

## Micronutrient Malnutrition: Ending the Hidden Hunger

While hunger and nutrition programs have often focused on ensuring that people consume enough calories and protein, a worldwide effort to boost fortification of foods with essential micronutrients, such as iodine, vitamin A and iron, has been slower to take root. But the impact of diets lacking these nutrients can be dire: Iodine deficiency is the leading cause of preventable mental retardation in the world and also leads to thyroid problems. Low iron intake can cause anemia, which results in fatigue, lower worker productivity and reduced ability to fight infection. Vitamin A deficiency leads to blindness and increased vulnerability to a range of illnesses.

**CommonHealth** Editor Barbara Ruben talked with Glen Maberly, MD, about micronutrient issues and how they affect the NIS. Maberly is the chairman of the Department of International Health of the Rollins School of Public Health at Emory University in Atlanta, Georgia and the director of the Program Against Micronutrient Malnutrition (PAMM), a collaborative effort of Rollins, the US Centers for Disease Control and other organizations.

**CommonHealth:** You have called the prevention of iodine deficiency one of the "most important achievable international health goals of the decade, conceivably exceeding the impact of the global eradication of smallpox." What is the extent of the problem and how can it be prevented?

**Maberly:** Iodine deficiency disorder is one of the oldest malnutrition issues known to mankind. There are pictures of goiters and cretinism in art and literature through the ages. As early as 200-300 AD goiter appears in art work present in sculptures of Buddha and his disciples.

But only in the last 10 years have leaders of the world's countries stated together that iodine deficiency is a priority issue. In 1990, UNICEF's World Summit for Children listed eradication of iodine and vitamin A deficiencies by the year 2000 as two of their top six nutrition goals.

Part of the reason is that we've only recently understood how the lack of iodine affects the development of the brain before birth. Iodine deficiency causes the brain to be wired with fewer connections. The development is inhibited significantly, not just in cretinism [severe stunting of mental development and growth of the body], but in the whole population. Even if we're seeing mild iodine deficiency, with only a 10 percent goiter rate in school children, the IQ of the whole population is likely to be down 10 to 15 points.

This problem is not just confined to mountainous and rural regions. We're talking about capital cities. It's been fairly well documented around the world.

There has been a movement worldwide to iodize salt. We've seen cooperation with the salt industry over the last 10 ten years in numerous areas--China, India, Latin America. Worldwide, there is a 70 to 80 percent rate of salt iodization. There was less than 10 percent in 1990.

**CommonHealth:** What is the status of salt iodization in the NIS?

**Maberly:** The Soviet Union did have some system of salt iodization, although in the western areas and very remote areas, it was not always effective. But there was a substantial breakdown in the system with the transformation of the Soviet Union to a market-based economy. Today the NIS has one of the largest populations in the world without adequate iodine intake. The most severely affected region is in the Caucasus and Central Asia, but there

are also problems in many cities, like Moscow and St. Petersburg. In Kyrgyzstan, there is a 10 percent cretinism rate. In Tbilisi, 60 percent of the newborns lack sufficient thyroid hormone.

The scientific, public health and medical communities there have not kept up to date on the issue of brain development and iodine deficiency disorders. When these policy makers and doctors are confronted with IDD they tend to underplay it. It's hard for them to accept that this is going to have such a dramatic impact on the next generation.

The breakdown in large part has to do with control of the markets by certain groups of people who have little regard for the issue. Only recently through ad hoc surveys has it become clear the problem has returned seriously and dramatically to most parts of the NIS.

Very little salt distributed in the NIS is iodized. Georgia just issued a decree last July to have iodized salt. The government sees this as a serious issue for the development of their country. And PAMM, the CDC, WHO and UNICEF view this as one of the most serious concerns for development of the region because if you end up with a significantly lower mental capacity that doesn't bode well for commerce, for education, for every sector. This has become a very, very serious problem for the NIS.

**CommonHealth:** What does this mean for populations living near Chernobyl?

**Maberly:** The thyroid gland is a major scavenger of iodine. When there's a deficiency, it far more aggressively takes on iodine. If the population exposed to the fallout had not already been iodine deficient then much of the radioactive iodine would not have remained in the thyroid gland. That's the reason for the high thyroid cancer rate in the region. Thyroid cancer has increased 100-fold or more in children in the region. There are now just under 1,000 children there with thyroid cancer. It's a very aggressive cancer. And it will go on for a whole generation. Considerably more cases are expected.

**CommonHealth:** What problems is the NIS experiencing with iron deficiency?

**Maberly:** It is the leading cause of maternal death. It also affects the brain function of children. If the population is iron deficient, this leads to lethargy, tiredness, a decrease of worker productivity of up to 40 percent.

Iron deficiency affects all regions. Diets lack iron. Also certain substances such as tea block uptake. You can distribute capsules to women and children, but that isn't always well tolerated. The best thing is through food vehicles, through flour mills and bread production. Micronutrients can be relatively easily added for not much expense. This is the preferred approach.

**CommonHealth:** What about vitamin A?

**Maberly:** Vitamin A needs to be assessed because we don't know how much of a problem this is right now. There is really very little data on the magnitude of the problem. Oil and fat consumption may or may not be a factor.

**CommonHealth:** What is the best way to address micronutrient deficiency in the NIS?

**Maberly:** First we need to make sure that the problem is recognized. Linkages need to be developed with the salt and other industries. Some of the countries have passed laws mandating salt iodization, but more needs to be done than just passing laws. For example, we would like to work with Georgia's government to strengthen its national plan. We would like to build some of that into the partnership work between Tbilisi and Atlanta.

Most of the salt in the NIS is imported from Armenia and Ukraine. It's really important to get these salt producing countries to put iodization in place. Then there must be programs to oversee the iodization and inspect the salt. And as industry moves into the NIS, micronutrient fortification should be a priority to alleviate anemia and Vitamin A deficiency.

It is also an issue of promotion. The media has a role to play in alerting the public. People in the NIS are well educated and will be receptive to public information campaigns once they know what the problems are. Awareness of micronutrient deficiency must be instilled at all levels.