Programmes and development of National Fortification Alliances and national programmes in Africa. Over the next five years, these programmes can cover at least one-third of the countries in Sub-Saharan Africa.

Prioritising programmes to reach the last 30 percent of the population not protected with iodized salt, and sustaining efforts to reach those already covered, will be the focus of the Network for the Sustained Elimination of Iodine Deficiency, working in collaboration with national governments and the salt industry.

Vitamin A programmes now urgently need to be given a much higher priority to help reduce child mortality more rapidly. Vitamin A supplementation can also become the cornerstone for an integrated package of essential health services delivered to all children at least twice a year. ■

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Controlling Vitamin and Mineral Deficiency is an affordable opportunity to improve the lives of two billion people and to strengthen the pulse of economic development.

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