

Health Council of the Netherlands

# Dutch dietary guidelines 2015



Health Council of the Netherlands

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To the Minister of Health, Welfare and Sport  
To the State Secretary of Economic Affairs

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Subject : Presentation of advisory report *Dutch dietary guidelines 2015*  
Your reference : CZB/VVB/98653  
Our reference : U-847162/RW/CS/cn/005-F  
Enclosure(s) : 1  
Date : November 4, 2015

Dear Minister and State Secretary,

Enclosed you find the advisory report Dutch dietary guidelines 2015, in which an expert committee describes the current level of knowledge about the relationship between diet and chronic disease and makes associated recommendations about a healthy dietary pattern. The report updates the guidelines previously issued in 2006 and 1986. It has been reviewed by the Health Council of the Netherlands' Standing Committee on Public Health and Standing Committee on Health Care. As pointed out in the context of that review, unhealthy dietary patterns have an influence on disease burden that, in quantitative terms, is comparable to that of smoking. Hence, diet is an extremely important public health issue.

The new Guidelines differ from the earlier versions in various respects. For example, the recommendations are formulated in terms of foods (rather than in terms of nutrients), which is more in keeping both with scientific developments and the dietary choices open to consumers. Progress made in research methodology over the last 10 years has made it possible to thoroughly re-assess the scientific evidence against strict quality requirements. Hence, a transparent, systematic approach to the assessment of the scientific literature has been developed, which may facilitate the process of updating the guidelines in the future. The approach can also contribute to international harmonisation of the methods used to define the scientific basis for dietary guidelines.

The advisory report's central recommendation is that a dietary pattern involving more plant-based food and less animal-based food is desirable. That is reflected in the guidelines on fruit and vegetables, meat, fish, nuts, legumes, cereal products, butter and oil, drinks, alcohol and salt. Guidelines on nutrient supplements have also been added. The guidelines relate to the adult population. The Netherlands Nutrition Centre is developing new public





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information material based on the guidelines, which should be ready for publication in spring 2016. The new material will help people to make healthy dietary choices in everyday life.

In its development of the guidelines, the expert committee received significant assistance from various sources, including the Netherlands Nutrition Centre, the National Institute of Public Health and the Environment and the many people who took advantage of the opportunity afforded by the public consultation process to comment on the twenty-nine documents describing the research into diet and chronic disease. I am very grateful for all the input received.

Yours sincerely,  
(signed)  
Professor W.A. van Gool  
President



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# **Dutch dietary guidelines 2015**

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to:

the Minister of Health, Welfare and Sport

the State Secretary of Economic Affairs

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No. 2015/26E, The Hague, November 4, 2015

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The Health Council of the Netherlands, established in 1902, is an independent scientific advisory body. Its remit is “to advise the government and Parliament on the current level of knowledge with respect to public health issues and health (services) research...” (Section 22, Health Act).

The Health Council receives most requests for advice from the Ministers of Health, Welfare and Sport, Infrastructure and the Environment, Social Affairs and Employment, and Economic Affairs. The Council can publish advisory reports on its own initiative. It usually does this in order to ask attention for developments or trends that are thought to be relevant to government policy.

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Preferred citation:

Health Council of the Netherlands. Dutch dietary guidelines 2015. The Hague: Health Council of the Netherlands, 2015; publication no. 2015/24E.

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Infographics and tables: Schwandt Infographics, Houten

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ISBN: 978-94-6281-104-1

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### **The guidelines in brief**

In this report, the Health Council of the Netherlands has assessed which foods and patterns lead to health gains. To this end, the Council has systematically evaluated the scientific evidence about the relationship between diet and chronic diseases. On this basis, the new Dutch dietary guidelines have been formulated:

- Follow a dietary pattern that involves eating more plant-based and less animal-based food, as recommended in the guidelines
- Eat at least 200 grams of vegetables and at least 200 grams of fruit daily
- Eat at least 90 grams of brown bread, wholemeal bread or other whole-grain products daily
- Eat legumes weekly
- Eat at least 15 grams of unsalted nuts daily
- Take a few portions of dairy produce daily, including milk or yogurt
- Eat one serving of fish weekly, preferably oily fish
- Drink three cups of tea daily
- Replace refined cereal products by whole-grain products
- Replace butter, hard margarines, and cooking fats by soft margarines, liquid cooking fats, and vegetable oils
- Replace unfiltered coffee by filtered coffee
- Limit the consumption of red meat, particularly processed meat
- Minimise consumption of sugar-containing beverages
- Don't drink alcohol or no more than one glass daily
- Limit salt intake to 6 grams daily
- Nutrient supplements are not needed, except for specific groups for which supplementation applies



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# Introduction

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Everyone knows that a good diet promotes good health. However, thorough scientific research is needed to establish just what constitutes a good diet. Much dietary research is intended to identify dietary factors that have positive and negative effects on health and to determine the extent of those effects or the levels of intake associated with them. More and more is being discovered about such matters all the time. In order to support the provision of public information and the development of dietary policy, the government considers it important that the Health Council periodically assesses the combined import and practical significance of the scientific findings (see Annex A). The product of that assessment is the *Dutch dietary guidelines*. The guidelines provide integrated evidence-based advice on the prevention of chronic disease. The previous edition of the guidelines was published in 2006.<sup>1</sup> The advisory report now before you sets out the new recommendations: *Dutch dietary guidelines 2015*. The report has been compiled by the Health Council's Committee on Dutch dietary guidelines 2015 (referred to in the remainder of this report as 'the Committee'; see Annex B).

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## 1.1 Shift in focus, from nutrients to foods and dietary patterns

This document is the outcome of the Health Council's third comprehensive assessment of what constitutes a good diet. The first version of the guidelines was published in 1986, having been compiled by the Food and Nutrition Council,

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which was incorporated into the Health Council in 1996.<sup>2</sup> The *Dutch dietary guidelines* originally provided advice expressed in terms of nutrients (fatty acids, sugars, dietary fibre, cholesterol, salt, alcohol, vitamins and minerals). Over time, attention has switched to advice expressed in terms of foods, such as vegetables, fruit and fish, and dietary patterns, such as the traditional Mediterranean diet, the Dietary Approaches to Stop Hypertension (DASH-) diet and a vegetarian diet. That realignment was made possible by the availability of more and more data about the associations among foods and chronic diseases. The 2006 guidelines included both nutrient-focused advice (saturated fats, trans fats, dietary fibre, salt, alcohol), and advice about over certain foods, including fish, whole-grain products and fruit and vegetables.<sup>1</sup>

This advisory report describes what is currently known about nutrients, foods and dietary patterns collectively. The guidelines contained in the report are formulated in terms of foods, but incorporate what is known about nutrients. Consequently, recommendations are made about a far greater number of foods than in the past. The report also contains advice about dietary patterns. Thus, the guidelines reflect not only recent scientific developments, but also to a greater extent the dietary choices open to consumers.

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## **1.2 Methodological advances**

In parallel to the shift in focus referred to above, recent decades have seen significant developments in the field of research methodology. The last ten years have been characterised by a considerable increase in ‘meta-analyses’: studies in which the findings of separate dietary studies are quantitatively combined. Meta-analyses increase the strength of the evidence provided by the available data. In addition, this advisory report includes a more detailed account of the underlying methodology than previous editions of the *Dutch dietary guidelines* (see Chapter 2).

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## **1.3 Purpose, domain and implications**

Unlike the 2006 advisory report, the updated guidelines include no specific recommendations about overweight and undesirable weight gain, or about physical activity.<sup>1</sup> In 2003, the Health Council produced an advisory report on overweight and obesity.<sup>3</sup> If asked to do so, the Council could update that report at any time.

The Dutch Recommendation for Healthy Physical Activity was added to the guidelines in the 2006 advisory report, because diet and exercise are very closely

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linked in the energy balance.<sup>1,4</sup> However, since that recommendation was defined, a great deal of additional data on the effects of physical activity have become available and new physical activity recommendations have been formulated in other countries.<sup>5-9</sup> In various respects, those recommendations are very similar to the Dutch recommendation, although some of them also cover muscle-strengthening exercises and sedentary behaviour. Next year, at the request of the Minister of Health, Welfare and Sport, the Health Council will prepare new recommendations for healthy physical activity in a separate advisory report.

In terms of their purpose, domain and implications, the latest *Dutch dietary guidelines* are essentially the same as the earlier editions. The guidelines are intended for use in the prevention of chronic diseases in the general population. They may also benefit certain groups of patients, albeit possibly in conjunction with disease-specific guidance (not provided in this report). Pregnant women, newborns and children up to two years old are also outside the scope of this advisory report. At the request of the Minister, the Health Council will prepare dietary guidelines for those groups in the next few years.

Most research data relate to effects observed in adults. The data available on food intake also relate to the general adult population. Consequently, like the previous editions, the latest *Dutch dietary guidelines* require translation into advice that people can apply in daily practice. The Netherlands Nutrition Centre will accordingly prepare guidance for various age groups and other population groups.

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## **1.4 Structure of this report**

Chapters 3 to 11 contain recommendations for the various product groups (fruit and vegetables, protein-rich products, carbohydrate and fibre-rich products, fat-rich products, etc.) and for dietary patterns. Linked to each chapter, there are separate background documents describing and assessing the scientific evidence on the basis of the methodology discussed in Chapter 2. Hence, the guidance contained in the chapters themselves is in summary form. Each chapter begins by setting out the conclusions of the background documents that have shaped the guidelines that follow. Next, guidelines for the product group in question are presented, expressed where appropriate in terms of desirable levels of consumption. The accompanying explanatory notes relate the guidelines to current patterns of consumption of products in the relevant group. In Chapter 12, the Committee concludes by considering the guidelines collectively.

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# Methodology

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When compiling the dietary guidelines, the Committee considered a large number of dietary factors and health effects. That required a careful selection and classification of the scientific literature. A detailed description of how the Committee went about that task is provided in a methodological background document.<sup>10</sup> This chapter summarises the content of that document. It also explains how the Committee has translated the conclusions from the background documents into guidelines.

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## 2.1 Dietary factors and measures of outcome

The Committee has investigated the relationships between nutrients, foods and dietary patterns and chronic disease risks. The measures of outcome considered by the Committee relate primarily to the 10 most important diseases in the Netherlands, in terms of mortality, years of potential life lost and burden of disease. Those diseases are coronary heart disease, stroke, heart failure, diabetes mellitus type 2, chronic obstructive pulmonary disease (COPD), breast cancer, colorectal cancer, lung cancer, dementia and cognitive decline, and depression.

The Committee has additionally looked at risk factors known to have a causal relationship with at least one chronic disease; such measures of outcome are referred to in this advisory report as ‘causal risk factors’. The risk factors in question – systolic blood pressure, LDL cholesterol and body weight – have been shown to have a causal relationship with at least one of the following chronic

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diseases: coronary heart disease, stroke, heart failure and diabetes mellitus type 2. No research data are available that indicate a causal relationship between any of those risk factors and COPD, colorectal cancer, breast cancer, lung cancer, dementia and cognitive decline or depression.<sup>10</sup>

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## 2.2 Types of research on which the guidelines are based

In the background documents, the Committee describes the findings of research in which food intake amongst people with no diagnosed chronic diseases was measured, because such data are more reliable than food intake data obtained from people with diagnosed diseases. In all cases, research of two types has been described and assessed: randomised controlled trials (RCTs) and prospective cohort studies. Both types of studies have advantages and disadvantages, and the two are complementary.

In RCTs, subjects are randomly divided into groups: a group that receives the treatment under investigation and a control group. Well-designed RCTs yield relatively unbiased results and provide the best evidence regarding the causality of an observed association. However, RCTs that use chronic disease as a measure of outcome are unusual, because they are expensive and difficult to carry out. The subjects in such trials are therefore generally people from groups with an elevated risk of chronic disease. However, drawbacks of RCTs are that high-risk groups are not representative of the population as a whole, and that the studies are usually short in duration. As well as describing the findings of RCTs that use disease as a measure of outcome, the Committee considers RCTs that use the causal risk factors blood pressure, LDL cholesterol and body weight as measures of outcome. In the various background documents, the Committee draws on the RCT findings to formulate conclusions regarding the *effects* of intake on causal risk factors and chronic disease and regarding the strength of the underlying evidence.

In a cohort study, the association between diet and chronic disease is investigated without intervention by the researcher. The advantage of such studies is that they can involve large groups of subjects and cover long periods of time. However, the evidence of causality provided by cohort studies is not as strong as that provided by RCTs, because the possibility of bias can never be excluded. In particular, it is uncertain whether adequate adjustment has been made for lifestyle variables (smoking, alcohol consumption, physical activity, etc.), which might have a confounding effect, i.e. might partially or entirely explain the observed association. Another drawback with cohort studies is that exposure is harder to quantify, introducing the risk of associations being under-

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# Types of research on which the guidelines are based

Different types of research are mutually complementary

## Cohort studies



Prospective observational research; no intervention in the research situation

- + Large study groups
- + Long study period
- Bias in results cannot be excluded
- Provide less strong evidence of causation

## RCTs



Randomized and controlled research in which the researcher intervenes in the research situation

- + Provide strong evidence of causation
- + Little scope for bias
- Short study period
- Selected populations

## Meta-analyses



Statistical analysis techniques make it possible to combine the results of separate studies in 'meta-analyses'. Combination increases the evidential strength of the data.

Legend:

- Cohort study into (associations with) disease
- Intervention research into (effects on) disease
- Intervention research into (effects on) causal risk factors

Figure 1 Types of research on which the guidelines are based.

or overestimated. To a degree, it is possible to compensate for the relative weakness of the evidence by taking account of the number of studies and the strength of the association when drawing conclusions (see the Bradford Hill criteria<sup>11</sup>). The results of cohort studies provide the basis for conclusions regarding *associations* between intake and chronic disease and the strength of the evidence for those associations.<sup>10</sup>

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## **2.3 Literature review**

In its literature review, the Committee considered publications from peer-reviewed journals in which data from several studies are combined. The combination of data results in greater statistical power and more accurate estimation of an association or effect than in the individual studies. It also enables more general conclusions to be reached, and thus increases the strength of the evidence. The literature review was, therefore, restricted to studies in which individual data were combined in pooled analyses, meta-analyses and systematic reviews. When selecting publications, factors considered by the Committee included the completeness of the summarised research, the way in which heterogeneity was analysed and the way in which potentially confounding variables were taken into account. In addition, as proof of principle, the Committee considered the results of individual RCTs that used disease incidence or mortality as a measure of outcome. The reason being that such research is unusual, but provides vital information about the causality of an observed association between a dietary factor and disease.<sup>10</sup> Where possible, the background documents identify studies sponsored by the food industry. The Committee believes that the question of sponsorship warrants attention and should be a standard feature of meta-analyses.

The literature review for the background documents included material published up to July 2014. The Committee considered no later scientific literature, except insofar as members were aware of more recent pooled analyses or meta-analyses that had reached conclusions inconsistent with those of earlier studies.

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## **2.4 Evidential strength of conclusions**

In the background documents, the Committee evaluates what is currently known regarding each dietary factor. The guidelines are based on conclusions that are supported by strong evidence:

- The dietary factor has been shown to influence a causal risk factor for disease or to influence a disease risk. The evidence comes from RCTs and the observed influence is referred to as an effect.
  - The dietary factor is associated with a disease risk. The evidence comes from cohort studies and the observed association is referred to as an association.
-

The strength of the evidence for a conclusion depends on various factors, including the availability and quality of the study and the strength of the association. Most of the evidentially strong conclusions drawn by the Committee relate to the risks of cardiovascular disease, diabetes and cancer. No strong associations were found concerning the risks of heart failure, COPD, dementia and depression, with the exception of the association between alcohol consumption and the risks of heart failure and dementia.

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## **2.5 Public consultation process**

In view of the size of the undertaking and the number of parties with an interest in the topic of diet, the President of the Health Council decided to make the draft versions of the background documents available to the public for comment. Feedback was invited particularly in relation to the following two questions: [1] Has the Committee overlooked any important publications, whose consideration was appropriate in the context of the methodology used? [2] Do the background documents contain any errors? Like the background documents themselves, the material feedback received and the Committee's responses to it were published on the Health Council website in Dutch.

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## **2.6 From conclusions to guidelines**

In essence, this advisory report is a translation of empirical data, as described in detail and assessed in the background documents, into recommendations aimed at promoting healthy behaviour: the guidelines. What should people do, and what should people avoid, in order to have a healthy diet? The process of translation has involved integration of the most relevant research results.

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### **2.6.1 *Integration of data***

The Committee wishes to emphasise that the conclusions contained in this advisory report are based on the data in the background documents and should be viewed in conjunction with those documents.

The Committee has integrated the available research results on a step-by-step basis. The first step was to consider how foods and nutrients could best be grouped with a view to providing consumers with useful information and advice. As a result of the way that foods and nutrients have been grouped, the background document findings regarding the exchange of protein, fat and carbohydrates<sup>12</sup> are not reflected in the guidelines. Consideration is given in turn

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to fruit and vegetables, protein-rich products, carbohydrate and fibre-rich products, fat-rich products and fish, drinks, salt and dietary patterns. Nutrient supplements are considered separately.

Next, for each food and associated nutrient(s), the Committee identified the RCT findings and/or cohort study findings contained in the relevant background document that provided the strongest evidence. In each case, the findings that were considered most important for guideline formulation were then tabulated. The tabulated findings were the strongest conclusion(s) regarding effects or associations with one or more chronic diseases. Below each table of significant findings, the Committee has also highlighted any adverse or protective associations with diseases other than those referred to in the table. Such findings played a supportive role in the formulation of the relevant guidelines. Each table additionally specifies the nature of the quantitative data: comparison between high and low intake levels (formulated as 'x versus y g/d'), dose-effect relationship (formulated as 'per x grams a day (g/d)'), or another possibility. The risk estimations in the tables are relative risks, expressed as percentages (rounded off to the nearest fifth percent in order to avoid giving a false impression of precision).

That is followed by a statement regarding the collective strength of the selected findings. Where results of meta-analyses of RCTs and cohort studies are mutually supportive, the Committee takes the view that it has been convincingly demonstrated that the food or nutrient in question has a positive or negative effect on the risk of chronic disease. The same conclusion is drawn where the evidence consists exclusively of findings from RCTs that used causal risk factors (blood pressure, LDL cholesterol or body weight) as measures of outcome. Where the results of cohort studies are supported by a separate RCT in which disease was used as the measure of outcome (proof of principle), the Committee again concludes that the effect has been convincingly demonstrated. Where only results of cohort studies are available, the Committee takes the view that an association is plausible. Hence, results may be considered convincing only if they relate to the effect of diet on cardiovascular diseases or diabetes, because those are the only effects regarding which data are available from RCTs that focused on effects on causal risk factors (blood pressure and LDL cholesterol for cardiovascular disease and body weight for diabetes). Because those causal risk factors are not predictive in relation to cancer, COPD, dementia or depression, associations among diet and those diseases can never be more than plausible.

The difference between 'convincing' and 'plausible' evidence is usually reflected in the wording of the associated guideline. Where an effect has been convincingly demonstrated, the associated guideline will usually contain a

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# Diet and chronic disease

The Committee evaluates prospective research into diet and disease

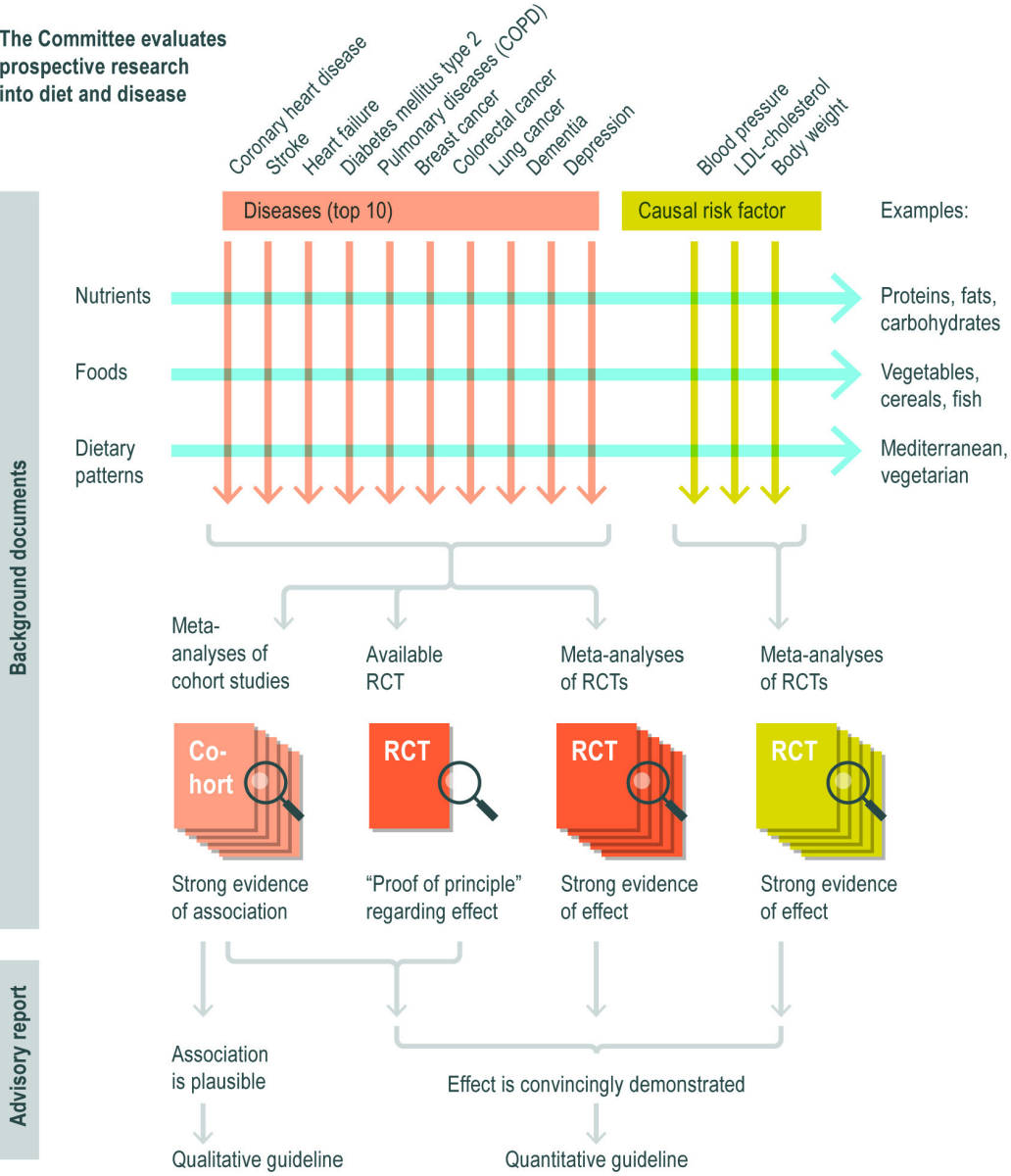


Figure 2 Methodology of the Committee: from scientific data to guideline.



quantitative recommendation (eat or drink so much); where an effect is merely 'plausible', no quantitative recommendation is normally made. The Committee's quantitative recommendations are based on consumption levels established in cohort studies. RCTs concerned with risk factors usually involve higher consumption levels in order to shed light on any causal relationships that may exist. The wording of a guideline also reflects the design of the studies on which that guideline is based. If the studies involved the replacement of one food by another, for example, the guideline is worded in similar terms.

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#### 2.6.2 *Link to eating habits*

The guidelines form the basis for public education. It is therefore important that the guidelines are formulated in a way that takes account of people's eating habits. People differ in their consumption patterns and think of their consumption mainly in terms of everyday units, such as spoons, glasses, cups, slices, pieces and portions. Each such unit represents an imprecise range of volumes or weights. In some cases, the scientific research considered by the Committee describes food consumption in similar everyday terms. In most cases, however, scientific intake data are expressed in terms of millilitres or grams. In the context of public information material, therefore, conversion into measures of consumption familiar to people in the Netherlands is necessary.

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## **Fruit and vegetables**

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In this chapter, the Committee sets out guidelines regarding fruit and vegetables. The chapter begins with a summary of the background document conclusions that underlie the guideline.<sup>13,14</sup> A guideline and explanation are then presented.

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### **3.1 Introduction**

In the research on which this advisory report is based, the definitions of ‘fruit’ and ‘vegetables’ are based on the nutritional value, taste and culinary uses of plant-based foods. So, for example, cucumbers, tomatoes and red peppers are regarded as vegetables, although botanically they are considered to be fruits. Green peas, French beans, sugar beans and broad beans are also treated as vegetables. Vegetable juices, however, do not fall within the definition of vegetables. Green leaf vegetables include foods such as spinach, chard, endives, lettuce and water cress.<sup>13</sup>

In the supporting research, the term ‘fruit’ covers not only fresh fruit, but also dried and canned fruit and sometimes also fruit juice. This chapter additionally deals with the findings regarding fruit fibre, including pectin.<sup>13,14</sup>







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### **3.2 Findings**

The RCT findings and cohort study findings upon which the guideline is based are summarised in Table 1.

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Table 1 Main background document conclusions supporting the guideline on fruit and vegetables

Fruit and vegetables	RCTs		Cohort studies	
	Blood pressure	LDL cholesterol	Coronary heart disease	Stroke
	+400 g/d			
Fruit and vegetables	 -3 mmHg			
			200 v. 125 g/d	per 200 g/d
Vegetables			 -10%	 -10%
			250 v. 50 g/d	per 200 g/d
Fruit			 -10%	 -30%
		+1 g/d		
Pectin		 -0.05 mmol/l		

 Beneficial effect      Beneficial association

The Committee concludes that it has been convincingly demonstrated that eating fruit and vegetables reduces the risk of coronary heart disease and stroke. That conclusion is based on the fact that the results of the RCTs and cohort studies concerned with fruit and vegetable consumption are mutually supportive. The findings in question concern the positive effect of the combination of fruit and vegetables on blood pressure and the positive effect of pectin from fruit on the LDL cholesterol, combined with an association of high consumption of fruit and vegetables with lower risk of coronary heart disease. Moreover, the beneficial effect of fruit and vegetables on blood pressure is consistent with the lower risk of stroke.<sup>13,14</sup>

In addition to the diseases referred to in the table, fruit and vegetable consumption has been observed to have an association of diabetes with certain types of cancer. Cohort studies have shown an association of the consumption of vegetables with a lower risk of colorectal cancer and of the consumption of green leaf vegetables with lower risks of diabetes and lung cancer. Consumption of fruit is associated with a lower risk of diabetes, colorectal cancer and lung cancer.<sup>13</sup>

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### 3.3 Guideline

Eat at least 200 grams of vegetables and at least 200 grams of fruit daily.

#### Explanation

In 2006, the Health Council recommended eating 150 to 200 grams of vegetables a day and 200 grams of fruit a day.<sup>1</sup> The data now available support revising the guideline to recommend the consumption of 200 grams of vegetables a day and 200 grams of fruit a day. The reason being that the daily consumption of 400 grams of fruit and vegetables reduces blood pressure, while the daily consumption of about 200 grams of vegetables or fruit is associated with lower risks of coronary heart disease and stroke. The stated consumption levels are also associated with lower risks of diabetes, colorectal cancer and lung cancer.<sup>13</sup> The average Dutch person eats about 125 grams of vegetables a day; the average Dutch man eats about 90 grams of fruit a day and the average Dutch woman about 120 grams.<sup>15</sup>



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## Protein-rich products

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In this chapter, the Committee sets out guidelines regarding protein-rich products. Within ‘protein-rich products’, the following subgroups are distinguished: meat, dairy products and eggs, legumes and nuts. Research findings regarding dietary cholesterol are also considered in this chapter. The chapter begins with a summary of the background document conclusions that underlie the guideline on each food.<sup>16-22</sup> A guideline and explanation are then presented.

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### 4.1 Meat

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#### 4.1.1 *Introduction*

As in the related scientific literature, this advisory report distinguishes between red meat and white meat, and between unprocessed and processed meat. Red meat is meat from mammals, such as cattle, calves, pigs, goats, sheep and horses. White meat is meat from poultry, such as chickens, turkeys, ducks and geese and from domestic rabbits.

The distinction between unprocessed and processed meat relates to the preservation method used. Meat is regarded as unprocessed if it is merely sliced or minced for domestic food preparation, possibly after being chilled or frozen. Meat is considered to be processed if it is smoked or salted for preservation or if preservatives such as nitrate or nitrite have been added. The term ‘processed

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meat’, therefore, covers all meat products, including ham, bacon, sausage and the small proportion of minced meat that is sold as a ready-to-eat cooked product. Most processed meat is red meat.<sup>16</sup>

### 4.1.2 Findings

The cohort study findings upon which the guidelines are based are summarised in the table below. No RCT findings are available regarding the effect of meat consumption on chronic diseases.

Table 2 Main background document conclusions supporting the guideline on meat

Meat	Cohort studies			
Exposure	Stroke	Diabetes	Colorectal cancer	Lung cancer
Total red meat	100-120 g/d       +10%	100 g/d       +15%	100 g/d       +10%	100-120 g/d       +20%
Unprocessed read meat	100-120 g/d       +10%	100 g/d       +15%		
Processed meat	50 g/d       +10%	50 g/d       +20%	50 g/d       +15%	

||||| Adverse association

The Committee concludes that a plausible association exists of the consumption of red meat and processed meat with higher risks of stroke, diabetes, colorectal cancer and lung cancer; the association is stronger where processed meat is concerned than where all red meat is concerned.<sup>16</sup>

### 4.1.3 Guideline

Limit the consumption of red meat, particularly processed meat.

#### Explanation

The Committee’s intention is to encourage a lower meat consumption, not to discourage all meat eating, since meat contains important nutrients. No

association has been found of overall meat consumption with elevated chronic disease risk.

The definitions of the various meat types used in scientific literature vary. In some cases, for example, the definition of processed meat covers both processed red meat and processed white meat, while in other cases only processed red meat is included. This can weaken the associations of the consumption of particular types of meat with chronic disease risk.

The average Dutch man eats roughly 105 grams of red meat and 55 grams of processed meat a day, while the average Dutch woman eats 65 grams of red meat and 35 grams of processed meat a day.<sup>15</sup>

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## **4.2 Dairy products and eggs**

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### **4.2.1 Dairy products**

#### **Introduction**

In the studies described, the term ‘dairy products’ covers products such as milk, yoghurt and cheese.<sup>17</sup> In the context of this advisory report, butter is excluded from the definition of dairy products, being included instead under fats and oils.<sup>23</sup>

#### **Findings**

The cohort study findings upon which the guidelines are based are summarised in Table 3. No RCT findings are available regarding the effect of dairy product consumption on chronic disease.

The Committee concludes that the consumption of dairy products is plausibly associated with a lower risk of colorectal cancer and the consumption of yoghurt with a lower risk of diabetes.<sup>17</sup> Where colorectal cancer is concerned, that conclusion is supported by the finding that the intake of calcium from supplements is associated with a lower disease risk.<sup>25</sup> The calcium intake from supplements associated with that effect was roughly half of that from dairy products.<sup>24,25</sup>

#### **Guideline**

Take a few portions of dairy produce daily, including milk or yogurt.

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Table 3 Main background document conclusions supporting the guideline on dairy products

Dairy products	Cohort studies	
	Diabetes	Colorectal cancer
		400 g/d
Total dairy products		-15%
		per 200 g/d
Milk		-10%
	≥60 v. <10 g/d	
Yoghurt	-15%	
		300 mg/d
Calcium supplements <sup>a</sup>		-10%

||||| Beneficial association

a. The associations observed in cohort studies regarding calcium supplements are reported here because the quantities involved are consistent with normal dairy product consumption. Hence, the findings regarding such supplements are relevant in relation to dairy products. In the Netherlands, 58 per cent of calcium intake derives from dairy products.<sup>24</sup>

### Explanation

In the Netherlands, the average dairy product consumption is around 390 grams a day amongst men and 325 grams a day amongst women.<sup>15</sup> The Committee sees no health-related reason to recommend a change to existing consumption patterns.

#### 4.2.2 Eggs

##### Introduction

Eggs are a protein source, but also a known source of dietary cholesterol (200 milligrams of cholesterol per egg). In the typical Dutch dietary pattern, other important sources of dietary cholesterol are meat and meat products, followed by

milk and milk products. Other contributors to dietary cholesterol intake are snacks, fish, and crustaceans and shellfish.<sup>18,19</sup>

## Explanation

In 2006, the Health Council made no specific recommendation regarding eggs or dietary cholesterol.<sup>1</sup> The Committee concludes that no further scientific data have become available, which would justify making such recommendations now. For every 100 milligrams of cholesterol from eggs that a person consumes per day, his or her LDL cholesterol level increases by 0.05 mmol per litre. However, that finding was observed in studies in which very large quantities of eggs were eaten. In cohort studies, no association has been observed between egg consumption and an elevated risk of coronary heart disease. It is also plausible that the consumption of seven or more eggs per week and a high cholesterol intake (400 milligrams a day) are associated with an elevated risk of diabetes.<sup>18,19</sup> Intake of cholesterol-rich products, such as eggs, fish, crustacean and molluscan shellfish, and certain types of offal remains low, however.<sup>26</sup>

The 2006 advisory report indicated that the above-average consumption of cholesterol-rich products was undesirable.<sup>1</sup> The Committee endorses that view and recommends monitoring consumption.

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## 4.3 Legumes

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### 4.3.1 Introduction

In the research on which this advisory report is based, the term ‘legumes’ covers beans (including soya beans), lentils, chick peas and split peas. Green peas, sugar beans, broad beans and French beans are regarded as vegetables and considered in the chapter on fruit and vegetables. In the context of this advisory report, peanuts are grouped with nuts.<sup>20,21</sup>

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### 4.3.2 Findings

The RCT findings upon which the guidelines are based are summarised in Table 4.

The Committee concludes that it has been convincingly demonstrated that the consumption of legumes reduces the LDL cholesterol concentration, which is known to be a causal risk factor for coronary heart disease.<sup>20</sup>

Table 4 Main background document conclusions supporting the guideline on legumes

Legumes	RCTs
Exposure	LDL cholesterol
	130 g/d
Legumes	-0.20 mmol/l
	40 g/d
Soya protein v. casein	-0.15 mmol/l

 Beneficial effect

### 4.3.3 Guideline

Eat legumes weekly.

#### Explanation

The available data show that the consumption of legumes leads to a reduction in LDL cholesterol.<sup>20</sup> However, the available cohort study data regarding the association of legume consumption with coronary heart disease are not sufficient to support a quantitative recommendation. In the Netherlands, half of the population rarely or never eats legumes. Ten per cent of the population eats at least 8 grams of legumes a day.<sup>15</sup>

## 4.4 Nuts

### 4.4.1 Introduction



In the context of this advisory report, the Committee uses the word ‘nuts’ to describe the products that consumers and nutrition researchers general consider to be nuts; the word is not used in its botanical sense. The most familiar types of nut are walnuts, almonds, hazel nuts, cashew nuts, pistachio nuts, macadamia nuts, Brazil nuts and pecan nuts. In the context of this advisory report, peanuts are also considered to be nuts.<sup>21</sup>



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### 4.4.2 Findings

The RCT findings and cohort study findings upon which the guidelines are based are summarised in the table below.

Table 5 Main background document conclusions supporting the guideline on nuts

Nuts	RCTs	Cohort studies
Exposure	LDL cholesterol	Coronary heart disease
	35 g/d <sup>a</sup>	15 g/d
Nuts	 -0.15 mmol/l	 -20%

 Beneficial effect     Beneficial association

a. Nuts or linseed

The Committee concludes that it has been convincingly demonstrated that the consumption of nuts reduces the risk of coronary heart disease. That conclusion is based on the fact that eating nuts reduces LDL cholesterol and is associated with a lower risk of coronary heart disease.<sup>21</sup> There has also been an RCT (the PREDIMED-RCT), in which the effect of consuming 30 grams of nuts a day on the risk of cardiovascular disease amongst patients at high risk of cardiovascular disease was studied and a protective effect observed.<sup>27</sup>

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### 4.4.3 Guideline

Eat at least 15 grams of unsalted nuts daily.

#### Explanation

The available data show that the consumption of roughly 15 grams of nuts a day leads to a reduction in the risk of coronary heart disease.<sup>21</sup> In most RCTs, including the PREDIMED-RCT, the nuts consumed by the intervention group were unsalted; therefore the guideline relates to unsalted nuts. In the Netherlands half of the population rarely or never eats nuts. Ten per cent of women eat 10 grams of nuts a day, while 10 per cent of men eat 15 grams a day.<sup>15</sup>

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## **Carbohydrate and fibre-rich products**

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In this chapter, the Committee sets out guidelines regarding carbohydrate and fibre-rich products. The chapter begins with a summary of the background document conclusions that underlie the guideline.<sup>14,28-30</sup> A guideline and explanation are then presented.

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### **5.1 Introduction**

The cereals eaten in the Netherlands include wheat, rice, oats, rye, barley, spelt and maize. The food group ‘cereal products’ is very broad. It includes bread, crackers and crispbreads, puff pastry, batter and other coatings, and flour. In the Netherlands, bread may be marketed as ‘wholemeal’ only if all the flour from which it is made is whole-grain flour. However, there are no controls on the use of the term ‘whole-grain’ in relation to other products. In research into possible associations of diet with health, products are often regarded as whole-grain if they contain at least 25 per cent whole-grain flour.<sup>28</sup>

Dietary fibre is the collective term applied to a group of substances that are very varied in their nature and physiological function. At the present time, there is no international consensus regarding a definition of dietary fibre, and the research considered in the context of this advisory report consequently relates to various types of fibre. The fibre intake investigated in cohort studies largely involves fibres from natural sources, such as whole-grain products, fruit and vegetables, and legumes. Beta-glucan is a type of fibre found in large quantities

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in oats and barley. The glycaemic index is a measure of the speed at which the glucose concentration in the blood rises after eating carbohydrates and thus reflects the rate of digestion of the carbohydrates in question. The index is determined not only by the amount and type of the carbohydrates involved, but also by factors such as the amount of fibre. However, it remains unclear whether research into the relationship between glycaemic index and chronic diseases adds to the findings regarding the effects of carbohydrates and fibre. Accordingly, no further consideration is given to findings regarding the glycaemic index in this advisory report.<sup>30</sup>

Potatoes are a source of starch, fibre, potassium and vitamin C. They are not considered in this chapter, because insufficient scientific data are available regarding the health effects of eating potatoes.<sup>29</sup>

## 5.2 Findings

The RCT findings and cohort study findings upon which the guideline is based are summarised in the table below.

Table 6 Main background document conclusions supporting the guideline on whole-grain products

Whole-grain products		RCTs		Cohort studies	
Exposure		Blood pressure	LDL cholesterol	Coronary heart disease	Stroke
Whole-grain products				90 g/d -25%	
Oat products			30-60 g/d -0.20 mmol/l		
Beta-glucan			+1 g/d -0.05 mmol/l		
Cereal fibre				per 7 g/d -15%	
Total fibre	+10 g/d -1 to -2 mmHg <sup>a</sup>			per 7 g/d -10%	High v. low -15%

Beneficial effect      Beneficial association

a. Diastolic blood pressure

The Committee concludes that it has been convincingly demonstrated that:

- the consumption of whole-grain products reduces the risk of coronary heart disease; and
- the intake of dietary fibre reduces the risk of stroke.

Those conclusions are based on the fact that the results from RCTs and from cohort studies concerning whole-grain products and fibre are mutually supportive. Where whole-grain products are concerned, the key findings are that fibre has a positive effect on blood pressure and that, in cohort studies, fibre is associated with lower risks of stroke and coronary heart disease. Where oats and beta-glucan are concerned, a reduction in LDL cholesterol has been demonstrated and an association has been observed of the consumption of whole-grain products with a lower risk of coronary heart disease.

In addition to the diseases referred to in the table, whole-grain products and fibres are associated with diabetes and colorectal cancer: cohort studies have shown that whole-grain products, cereal fibre and total fibre are associated with lower risks of those diseases.<sup>14,28,30</sup>

The Committee additionally concludes that it has been convincingly demonstrated that replacing sugars (mono- and disaccharides) with starch representing 15 per cent of energy intake reduces LDL cholesterol (a causal risk factor for coronary heart disease) by 0.25 mmol/l.<sup>30</sup>

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### **5.3 Guideline**

Replace refined cereal products by whole-grain products. Eat at least 90 grams of brown bread, wholemeal bread or other whole-grain products daily.

#### **Explanation**

The 2006 guidelines recommended that people should eat plenty of whole-grain products. On the basis of the data now available, it is possible to express that advice in quantitative terms. The Committee additionally emphasises the importance of replacing refined cereal products with unrefined alternatives.

Replacing sugars with starch leads to a reduction in LDL cholesterol.<sup>30</sup> Roughly half of the carbohydrates that adults consume come from sugars.<sup>15</sup> Starch is a healthier source of carbohydrates than sugars. The Committee has nevertheless refrained from giving advice regarding sugars and starches because this advisory report is intended to provide guidelines relating to foods, rather than nutrients. Furthermore, the replacement of sugar-rich products with starch-

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rich products would not be straightforward because such products fall under various product categories.

In the Netherlands, the average consumption of unrefined cereal products (brown bread, wholemeal bread and other whole-grain products) is roughly 90 grams a day for women and 115 grams a day for men. The corresponding figures for refined cereal products (white bread, pasta, etc.) are roughly 80 grams a day for women and 110 grams a day for men.<sup>15</sup>

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## **Fat-rich products and fish**

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In this chapter, the Committee sets out guidelines regarding fats, oils and fish. The chapter begins with a summary of the background document conclusions that underlie the guidelines.<sup>23,31-35</sup> Guidelines and explanation are then presented.

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### **6.1 Fats and oils**

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#### **6.1.1 Introduction**

Fat-rich products, such as butter, margarine and oil contain combinations of fatty acids.<sup>23</sup> Until the nineties, the typical Dutch diet included a lot of trans fatty acids, but the proportion has since been reduced to less than 1 per cent, because trans fatty acids increase the risk of coronary heart disease.<sup>33,36</sup> Trans fatty acids are still found in certain bakery products (such as biscuits and cake) and in animal products (such as meat and dairy products).

Butter contains more saturated fatty acids than soft margarine or oil. Olive oil contains mainly cis-monounsaturated fatty acids. Sunflower oil contains a lot of cis-unsaturated fatty acids, two thirds of which is polyunsaturated. Generally speaking, vegetable fats and oils contain little saturated fatty acids and a lot of unsaturated fatty acids. The exceptions are palm oil, coconut oil and cocoa butter, which contain a lot of saturated fatty acids.<sup>23</sup>



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## 6.1.2 Findings

The RCT findings and cohort study findings upon which the guidelines are based are summarised in the table below.

Table 7 Main background document conclusions supporting the guideline on fat-rich products

Fat-rich products	RCTs		Cohort studies
Exposure	LDL cholesterol	Coronary heart disease	Coronary heart disease
Soft margarines v. butter	10% of energy <sup>a</sup> -0.20 mmol/l		
Cis-monounsaturated fatty acids v. saturated fatty acids	1% of energy -0.04 mmol/l		
Cis-polyunsaturated fatty acids v. saturated fatty acids	1% of energy -0.05 mmol/l	10% of energy -15%	5% of energy -10%

 Beneficial effect    
  Beneficial association

a. 10% of energy is 10 per cent of total daily energy intake

The Committee concludes that it has been convincingly demonstrated that foods rich in cis-unsaturated fatty acids, such as soft margarines or vegetable oils, reduce the risk of coronary heart disease relative to foods rich in saturated fatty acids, such as butter and hard margarines.

That conclusion is based on the following findings. RCTs have shown that a reduction in LDL cholesterol is achieved by replacing butter with soft margarine and replacing saturated fatty acids with (mono- or poly-)unsaturated fatty acids. Replacing saturated fatty acids with polyunsaturated fatty acids also reduces the risk of coronary heart disease. That finding has been confirmed by cohort studies.<sup>23,31</sup> In addition, the effect of consuming 50 millilitres of olive oil a day on the risk of cardiovascular diseases has been investigated in an RCT involving

patients with a high risk of such diseases. The PREDIMED-RCT in question detected a protective effect.<sup>27</sup>

The Committee additionally concludes that it has been convincingly demonstrated that trans fatty acids increase the risk of coronary heart disease. RCTs have shown that replacing unsaturated fatty acids with trans fatty acids representing 1 per cent of energy intake increases LDL cholesterol by 0.04 mmol per litre. Cohort studies have also shown that trans fatty acids are associated with an elevated risk of coronary heart disease (20 per cent higher risk per 2 energy intake percentage points of trans fatty acids).<sup>31,33</sup>

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### **6.1.3**     *Guideline*

Replace butter, hard margarines, and cooking fats by soft margarines, liquid cooking fats, and vegetable oils.

#### **Explanation**

The 2006 guidelines recommended that less than 10 per cent of energy intake should be in the form saturated fatty acids.<sup>1</sup> Because the evidence for the relevant health effect is based on the replacement of saturated fatty acids by cis-unsaturated fatty acids, the Committee has formulated a new guideline expressed in terms of replacement.<sup>31</sup> In the past, research tended to focus on replacing saturated fat with the cis-polyunsaturated acid linoleic acid.<sup>1</sup> However, data are now available regarding cis-monounsaturated fatty acids as well.<sup>31</sup>

The 2006 guidelines recommended that less than 1 per cent of energy intake should come from trans-monounsaturated fatty acids.<sup>1</sup> Current intake levels comply with that recommendation, partly because the trans fatty acid content of many products has been reduced considerably in recent years.<sup>15</sup> With present-day intake levels in mind, the Committee sees no need for a separate guideline on trans fatty acids. It is nevertheless important that trans fatty acid intake remains low and is therefore monitored.

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## **6.2**     **Fish and fatty acids from fish**

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### **6.2.1**     *Introduction*

Fish is an important source of the very-long-chain polyunsaturated fatty acids eicosapentaenoic acid and docosahexaenoic acid (the fish fatty acids EPA and DHA) and essential nutrients such as vitamin D, iodine and selenium. Oily fish

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species include herring, salmon and mackerel. Non-oily fish species include pollock, cod, plaice, and the Pangas catfish.<sup>34,35</sup>

6.2.2 Findings

The RCT findings and cohort study findings upon which the guidelines are based are summarised in the table below.

Table 8 Main background document conclusions supporting the guideline on fish

Fish	RCTs	Cohort studies
Exposure	Fatal coronary heart disease	Fatal coronary heart disease
		≥ 1/wk v. < 1/mth
Fish		-15% <sup>a</sup>
	1 g/d	
Fatty acids from fish	■ -10% <sup>b</sup>	

■ Beneficial effect    ||||| Beneficial association

a. Eating 1 portion of fish a week is sufficient to obtain the maximum health gain.  
b. In cardiac patients and high-risk groups.

The Committee concludes that it has been convincingly demonstrated that eating fish reduces the risk of fatal coronary heart disease. The basis for that conclusion is that fatty acids from fish reduce the risk of fatal coronary heart disease, while the consumption of one portion of fish a week is associated with a lower risk of fatal coronary heart disease.<sup>34,35</sup> The effect of eating two portions of oily fish a week on the risk of fatal coronary heart disease has also been investigated in an RCT involving cardiac patients. The DART trial, as it was known, detected a protective effect.<sup>37</sup>

In addition to the diseases referred to in the table, the consumption of one portion of fish a week was found to be associated with a lower risk of stroke in cohort studies.<sup>34</sup>

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### 6.2.3 *Guideline*

Eat one serving of fish weekly, preferably oily fish.

#### Explanation

The 2006 guidelines recommended eating fish twice a week, including one portion of oily fish.<sup>1</sup> Additional cohort study data have since become available, showing that the lower risk of fatal coronary heart disease associated with eating a single portion of fish a week is just as great as that associated with higher consumption levels.<sup>34</sup> The Committee has accordingly adjusted the advice. Non-fatal coronary heart disease can be influenced only by a level of consumption that would be abnormally high for the Netherlands.<sup>34</sup>

Oily fish should be preferred to non-oily fish, because oily fish contains more of the desirable fatty acids than non-oily fish. If various types of fish are eaten, the consumption of one portion a week would not involve any health risk from the toxic substances that may accumulate in fish.<sup>38</sup>

Half of the Dutch population currently eats two to three portions of fish a month.<sup>15</sup>



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# Drinks

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In this chapter, the Committee sets out guidelines regarding tea, coffee and sugar-containing beverages. The chapter begins with a summary of the background document conclusions that underlie the guideline.<sup>13,39-42</sup> A guideline for each type of drink, and explanation are then presented.

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## 7.1 Tea

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### 7.1.1 Introduction

In the context of this advisory report, the term ‘tea’ covers green tea and black tea. Green tea comes from the tea plant, but unlike black tea it has not undergone oxidation. Herbal teas and for example rooibos are outside the scope of this report.<sup>41</sup>

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### 7.1.2 Findings



The RCT findings and cohort study findings upon which the guidelines are based are summarised in Table 9.

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Table 9 Main background document conclusions supporting the guideline on tea

Tea	RCTs	Cohort studies
Exposure	Blood pressure	Stroke
	3-5 cups/d	3-4 cups/d
Tea <sup>a</sup>	 -2 mmHg	 -10%

 Beneficial effect      Beneficial association

a. Black tea and green tea.

The Committee concludes that it has been convincingly demonstrated that the consumption of tea reduces the risk of stroke. That conclusion is based on the fact that RCTs show that three cups of green tea or five cups of black tea a day reduce blood pressure, while the consumption of tea is associated with a lower risk of stroke in cohort studies. In addition, the consumption of black tea and the consumption of green tea are plausibly associated with a lower risk of diabetes.<sup>41</sup>

### 7.1.3 Guideline

Drink three cups of tea daily.

#### Explanation

Three to four cups of green tea or black tea a day reduce the risk of stroke.<sup>41</sup> In the Netherlands, men drink on average 200 millilitres and women 400 millilitres of tea a day.<sup>15</sup>

## 7.2 Coffee

### 7.2.1 Introduction

The way that coffee is prepared – whether it is filtered or not – makes a difference to its influence on health. That is because filtering can remove the cholesterol-raising substances cafestol and kahweol from coffee. In the context of this advisory report, ‘filtered coffee’ covers coffee made using a filter

machine, coffee made using coffee pods, instant coffee and vending-machine coffee made using liquid coffee concentrate. Unfiltered coffee includes boiled coffee, cafetiere coffee, Greek coffee and Turkish coffee. Espresso and coffee from vending machines that use fresh coffee may count either as filtered or as unfiltered, depending on the type of machine, the type and amount of coffee and the type of filter used.<sup>40</sup>

### 7.2.2 Findings

The RCT findings upon which the guideline are based are summarised in the table below.

Table 10 Main background document conclusion supporting the guideline on coffee

Coffee	RCTs	
Exposure	LDL cholesterol	
	5-6 cups/d	
Unfiltered v. filtered coffee		+0.30 mmol/l

Adverse effect

The Committee concludes that it has been convincingly demonstrated in RCTs that unfiltered coffee increases LDL cholesterol, which is known to be a causal risk factor for coronary heart disease. Coffee consumption is associated with lower risks of coronary heart disease, stroke and diabetes in cohort studies, which relate predominantly to filtered coffee consumption.<sup>40</sup>

### 7.2.3 Guideline

Replace unfiltered coffee by filtered coffee.

#### Explanation

Because unfiltered coffee increases LDL cholesterol, filtered coffee is preferable.<sup>40</sup> In the Netherlands, the average women drinks 400 millilitres and the average man 550 millilitres of coffee a day.<sup>15</sup> That corresponds roughly to the

level of consumption at which favourable associations have been observed of filtered coffee with health (lower risks of coronary heart disease, stroke and diabetes).<sup>40</sup>

### 7.3 Sugar-containing beverages





#### 7.3.1 Introduction



In the context of this advisory report, the term ‘sugar-containing beverages’ covers both drinks with added sugar and fruit juice, because the sugar-content of the two is comparable. ‘Drinks with added sugar’ are cold drinks made by the addition of sucrose, fructose or glucose. Examples include fruit juice drinks and ‘nectars’, carbonated drinks (‘pops’ and ‘sodas’), ice tea, vitamin-fortified water and sports drinks made by the addition of sugar.<sup>13,39</sup>

#### 7.3.2 Findings

The RCT findings and cohort study findings upon which the guidelines are based are summarised in the table below.

Table 11 Main background document conclusions supporting the guideline on sugar-containing beverages

Sugar-containing beverages	RCTs	Cohort studies
Exposure	Body weight	Diabetes
	1 l/d	per 330 ml/d
Drinks with added sugar	 +1 kg <sup>a</sup>	 +20%
	250-500 ml/d	
	 +1 kg <sup>b</sup>	
	+17 energy%	
Sugars from sugar-containing beverages	 +1 kg <sup>c</sup>	

 Adverse effect       Adverse association

a. In adults, within a month.

b. In children and adolescents; observation concerns an increase in body mass index equating to roughly 1 kilogram of body weight within six to eighteen months.

c. Within 2.5 months.

The Committee concludes that it has been convincingly demonstrated that the consumption of drinks with added sugar increases the risk of diabetes. That conclusion is based on the fact that RCTs have shown that drinks with added sugar increase body weight, while cohort studies indicate an association of the consumption of drinks with added sugar with a higher risk of diabetes.<sup>39</sup> The Committee considers that those findings are also valid for other sugar-containing beverages, such as fruit juice and sweetened milk drinks.

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### 7.3.3 *Guideline*

Minimise consumption of sugar-containing beverages.

#### Explanation

Consumption of one to two glasses of sugar-containing beverages a day leads to a higher risk of diabetes. Good alternatives are water and unsweetened tea and filtered coffee. There are no data indicating that the consumption of water has any effect on or association with disease.<sup>42</sup> Because water contains no energy or undesirable substances, the Committee considers water to be a good alternative to sugar-containing beverages.<sup>39</sup>

In the Netherlands, the average child consumes about three quarters of a litre of sugar-containing beverages a day, while the average woman consumes a quarter of a litre and the average man a third of a litre <sup>15</sup>.



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# Alcoholic drinks

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In this chapter, the Committee sets out a guideline for alcoholic drinks. The chapter begins with a summary of the background document conclusions that underlie the guideline.<sup>43,44</sup> A guideline and explanation are then presented.

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## 8.1 Introduction

In the Netherlands, a standard glass of alcoholic drink is defined as containing roughly 10 grams of alcohol. That is roughly the amount of alcohol in 250 millilitres of beer (5 per cent alcohol), 100 millilitres of wine (12 per cent alcohol) or 35 millilitres of spirits (35 per cent alcohol).<sup>\*43,44</sup>

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## 8.2 Findings

The RCT findings and cohort study findings upon which the guideline is based are summarised below in three tables, relating to (respectively) high alcohol consumption (more than 15 grams a day), moderate alcohol consumption (up to 15 grams a day) and mortality from any cause. Findings relating to very high alcohol consumption are not considered in this context.

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\* 10 grams of alcohol is the equivalent of roughly 13 millilitres of alcohol.

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Table 12 Main background document conclusions concerning alcohol consumption of more than 15 grams a day, relative to no alcohol consumption

High alcohol consumption	RCTs			Cohort studies	
	Blood pressure		Coronary heart disease		Stroke
Beer <sup>a</sup>					
Wine <sup>a</sup>					
Spirits <sup>a</sup>					
Alcohol	per -10% -1,0 mmHg				≥30 g/d +35% <sup>b</sup>
Binge drinking <sup>c</sup>				+45%	



 Beneficial effect
  Adverse association

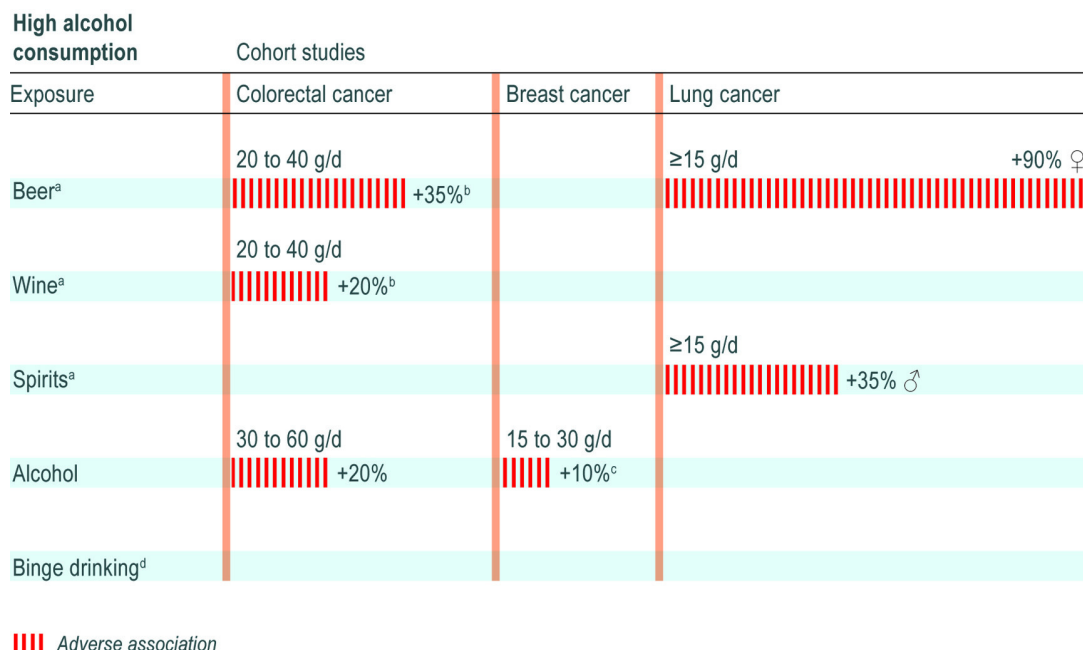
Table 12 continues on next page

a. The quantities relate to the amount of alcohol in the drink.

b. Relate to the risk relative to people whose alcohol consumption is more than 0, but less than 15 grams a day.

c. Different definitions of binge drinking are used in the cohort studies. The Committee considers binge drinking to be 60 grams of alcohol or more per occasion.

Table 12 continued Main background document conclusions concerning alcohol consumption of more than 15 grams a day, relative to no alcohol consumption



a. The quantities relate to the amount of alcohol in the drink.

b. Relates to the risk relative to people whose alcohol consumption is more than 0, but less than 3 grams a day.

c. Relates to the risk relative to people whose alcohol consumption is more than 0, but less than 5 grams a day.

d. Different definitions of binge drinking are used in the cohort studies. The Committee considers binge drinking to be 60 grams of alcohol or more per occasion.

The Committee concludes that it has been convincingly demonstrated that high alcohol consumption increases the risk of stroke and that binge drinking (60 grams or more per occasion) increases the risk of coronary heart disease. That conclusion is based on the fact that RCTs have shown that reducing high alcohol intake reduces blood pressure, while cohort studies have found that high alcohol consumption is associated with an elevated risk of stroke and that binge drinking increases the risk of coronary heart disease. In addition, high alcohol consumption is associated with an elevated risk of breast cancer and colorectal cancer and a high intake of beer and spirits is associated with lung cancer.<sup>43,44</sup>



Table 13 Main background document conclusions concerning moderate alcohol consumption (1 to 15 grams a day), relative to no alcohol consumption

Moderate alcohol consumption		Cohort studies		
Exposure		Cardiovascular disease	Diabetes	Breast cancer
Beer <sup>a</sup>			>0 g/d       +15% ♂	
Wine <sup>a</sup>				
Spirits <sup>a</sup>			>0 to 12 g/d       +10% ♀	
Alcohol	>2 to 15 g/d       -20%		>0 to 24 ♀ and 6 to 48 ♂ g/d       -20%	>5 to 15 g/d       +5% <sup>b</sup>

||||| Beneficial association                      ||||| Adverse association                      Table 13 continues on next page

a. The quantities relate to the amount of alcohol in the drink.  
b. Relates to the risk relative to people whose alcohol consumption is more than 0, but less than 5 grams a day.

Moderate alcohol consumption (up to 15 grams a day) is plausibly associated with a lower risk of cardiovascular disease, diabetes and dementia, but with a higher risk of breast cancer. However, moderate consumption of beer by men and spirits by women is associated with a higher risk of diabetes. Moderate consumption of beer and wine is associated with a lower risk of lung cancer.<sup>43,44</sup>

As the information above illustrates, the findings regarding moderate alcohol consumption include both favourable and unfavourable associations between alcohol consumption and chronic diseases risk, while higher consumption levels are associated with higher risks of chronic diseases.

Table 13 continued Main background document conclusions concerning moderate alcohol consumption (1 to 15 grams a day), relative to no alcohol consumption

Moderate alcohol consumption		Cohort studies	
Exposure		Lung cancer	Dementia
Beer <sup>a</sup>		>0 to 5 g/d ♀ and 5 to 15 g/d ♂ -20%	
Wine <sup>a</sup>		>0 to 12 g/d -25%	
Spirits <sup>a</sup>			
Alcohol			>0 to 30 g/d -25%

Beneficial association

a. The quantities relate to the amount of alcohol in the drink.

Table 14 shows that both moderate and high consumption of beer is associated with a higher all-cause mortality. High consumption of wine has a similar association. Low consumption of wine is associated with lower mortality. There is an association between drinking one glass of alcohol every two days and a 15 per cent lower risk of mortality.

8.3 Guideline

Don't drink alcohol or drink no more than one glass daily.

Explanation

The 2006 guidelines recommended that women drink no more than one standard glass of alcohol a day and men no more than two glasses.<sup>1</sup> The data now available indicate that men should be advised to drink less than two glasses a day.

Table 14 Main background document conclusions concerning associations with all-cause mortality.

**Alcohol and mortality** Cohort studies



a. The quantities in this table relate to the amount of alcohol in the drink.  
b. Relates to the risk relative to people whose alcohol consumption is more than 0, but less than 3 grams a day.  
c. Relates to the risk relative to people who consume no alcohol.

Both favourable and unfavourable associations have been observed between moderate alcohol consumption and health risk. On the one hand, moderate wine consumption is associated with a lower risk of cardiovascular diseases. That observation should not be interpreted, however, as indicating that people who do not drink alcohol should start doing so for health reasons. In women, moderate alcohol intake is associated with an elevated risk of breast cancer. Where unfavourable associations are concerned, differences are sometimes observed between men and women. In men moderate beer drinking is associated with a higher risk of diabetes, while in women moderate drinking of spirits has a similar association. Some differences between men and women have also been found in terms of the levels of alcohol consumption at which associations are observed. That is the case, for example, with the levels of beer consumption and wine consumption that have associations with higher mortality from any cause. The new guideline does not distinguish between different types of alcoholic drink,

because the possibility of confounding in the research findings cannot be excluded.

Drinking more than one standard glass of alcohol a day does not deliver any additional health gains and is undesirable because of the increased risks of stroke, breast cancer, colorectal cancer and lung cancer associated with higher consumption. Binge drinking is harmful.<sup>43,44</sup> As well as the chronic disease risks referred to above, various other risks are increased by alcohol consumption, including the risks of accident, addiction, psychosocial problems, cirrhosis of the liver and head and neck cancers.<sup>45,46</sup> The advice to women who are trying to conceive, are pregnant or are breast feeding is not to drink alcohol at all.<sup>47</sup>

In the Netherlands, roughly 27 per cent of adult men and 49 per cent of adult women drink no alcohol. A further 28 per cent of men and 31 per cent of women drink an average of up to one standard glass of alcohol a day; 45 per cent of men and 20 per cent of women drink more.<sup>26</sup> Some 14 per cent of men drink more than six glasses of alcohol on a single day at least once a week; 7 per cent of women drink more than four glasses of alcohol on a single day at least once a week.<sup>48</sup>



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# Salt

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In this chapter, the Committee sets out a guideline on salt. The chapter begins with a summary of the background document conclusions that underlie the guideline.<sup>49,50</sup> A guideline and explanation are then presented.

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## 9.1 Sodium

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### 9.1.1 *Introduction*

Salt (sodium chloride) is found in a lot of foods and is often added to foods. Domestic salt use (cooking salt + table salt) is believed to account for roughly 20 per cent of sodium intake, while the remaining 80 per cent of salt consumed comes from food products, including bread, sausage, cheese, savoury snacks and ready meals. One gram of sodium equates to roughly 2.5 grams of salt.<sup>49</sup>

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### 9.1.2 *Findings*

The RCT findings upon which the guidelines are based are summarised in Table 15.

Table 15 Main background document conclusions supporting the guideline on salt

Salt	RCTs
Exposure	Blood pressure
	-2 g/d
Sodium	-2 mmHg <sup>a</sup>
	-2 g/d
	-5 mmHg <sup>b</sup>

 Beneficial effect

a. People with normal blood pressure.  
b. People with high blood pressure.

The Committee concludes that it has been convincingly demonstrated that reducing sodium intake reduces blood pressure, which is a causal risk factor for cardiovascular disease. The protective effect of reducing sodium intake is greater in people with high blood pressure than in people with normal blood pressure.<sup>49</sup>

### 9.1.3 Guideline

Limit salt intake to 6 grams daily.

#### Explanation

The 2006 guidelines recommended that salt intake should be limited to 6 grams a day, because that was regarded as a realistic target at the time. The additional point was made that further limitation of salt intake would deliver greater health gains.<sup>1</sup> The Committee concludes that the new scientific data are not sufficient for further specification of the guideline. Too few suitable cohort studies have examined the association of sodium intake with the risk of cardiovascular diseases.<sup>49</sup> The Committee has, therefore, decided to reiterate the recommendation given in 2006.<sup>1</sup> In reaching that decision, the Committee has taken account of the fact that salt intake has remained high in the Netherlands since 2006: the average man consumes 10 grams of salt a day and the average woman 7.5 grams.<sup>26,49</sup>

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## **9.2 Potassium**

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### **9.2.1 Introduction**

In addition to sodium, a lot of foods contain other minerals, such as potassium. Potassium is found in both food from animals and plant-based foods. Potassium-rich products include vegetables, fruit, potatoes, whole-grain products, meat and dairy products.<sup>50</sup>

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### **9.2.2 Findings**

The Committee concludes that it has been convincingly demonstrated that a high potassium intake reduces the risk of stroke. That conclusion is based on the fact that potassium reduces blood pressure in people with hypertension (high blood pressure) and is associated with a lower risk of stroke.<sup>50</sup>

Sodium and potassium metabolism are closely related. Reducing sodium intake and increasing potassium intake has been shown to have a positive effect on health in people with high blood pressure. For such people, it is therefore important not only to reduce sodium intake but also to increase potassium intake.<sup>49,50</sup> In the Netherlands, the average daily potassium intake is about 3 grams in women and 4 grams in men. Following the guidelines on fruit and vegetables, legumes, nuts and whole-grain products would increase the intake of potassium. The Committee does not therefore believe that further potassium supplementation is advisable for the general population or that a guideline on potassium is desirable.<sup>15,26</sup>





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# Nutrient supplements

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In this chapter, the Committee sets out a guideline for nutrient supplements. The chapter begins with a summary of the background document conclusions that underlie the guideline.<sup>25</sup> A guideline and explanation are then presented.

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## 10.1 Introduction

Nutrient supplements are vitamins and minerals consumed in addition to ordinary foods. Such supplements are available in the form of powders, pills, drops and effervescent tablets. This chapter is concerned mainly with supplements that provide doses higher than those associated with a habitual dietary pattern.<sup>25</sup>

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## 10.2 Findings



The RCT findings upon which the guidelines are based are summarised in Table 16.

The Committee concludes that it has been convincingly demonstrated that beta-carotene suppletion increases the risk of lung cancer for smokers and asbestos workers. It has also been convincingly demonstrated that vitamin D and calcium suppletion reduces the risk of fractures in the elderly and post-menopausal women.

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Table 16 Main background document conclusions supporting the guideline on supplements

Dietary patterns	RCTs		
Exposure	Lung cancer	Fractures (total)	Hip fractures
	20-30 mg/d <sup>a</sup>		
Beta-carotene supplement	 +20%	10-20 µg/d vitamine D and 1 g/d calcium	10-20 µg/d vitamine D and 1 g/d calcium
Vitamin D with calcium supplement		 -10% <sup>b</sup>	 -15% <sup>b</sup>

 Beneficial effect     Adverse effect

a. In smokers and asbestos workers.

b. Elderly people, particularly post-menopausal women.

The Committee also concludes that there is insufficient evidence that vitamin C supplements have any effect on the risk of cardiovascular diseases.<sup>25</sup> Vitamin C supplementation does reduce blood pressure, but an RCT in which subjects consumed 500 mg of vitamin C a day from supplements yielded no evidence of a beneficial effect on the risk of cardiovascular diseases (the Physicians' Health Study II).<sup>25,51</sup>

## 10.3 Guideline

Nutrient supplements are not needed, except for specific groups for which supplementation applies.

### Explanation

In 2009, the Health Council concluded that a varied dietary pattern would normally provide sufficient vitamins and minerals. For the general population, nutrient supplementation up to the safe limit delivers no health gains (see inset text), while prolonged supplementation above the safe limit can actually be harmful. The Council, therefore, advised against the consumption of nutrient supplements containing micronutrients in doses exceeding the recommended daily allowance.<sup>52</sup> Data that have become available since 2009 confirm that high levels of supplementation are potentially harmful. For example, a high dose of beta-carotene increases the risk of lung cancer in smokers and asbestos workers.<sup>25</sup>

### **The significance of nutrient supplements for the risk of chronic disease<sup>25</sup>**

Nutrient supplements are often presumed to have health benefits. However, that is not always the case, as demonstrated by the following RCT findings, which convincingly demonstrate that:

- Beta-carotene supplements do not reduce the risk of cardiovascular disease, breast cancer or colorectal cancer
- Vitamin E-supplements do not reduce the risk of cardiovascular disease, colorectal cancer or lung cancer
- Folic acid (whether combined with vitamins B6 and B12 or not) does not reduce the risk of coronary heart disease, stroke or cognitive decline in patients
- Vitamin D does not reduce the risk of coronary heart disease
- Multivitamins and minerals do not reduce the risk of cardiovascular disease

Moreover, some supplements have undesirable effects on the risk of chronic disease:

- Vitamin E-supplements reduce the risk of cerebral infarction but increase the risk of cerebral haemorrhage
- Calcium supplements reduce blood pressure and are associated with a lower risk of colorectal cancer, but increase the risk of coronary heart disease

The Committee has accordingly revised the recommendation made in 2009, because it has been unable to find any evidence that nutrient supplementation by the general population reduces the risk of chronic diseases.

Certain groups may, however, benefit from taking certain supplements. Some population groups require extra vitamin D, for example. The groups in question are young children, pregnant women, women over the age of fifty, men over the age of seventy, people with dark skin, people who habitually wear concealing clothing and people who rarely go outside.<sup>53</sup> Because normal calcium intake is quite high in the Netherlands, there is generally no need for vitamin D supplementation to be combined with calcium supplementation. However, people in high-risk groups who don't eat dairy products or eat them in unusually small quantities should combine vitamin D supplementation with calcium

supplementation. In addition, women who want to conceive require extra folic acid (around the time of conception), while vegans require extra vitamin B12.<sup>52</sup>

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## Dietary patterns

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In this chapter, the Committee sets out a guideline for dietary patterns. The chapter begins with a summary of the background document conclusions that underlie the guideline.<sup>54</sup> A guideline and Explanation are then presented.

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### 11.1 Introduction

In the context of this advisory report, the Committee has considered the health implications of dietary patterns, defined as the quantities, proportions, variety and combinations of the foods and drinks making up the diet and the frequencies of consumption. No consideration has been given to dietary patterns based on specific nutrients, as opposed to foods. Various dietary patterns are focus on health benefits; such patterns are referred to by the Committee as ‘recommended dietary patterns’. Examples include the traditional Mediterranean dietary pattern, the New Nordic Diet and the American Dietary Approaches to Stop Hypertension (DASH diet). Those dietary patterns involve the consumption of staple foods in differing quantities. All of the patterns include a lot of vegetables, fruit, whole-grain products, nuts, legumes, oils rich in cis-unsaturated fatty acids, reduced-fat and low-fat dairy products, poultry and fish; none include much red or processed meat, full-fat dairy products, hard fats, salt or drinks (or other products) with added sugar; all involve alcohol moderation. What characterises the dietary patterns in question is that they involve less animal-based food and more plant-based food than a conventional Dutch diet. Vegetarian dietary patterns are

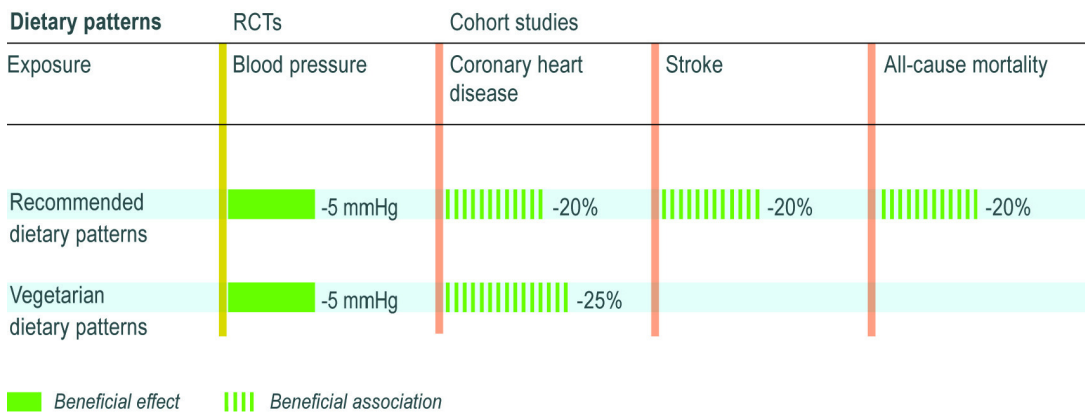
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characterised by abstinence from meat eating and sometimes from eating other animal products as well.<sup>54</sup>

## 11.2 Findings

The RCT findings and cohort study findings upon which the guidelines are based are summarised in the table below.

Table 17 Main background document conclusions supporting the guideline on dietary patterns



The Committee concludes that it has been convincingly demonstrated that the recommended dietary patterns reduce the risks of coronary heart disease and stroke. The conclusion is based on the fact that RCTs have shown that the recommended dietary patterns reduce blood pressure, while cohort studies have shown that they are associated with lower risks of coronary heart disease and stroke. The dietary patterns in question are also associated with lower risks of diabetes, colorectal cancer and mortality from any cause.

It has been convincingly demonstrated that vegetarian dietary patterns reduce the risk of coronary heart disease. RCTs have shown that a vegetarian diet reduces blood pressure, while cohort studies have shown an association with a lower risk of coronary heart disease.<sup>54</sup>

In addition, the effect of a Mediterranean dietary pattern that includes extra virgin olive oil (50 millilitres a day) or additional nuts (30 grams a day) has been compared with the effect of a lower-fat dietary pattern in an RCT involving patients at high risk of cardiovascular diseases. The PREDIMED-RCT, as it was

known, found that a Mediterranean diet including either extra virgin olive oil or additional nuts had a protective effect.<sup>27</sup>

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### **11.3 Guidelines**

Follow a dietary pattern that involves eating more plant-based and less animal-based food, as recommended in the guidelines.

#### **Explanation**

Dietary patterns that involve eating more plant-based food and less animal-based food have health benefits.<sup>54</sup> The findings regarding dietary patterns are consistent with the guidelines set out in the previous chapters of this advisory report, which refer to evidence that fruit and vegetables, legumes, nuts, whole-grain products and vegetable fats and oils have a protective effect by reducing the risk of chronic diseases, while both processed meat and red meat are associated with a high risk of chronic diseases.





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## In conclusion

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In this chapter, the guidelines are considered collectively and the ecological aspects associated with them are addressed. Finally, the Committee presents its view of prospects for the future.

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### 12.1 A review of the guidelines

In the earlier chapters of this document, the Committee identified the foods and dietary patterns currently known to deliver health gains. The evidence supporting most of the guidelines is described by the Committee as ‘convincing’; only the guidelines on meat and dairy products are based on ‘plausible’.

The dietary pattern of the average person in the Netherlands already conforms to the guideline on dairy products, but much remains to be done where the other guidelines are concerned. The maximum benefit attainable by following all the guidelines cannot be quantified. The risk estimations (relative risks) presented in the tables are mostly of a similar order (10 to 20 per cent); where any individual food is concerned, the effects and associations are relatively minor. Because of the interrelationships between groups of foods, the effects are not additive. However, the results of the PREDIMED-RCT show that following multiple guidelines delivers a greater health gain than that revealed by the cohort studies.<sup>27</sup>

The guidelines advocate a shift towards the consumption of plant-based foods. It has been convincingly demonstrated that such a shift would be beneficial at the population level. A shift toward plant-based foods implies eating

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more fruit and vegetables, for example; consumption levels of double the average levels are desirable. Replacing refined cereal products with brown or wholemeal bread or other whole-grain products has also been shown to have beneficial effects. Further benefit can be obtained by eating more legumes and nuts. Only 10 per cent of the population eat those foods in small quantities; half of Dutch people barely eat them, or don't eat them at all.

Consumption of animal products also needs to change. Although the scientific evidence is not as strong as that pointing to the benefits of plant-based products, it is plausible that moderating meat consumption is good for one's health. Men in particular eat both processed meat and red meat in quantities that are associated with elevated chronic disease risks. On the other hand, eating a little more fish than is normal in the Netherlands would be beneficial. Half of the population eat no more than two or three portions a month and would benefit from increasing their consumption to one portion a week.

Revised drinking patterns are also desirable. Consumption of sugar-containing beverages by children (three quarters of a litre on average) and by adults (a quarter to a third of a litre) is high in the Dutch population. Consequently, replacing sugar-containing beverages with water or, for example, tea and filtered coffee without sugar would deliver health gains. People who drink alcohol should limit themselves to one glass a day. The distribution of alcohol consumption is also important: although one glass a day is acceptable, an average of one glass a day resulting from occasional or regular binge drinking is undesirable.

Health gains may also be expected to result from reducing salt intake. The best way to do that is by minimising consumption of processed products and by not adding salt when cooking or at the table. It is furthermore advisable to replace butter, hard margarine and cooking fats with soft margarines, liquid cooking fats and vegetable oils. For certain population groups, it is important to supplement the diet with vitamin D. In addition, women who wish to conceive require extra folic acid and vegans require extra vitamin B12. For the general population, however, there is nothing to be gained – in terms of chronic disease prevention – by taking nutrient supplements.

Some diet-related disorders, such as constipation and dental caries, are not directly addressed by the guidelines. Nevertheless, following the guidelines would help to prevent those disorders. Higher fibre intake reduces the risk of constipation and reduced or less frequent sugar consumption prevents caries.<sup>1,55</sup>

## General

Follow a dietary pattern that involves eating more plant-based and less animal-based food, as recommended in the guidelines.

### Higher consumption recommended

- Eat at least 200 grams of vegetables and at least 200 grams of fruit daily.
- Eat at least 90 grams of brown bread, wholemeal bread or other whole-grain products daily.
- Eat legumes weekly.
- Eat at least 15 grams of unsalted nuts daily.
- Eat fish weekly, preferably oily fish.
- Drink three cups of tea daily.

### Replacement recommended

- Replace refined cereal products by whole-grain products.
- Replace butter, hard margarines, and cooking fats by soft margarines, liquid cooking fats, and vegetable oils.
- Replace unfiltered coffee by filtered coffee.

### Limitation recommended

- Limit the consumption of red meat, particularly processed meat.
- Minimise consumption of sugar-containing beverages.
- Don't drink alcohol or no more than one glass daily.
- Limit salt intake to 6 grams daily.
- Nutrient supplements are not needed, except for specific groups for which supplementation applies.

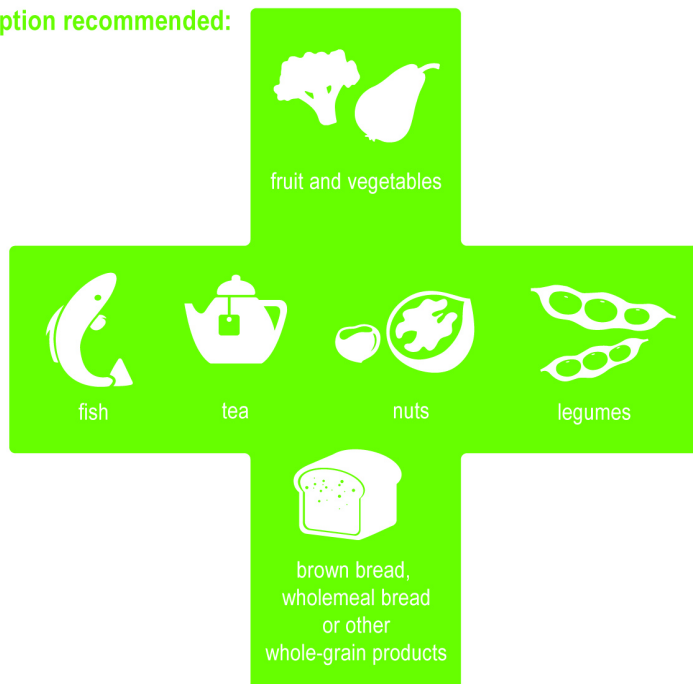
### Maintenance of current consumption recommended

- Take a few portions of dairy produce daily, including milk or yogurt.

## Recommended food consumption

Follow a dietary pattern that involves eating more plant-based and less animal-based food, as recommended in the guidelines

Higher consumption recommended:



Maintenance of current consumption recommended:



Figure 3 Recommended food consumption levels relative to current levels, at the population level.

## Replacement recommended:

Replace...



refined  
cereal products

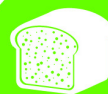


butter,  
hard margarines  
and cooking fats



unfiltered  
coffee

by...



whole-grain  
products



soft margarines,  
liquid cooking fats  
and vegetable oils



filtered coffee

## Limitation recommended:



red meat and  
processed meat



salt



nutrient  
supplements\*



sugar-containing  
beverages



alcoholic  
beverages

*\* except for specific groups for which supplementation applies*

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## 12.2 Ecological aspects

In 2011, the Health Council published an advisory report considering the ecological aspects of the *Dutch dietary guidelines*.<sup>56</sup> The findings of that report have recently been confirmed.<sup>57-60</sup> The Committee has analysed its new guidelines in the light of the 2011 findings and has concluded that, as well as having health benefits, following a number of the recommendations would lead to dietary patterns with ecological benefits. Limiting meat consumption is both medically and ecologically desirable, for example. Generally speaking, a diet that includes less food from animals and more plant-based food has a lower ecological burden than a conventional Dutch diet. From that perspective, it is advisable to moderate high dairy product consumption as well. Similarly, the new guidelines advocate eating fish once a week, i.e. less than the two portions a week recommended in the 2006 guidelines,<sup>1</sup> implying a lower ecological burden.<sup>56</sup> Where fish consumption is concerned, it is ecologically desirable to place the emphasis on species that are not over-fished or can be cultivated in an environmentally friendly manner.<sup>56</sup> Nevertheless, following the guidelines is not sufficient to significantly reduce food-related ecological burden; that would unquestionably require changes in the food production chain.<sup>61,62</sup>

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## 12.3 Target group

The guidelines have been formulated with the general population in mind. Certain population groups require specific dietary advice: the Council will accordingly be producing separate reports concerning children below the age of two and concerning pregnant women. Because they have been formulated with the general population in mind, the guidelines apply to 'healthy' people. However, the distinction between healthy people and people with health problems is becoming less clear. Furthermore, people with health problems can also benefit from following a dietary pattern that is consistent with the guidelines. Cohort studies had shown an association, for example, between a healthy dietary pattern and lower mortality risk in cardiovascular patients.<sup>63,64</sup> Population aging means that levels of multimorbidity are increasing. As the evidence considered in this document shows, diet is relevant to various chronic diseases and can therefore play an important role in the reduction of multimorbidity.

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## **12.4 Translation to everyday practice**

The *Dutch dietary guidelines* describe what is currently known about the characteristics of a healthy dietary pattern. However, it is difficult for consumers to make healthy eating choices on the basis of the guidelines alone. The Netherlands Nutrition Centre will therefore translate the guidelines into public information material. There are various ways of achieving a healthy dietary pattern. The Netherlands Nutrition Centre will describe everyday healthy dietary choices for various age groups and both sexes, which include sufficient variety and provide adequate amounts of vitamins and minerals. The Netherlands Nutrition Centre's advice is expected to appear in spring 2016.

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## **12.5 Healthier eating isn't only down to the consumer**

The guidelines relate primarily to the eating habits of consumers. However, other actors also have at their disposal means of exercising a positive influence on consumer behaviour and making the healthy choice the easy choice. The previous edition of the guidelines and the Health Council's advisory report on food logos both highlighted that point.<sup>1,65</sup> For example, during product development and modification, the food industry has the opportunity to promote portion size reduction, to improve product labelling and to realise the compositional changes recommended in this advisory report. Product improvement will also receive attention during the Netherlands' presidency of EU in the first half of 2016. In addition, establishments that provide catering, such as canteens and restaurants in schools, businesses and sports facilities can contribute to the promotion of healthy eating habits, as can catering firms.





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A Request for advice

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B The Committee

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## Annexes





# A

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## Request for advice

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On 19 February 1998, the then Vice-President of the Health Council received the following request (reference GZB/VVB/98653) from the then State Secretary for Health, Welfare and Sport:

My colleague the Minister of Agriculture, Nature and Food Quality and I hereby ask you to address the following matter:

In 1986, the former Food and Nutrition Council produced a report entitled Guidelines for a Healthy Diet. That publication formed the basis for subsequent food policy and for initiatives in the fields of food production and the dissemination of food-related information to the public. In recent years, a number of minor revisions have been made to the guidelines, in line with scientific developments.

More than ten years have passed since publication of the guidelines, and certain aspects of them are now the subject of debate. I would therefore be grateful if the Health Council would start work on the general, periodic review of the guidelines referred to in the annual plan for 1998. I understand that it will not be possible to complete this review in the short term. My suggestion therefore is that a revised version of the guidelines should be published in the year 2000 and that the guidelines should thereafter be updated every five years, in addition to any revisions that may be necessitated in the interim.

Please let me know whether the Council is able to act upon this proposal.

With kind regards,  
State Secretary for Health, Welfare and Sport,  
(signed) Erica Terpstra

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## B

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# The Committee

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- Prof. D Kromhout, *chairperson*  
Vice President of the Health Council (*until 1 January 2015*), The Hague
  - Prof. J. Brug  
Professor of Epidemiology, VU Medical Center, Amsterdam
  - Prof. A.W. Hoes  
Professor of Clinical Epidemiology and General Practice, University Medical Center Utrecht
  - Dr. J.A. Iestra  
Nutritionist, University Medical Center Utrecht
  - Prof. H. Pijl  
Professor of Diabetology, Leiden University Medical Center, member (*until 1 April 2015*), *advisor (from 1 April 2015 onwards)*
  - Prof. J.A. Romijn  
Professor of Internal Medicine, Academic Medical Center, Amsterdam
  - Prof. J.C. Seidell  
Professor of Nutrition and Health, VU University Amsterdam
  - Prof. P. van 't Veer  
Professor of Nutrition, Public Health and Sustainability, Wageningen University and Research Centre, member (*until 1 June 2015*), *advisor (from 1 June 2015 onwards)*
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- Prof. M. Visser  
Professor of Healthy Aging, VU University Amsterdam and VU University Medical Center, Amsterdam
- Prof. J.M. Geleijnse, *advisor*  
Professor of Nutrition and Cardiovascular Diseases, Wageningen University and Research Centre
- Prof. J.B. van Goudoever, *advisor*  
Professor of Paediatrics, VU University Medical Center Amsterdam and Academic Medical Center, Amsterdam
- Prof. M.T.E. Hopman, *advisor*  
Professor of Integrative Physiology, Radboud University Medical Center, Nijmegen
- Prof. R.P. Mensink, *advisor*  
Professor of Molecular Nutrition, Maastricht University
- Prof. A.M.W.J. Schols, *advisor*  
Professor of Nutrition and Metabolism in Chronic Diseases, Maastricht University
- Prof. M.H. Zwietering, *advisor*  
Professor of Food Microbiology, Wageningen University and Research Centre
- C.A. Boot, M.Sc., *observer*  
Ministry of Health, Welfare and Sport, The Hague
- Dr. J. de Goede, *scientific secretary*  
Health Council of the Netherlands, The Hague
- Dr. C.J.K. Spaaij, *scientific secretary*  
Health Council of the Netherlands, The Hague
- Dr. R.M. Weggemans, *scientific secretary*  
Health Council of the Netherlands, The Hague

### The Health Council and interests

Members of Health Council Committees are appointed in a personal capacity because of their special expertise in the matters to be addressed. Nonetheless, it is precisely because of this expertise that they may also have interests. This in itself does not necessarily present an obstacle for membership of a Health Council Committee. Transparency regarding possible conflicts of interest is nonetheless important, both for the chairperson and members of a Committee and for the President of the Health Council. On being invited to join a Committee, members are asked to submit a form detailing the functions they

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hold and any other material and immaterial interests which could be relevant for the Committee's work. It is the responsibility of the President of the Health Council to assess whether the interests indicated constitute grounds for non-appointment. An advisorship will then sometimes make it possible to exploit the expertise of the specialist involved. Advisors cannot, however, vote on the formulation of the Committee's conclusions or recommendations and they have no responsibility for the contents of advisory reports. During the inaugural meeting the declarations issued are discussed, so that all members of the Committee are aware of each other's possible interests.



# Health Council of the Netherlands

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## Advisory Reports

The Health Council's task is to advise ministers and parliament on issues in the field of public health. Most of the advisory opinions that the Council produces every year are prepared at the request of one of the ministers.

In addition, the Health Council issues unsolicited advice that has an 'alerting' function. In some cases, such an alerting report leads to a minister requesting further advice on the subject.

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## Areas of activity



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**Optimum healthcare**  
What is the optimum result of cure and care in view of the risks and opportunities?



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**Prevention**  
Which forms of prevention can help realise significant health benefits?



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**Healthy nutrition**  
Which foods promote good health and which carry certain health risks?



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**Environmental health**  
Which environmental influences could have a positive or negative effect on health?



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**Healthy working conditions**  
How can employees be protected against working conditions that could harm their health?



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**Innovation and the knowledge infrastructure**  
Before we can harvest knowledge in the field of healthcare, we first need to ensure that the right seeds are sown.

