Summary

The background to this advisory report

Regulations and research undergo rapid development

European legislation, regulations and research in the field of vitamins, minerals and trace elements, known as micronutrients, undergo rapid development. That is why the Minister for Health, Welfare and Sport has asked the Health Council of the Netherlands for advice in connection with a review of policy in this area.

The aim of the policy is to ensure that as many people as possible consume adequate quantities of micronutrients, while, at the same time, minimising the risk that people exceed the safe upper level of intake.

In this final advisory report, the specially constituted committee (the Micronutrients Committee) presents advice on what is needed for the general, healthy population. The committee takes its earlier advisory reports on vitamins A and D, folic acid and iodine into account. The micronutrient intake of people with medical problems is not covered by this advisory report.

What micronutrients is the daily diet short of, or are supplied in excess?

Some population groups may not obtain adequate quantities of certain micronutrients, although the consequences of this for health are often unclear.

The daily diet of most children and adults of Dutch origin supplies enough thiamin, riboflavin, vitamins B_6 and C, phosphorous, potassium, magnesium, copper and zinc.

Much less is known about the micronutrient intake of women who are pregnant or breastfeeding, people of non-Western origin, individuals with a low energy intake or with an unusual dietary pattern. However, there are indications that:

- the riboflavin and calcium intake of people of Turkish, Moroccan or Surinamese background may be too low,
- the vitamin B_{12} status* of 12 to 25 per cent of elderly people is too low,
- the iron status of 20 per cent of children of asylum-seekers, approximately 35 per cent of women of childbearing age and almost 50 per cent of pregnant women is too low, and
- the vitamin E and selenium intake of young children may be too low.

It is unclear whether excessively low intake or status are associated with adverse effects on health. A low status is not the same as a deficiency of vitamins, minerals or trace elements, which needs to be treated.

There is also a small group of the population who are at risk of having a micronutrient intake above the safe upper level of intake as a result of taking supplements. These levels of intake can have adverse effects on health.

* For example, the concentration of a micronutrient in the blood.

What needs to be taken into account when adopting measures to ensure adequate micronutrient intake?

There is no standard approach. A multi-stage plan can be used to determine how micronutrient intake can be guaranteed

The committee's four previous advisory reports show that it is impossible to devise one standard approach to select the right measure for a micronutrient. Each of the micronutrients examined is unique in respect of excessively low or high intake and associated risks for the various population groups. A multi-stage plan can be followed when considering measures (Figures 1 and 2).

The underlying principle of this plan is that a diet in accordance with the Guidelines for a Healthy Diet supplies enough micronutrients for the general population. However, there are some exceptions to this: women need extra folic acid around the time of conception; young children, people who do not go outdoors enough or who have dark skin, women who are pregnant or breastfeeding, women who wear a veil, women aged 50 and over and men aged 70 and over need extra vitamin D; infants need extra vitamin K; and vegans need extra vitamin B_{12} (Tables 5 and 6).

The committee is also of the opinion that measures such as advice on supplements or fortification should only be applied if they provide health benefits.

Intake above the recommended dietary allowance does not provide any health benefits

The new European regulations mean that people who consume fortified foods and supplements may in some cases have an intake well above the recommended dietary allowance. There are no indications that intake at these levels is more beneficial to health than the recommended intake.

The current European regulations on voluntary fortification may be a limiting factor with regard to the fortification of staple foods

The advisory reports on folic acid and vitamin D recommended the Minister to consider fortification of only a limited number of staple foods. The European regulations on voluntary fortification may be a limiting factor with regard to the fortification of staple foods with these and other micronutrients where the recommended intake and the safe upper level of intake are relatively close together:

vitamin A, iodine, selenium, copper and zinc. It is not possible at present to prohibit foods that have been fortified on a voluntary basis from the market. In the case of micronutrients with such a narrow margin, the combination of fortified staple foods with products that are fortified on a voluntary basis increases the risk of exceeding the safe upper level of intake.

What measures should be given priority?

Providing information about the risk groups that need extra micronutrients in addition to a varied diet.

The committee recommends taking a diet according to the Guidelines for a Healthy Diet as the basis for information, and specifying which population groups need extra vitamins and minerals in addition to this diet.

Preventing excessively high intake of micronutrients.

The committee advises people wishing to take supplements or consume fortified foods to ensure that their intake of micronutrients from these products does not exceed the recommended daily intake of micronutrients per day in addition to the micronutrients obtained from the diet. Consuming amounts up to the safe upper level of intake does not offer any health benefits and amounts in excess of the safe upper level can even be harmful in the long term.

Ideally, restrictions should be set at European level on the number of products which can be fortified with micronutrients that have a narrow margin (vitamins A and D, folic acid, iodine, selenium, copper and zinc).

What monitoring activities should be given priority?

High priority should be accorded to determining micronutrient intake by children and adults of Turkish, Moroccan or Surinamese background

The committee recommends that high priority be given to determining the micronutrient intake and status of children and adults of Turkish, Moroccan or Surinamese background. One of the topics that needs to be addressed specifically is the iron intake and status of young children.

Other groups whose micronutrient intake should be investigated

The committee is also of the opinion that it would be desirable for more data to be obtained regarding the micronutrient intake of women who are pregnant or breastfeeding, with investigation into micronutrient status as well where necessary. This also applies to people with a low energy intake, especially elderly people, and individuals whose dietary pattern is unusual. The RIVM (Netherlands National Institute for Public Health and the Environment) will over the coming few years be conducting food consumption surveys of among others individuals of non-western background, women who are pregnant or breastfeeding, and elderly. This may be followed by additional status research.

Monitor the micronutrient intake and the composition of fortified foods continuously

The committee also recommends continuous assessment of micronutrient intake and, where necessary, status, taking account of new developments in science and regulations. It is important to this end to investigate how far fortified products and supplements contribute to the intake of these micronutrients. To this end it is essential that records are kept of the composition and consumption of fortified foods.

What additional research should be given priority?

High priority should be given to research into the effects of low iron status on health among women of childbearing age

The committee recommends giving high priority to investigating whether low iron status among teenage girls and women of childbearing age, whether pregnant or not, is associated with health problems.

Additional research

Other issues which the committee advises putting on the research agenda:

- Investigation as to whether low vitamin B_{12} status among adults and elderly people is also associated with health problems.
- Investigation as to whether low iron status among children is also associated with health problems.

- Investigation to ascertain whether the possibility that the intake of riboflavin and calcium by people of Turkish, Moroccan or Surinamese background and vitamin E and selenium by children in general is too low is confirmed by status research and, where necessary, research into any health effects.
- Expanding the Dutch food composition database by adding information about the vitamin K content of foods.
- Research into the safe upper intake levels of micronutrients for children (little or no research has so far been carried out into this topic).
- Assessment of the Dutch micronutrient dietary reference values by comparing the current values with those applied in the United States, Australia and New Zealand and with new dietary reference values that may have been established by then in the European Union and Scandinavia. A start has been made on this point in this advisory report, which uses more recent American, Australian and New Zealand dietary reference values for those micronutrients with Dutch dietary reference values which had been drawn up in 1989. The safe upper levels of intake used in this advisory report are those drawn up at European level in 2006.