WHY IRON IS IMPORTANT

Iron plays a strong role in enzymes regulating heme and non-heme cellular development and function: it occurs in the cell division, cellular metabolism, oxygen delivery, neurotransmitter synthesis and myelination, thus in prenatal and postnatal years.

WHEN IRON IS CRITICAL

First critical period: the last trimester of pregnancy when iron is taken by the serum ferritin.
Second critical period: from 6 to 12 months when there is no backup of an iron reserve.

FACTS AND FIGURES

4-5 billion people (66-80% of the world’s population) may be iron deficient; 2 billion people (over 30% of the world’s population) are anemic, mainly due to iron deficiency.
For pregnant women, anemia contributes to 20% of all maternal deaths.
9 out of 10 anemia sufferers live in developing countries; on average, every second pregnant woman and 4 out of 10 preschool children are anemic.

From www.who.int/nut/ida.htm

EFFECTS

For the mother:
- intrauterine growth retardation
- increased perinatal mortality and infection
- increased maternal morbidity and mortality
- haemorrhage and uterin dysfunction
- impaired immune system
- insufficient iron in breastmilk

For the child:
- low birth weight
- less iron reserves
- impaired mental development
- impaired psychomotor function
- lower performance at school
- limited attention and concentration span
- impaired affective relationships
- lower IQ scores
- impaired hormonal production (especially thyroid)
- impaired immune system
- impaired neurotransmitter function
- impaired reproductive function
- scarsity of muscles’ fibres
- lower blood transport to the tissues

For the society:
- higher health costs because of the higher demand of health services
- lower productivity because of the impairment of children’s intellectual and economic potential.

WHAT CAN BE DONE

A preventive action, since effects are irreversible!

increasing iron taken
- iron supplements
- iron-rich diets

infection control
- public health
- measures to control hookworm infection, malaria and schistosomiasis

improving nutritional status
- control of major nutrient deficiencies
- diet diversification
- infection prevention
WHY IODINE IS IMPORTANT
Iodine plays a strong role since it is required for the synthesis of thyroid hormones, which are required for brain development, thus during fetal and early postnatal life.

WHEN IODINE IS CRITICAL
During the prenatal period, but treatment with thyroid hormones has to begin before conception to be surely effective.

FACTS AND FIGURES
- IDD affects over 740 million people, 13% of the world’s population; 30% of the remainder are at risk.
- Nearly 50 million people suffer from some degree of IDD-related brain damage and physical impairment due to IDD: 11 millions are cretins, 760 millions have goitres.
- 68% of the 5 billion people living in countries with IDD have access to iodized salt.

From www.who.int/nut/idd.htm

EFFECTS
- irreversible mental retardation
- cretinism, caused by a combination of maternal and fetal hypothyroxinemia during gestation
- neurological damage
- stillbirths and abortions
- congenital abnormalities
- thyroid failure (hypothyroidism)
- endemic goitre (the swelling of the thyroid gland in the neck)
- poor school performance
- lower IQ scores (10-15 points)
- restricted capacity to work
- increased rate of mortality at birth

WHAT CAN BE DONE
- a preventive action, since effects are irreversible!
- treatment of thyroid hormone before conception and during the neonatal period
- increasing iodine intake before conception, through diffusion of iodized salt

OTHER IMPORTANT MICRONUTRIENTS...

ZINC
- It is an element in enzymes that work with red blood cells which move carbon dioxide from tissues to lungs.
- It also helps maintain an effective immune system.
- Zinc deficiency in malnourished children contributes to susceptibility to infections, and is also thought to be associated with complications of childbirth.
- More than 100 different enzymes in human body depend entirely on zinc for their correct functioning.

VITAMIN A
- Over 100 million young children suffer from vitamin A deficiency
- Supplements and treatments of both vitamin A and zinc can reduce the rates of deaths for diarrhea, measles, pregnancy-related deaths and malaria.
- Vitamin A deficiency also causes serious corneal damage, sometimes blindness.