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# Nutrient Profiling

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Report of a WHO/IASO  
Technical Meeting

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LONDON, UNITED KINGDOM  
4-6 OCTOBER 2010

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**Nutrient profiling**  
**Report of a WHO/IASO technical meeting**  
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# Acknowledgement

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# 1 Introduction

A technical meeting on nutrient profiling was jointly organized by the World Health Organization (WHO) and the International Association for the Study of Obesity (IASO) in London, United Kingdom (UK), from 4 to 6 October 2010. The meeting was opened by Professor WPT James, President of IASO and Dr Francesco Branca, Director of the WHO Department of Nutrition for Health and Development (NHD). The meeting was convened as part of WHO's efforts and response to the global epidemic of obesity and diet-related noncommunicable diseases (NCDs).

Dr Ala Alwan, Assistant Director-General, Noncommunicable Diseases and Mental Health cluster (NMH), described the challenges and perspectives of malnutrition in the world. Widespread undernutrition and micronutrient deficiency, especially among women and children, coexist with increasing levels of obesity and diet-related NCDs. Today, NCDs have become the most important causes of death in the world, with low- and middle-income countries accounting for most deaths, and these diseases rank higher than infectious diseases in the global risk landscape. Nutrition is a major risk factor for various NCDs, yet the amount of official development assistance allocated to nutrition is only a fraction of the total given to health. WHO's vision of how to address this challenge is stated in a number of strategy documents, including the:

- *Global Strategy for the Prevention and Control of Noncommunicable Diseases (2000)* and its *Action Plan*, endorsed by the 61st World Health Assembly in May 2008 (WHA61.14)
- *Global Strategy on Infant and Young Child Feeding (2002)*
- *Global Strategy on Diet, Physical Activity and Health (2004)*.

There is also a growing interest in the global community in galvanizing action to halt and begin to reduce the diseases burden of NCDs, and reverse the prevalence of premature death from NCDs. A United Nations (UN) high-level meeting on NCDs will be held in New York in September 2011. The preparatory work and process at global and regional levels leading up to the high-level meeting – including the 1st global ministerial conference on Healthy Lifestyles and NCD control to be held in Moscow in April 2011 – are increasing the momentum for putting NCDs high on the global political agenda.

Nutrient profiling is a scientific method for assessing the nutritional quality of food and beverage items. It can be used by national authorities to promote public health dietary goals. An internationally recognized method for nutrient profiling could have a wide range of applications, but it is not known whether the criteria developed for one culture or cuisine, or for one purpose or setting would transfer to another. Multiple interpretations of nutrient profiling can lead to confusion; for example, food companies have already proposed a range of different nutrient profile models, many of which suit a specific portfolio of brands. A procedure for systematic validation and comparison of different approaches is required, and a set of guiding principles is needed to ensure that national authorities can make use of any models found to be effective and suitable.

To respond to this need, in 2009, WHO started work on an evidence-based framework and guiding principles that WHO Member States and Regions could adapt in developing and implementing the nutrient profiling of foods for various uses. Such uses would include marketing of foods to children, health and nutrition claims, product labelling logos or symbols, information and education, provision of food to public institutions, and the use of economic tools to orient food consumption. Developing guidance on nutrient profiling can contribute to the implementation of Objective 3 of the *NCD Action Plan* (WHA61.14).

Nutrient profiling is also one mechanism that Member States can use in implementing the set of recommendations on the marketing of foods and nonalcoholic beverages to children that were endorsed by the 63rd World Health Assembly (WHA63.41). The main aim of the marketing recommendations was to guide efforts by Member States in designing new policies or strengthening existing policies on food marketing communications to children, to reduce the impact on children of marketing of foods high in saturated fatty acids, trans fatty acids, free sugars or salt/sodium. The 12 marketing recommendations are structured in five sections: rationale, policy development, monitoring, evaluation and research.

A draft guiding principle and framework document on nutrient profiling was developed in September 2009, and was disseminated for peer-review by experts and some of the major institutions involved in the work of nutrient profiling between December 2009 and February 2010. Comments received were then reviewed and analysed in order to prepare a revised draft guiding principle and framework document by the end of July 2010.

The objectives of the technical meeting were to:

- share experience of the use of nutrient profiling;
- examine the guiding principles and methodological framework for developing nutrient profiling that have been revised and updated as a result of the peer-review;
- consider the strategies and processes needed to field test the guiding principles and methodological framework in countries, including the identification of possible countries and planned timeframe for the country field testing process.

Participants included representatives of some of those countries that had indicated their interest in undertaking work on nutrient profiling, together with experts and representatives of national institutions that have experience in developing and implementing nutrient profiling systems. The list of participants of the meeting is provided in Annex A.

## **2 Guiding principles manual and framework**

This section of the report outlines the findings of the meeting in relation to what should be included in the guiding principles manual and methodological framework for developing nutrient profiling.

### **2.1 Part 1 of the manual**

Part 1 of the manual covers background information including definitions, history of nutrient profiling, relationship with food-based dietary guidelines, possible applications and guiding principles for nutrient profiling.

#### **Definitions and terms**

The draft definition for nutrient profiling proposed in the manual is “the science of categorizing foods according to their nutritional composition”. The proposed definition was the subject of extensive discussions. Participants suggested that the proposed definition was too simple, and needed to be adapted to reflect the fact that the aim is to categorize foods based on their “healthfulness”. It was also suggested that “classifying” might be preferable to “categorizing”, given that a nutrient profile model already includes categories of foods. (Note: The definition for nutrient profiling was changed after the



London meeting and the revised version of the manual will contain this updated definition.)

It is important to differentiate between a model and the application of that model. The term model is used here as a general term for a system that includes nutrient criteria that underpin an application (e.g. a particular form of food labelling).

### **General purposes**

Nutrient profile models fall into two groups, which generate descriptions that refer:

- to the nutrient levels in foods (e.g. high fat; low fat; reduced fat; source of fibre; high in fat, sugars or salt/sodium; energy dense, nutrient poor);
- directly to the effects of consuming the food on a person's health (e.g. healthy, healthier option, less healthy).

### **History**

One of the most common uses of nutrient profiling in developed countries has been for food labelling schemes aimed at helping consumers to identify healthier food options.

Although nutrient profiling is relatively young, voluntary labelling schemes were developed over 20 years ago. The first was the UK Coronary Prevention Group Banding Scheme, published in 1986; this was followed by the Swedish Green Keyhole scheme, launched in 1989. Nutrient profiling has been used in the regulation of nutrition and health claims to:

- set qualifying criteria for nutrition and health claims;
- disqualify foods from carrying nutrition or health claims based on overall characteristics, even if they meet the qualifying criterion for a particular claim.

It has also been used to create food quality indices, which aim to give an indication of the extent to which different foods contribute to dietary recommendations.

### **Relationship of nutrient profiling to food-based dietary guidelines**

Food-based dietary guidelines are recommendations for healthy eating, framed in terms of foods and food patterns. Nutrient profile models classify foods based on their nutrient composition, and this information can be used to help in achieving dietary recommendations. Thus, nutrient profile models need to complement and support food-based dietary guidelines in the regions or countries in which they are applied.

### **Applications of nutrient profiling**

Nutrient profiling is a tool that can be used in both developed and developing countries to assist with:

- public health interventions aimed at improving diets;
- influencing the wider environmental determinants of diets (e.g. the ways in which foods are marketed).

Dr Mike Rayner from the British Heart Foundation Health Promotion Research Group at the University of Oxford explained that social marketing theory provides a convenient framework for classifying public health interventions aimed at improving diets. The theory divides interventions and determinants into those concerned with product, promotion, place and price (the four 'Ps' of marketing). Examples of interventions where nutrient profiling could play a part in improving diets are shown in Table 1 of the manual.

Participants identified a number of modifications to Table 1 that were needed. Specifically, some participants thought that the table headings needed to be changed, because not all activities listed are necessarily public health interventions; others suggested that the table should also include consumer education. One participant noted that some of the examples are specific to one or two developed countries, whereas the manual should have worldwide applicability and should therefore have many examples, especially those relevant to low- and middle-income countries.

The group discussed how one model might be used for several applications. If a model generates a scale, then each application might use a different point in the scale as its cut-off point for classifying foods.

**Scope and limitations of nutrient profiling**

Nutrient profiling is not a panacea; it cannot solve all problems in relation to food and health. One reason for this is that the nutrient composition of individual foods is not the only determinant of diets. Diets are also determined by the portion sizes of individual foods that consumers eat, the frequency of their consumption, the variety of different foods that make up the diets and the combinations in which they are eaten.

Also, nutrient profiling is concerned primarily with nutrients and the energy content of foods, and it sometimes includes substances that are not nutrients, but may be considered alongside nutrients (e.g. phytochemicals). It does not usually encompass other substances such as pathogens, contaminants and food additives. Nutrient profiling also does not embrace other concerns people have about food (e.g. ethical, religious and environmental concerns).

**Key principles**

Conditions that are necessary for the successful development and implementation of a nutrient profile model can be divided into two categories – normative and aspirational – as shown in the table below.

Normative	Aspirational
<ul style="list-style-type: none"> <li>• Has a clear purpose</li> <li>• Is appropriate for purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiency</li> </ul>
<ul style="list-style-type: none"> <li>• Was systematically developed</li> </ul>	<ul style="list-style-type: none"> <li>• Transparency</li> </ul>
<ul style="list-style-type: none"> <li>• Is evidence based</li> <li>• Is rational and logical</li> </ul>	<ul style="list-style-type: none"> <li>• Validity</li> </ul>

**2.2 Part 2 of the manual**

Part 2 of the manual contains four modules, each of which is described in detail below. The modules are:

- 1 – Planning the development of a nutrient profile model.
- 2 – Step-by-step procedure for development of a nutrient profile model.
- 3 – Validating a nutrient profile model.
- 4 – Implementation, monitoring and evaluation of applications involving nutrient profile models.

## **Module 1: Planning the development of a nutrient profile model**

Module 1 provides a step-by-step description of the process for developing a nutrient profile model. The six main steps in planning the development of a model are as follows:

1. Identify and describe nutrition-related public health problems.
2. Assess how these nutrition-related public health problems are related to existing dietary patterns.
3. Develop a list of key recommendations for foods and nutrients.
4. Identify all possible interventions.
5. Select interventions that require nutrient profiling.
6. Convene a project group.

There was discussion about whether a dietary survey was always needed to develop a nutrient profile model. The purpose of the dietary survey is, in part, to help determine what nutrients should be included in the profiling model. This information was thought to be a useful addition rather than an absolute prerequisite. It was further noted that it can be difficult to use food balance sheets as a source of information about food and nutrient intakes in a country.

Food composition data are also useful for profiling, but composition tables often provide averages rather than brand-specific information and thus do not indicate the variability among similar foods. In addition, communication across different groups is important because it is often the case that different groups of people are responsible for developing dietary guidelines and nutrient profile models.

The political context is also an important influence in developing a model for a country.

## **Module 2: Step-by-step procedure for development of a nutrient profile model**

Module 2 provides information on the experiences and a proposed process for developing or adapting a model. The main steps necessary to develop or adapt a nutrient profile model are as follows:

1. Define the purpose of the model. This includes agreeing on:
  - a. whether the model should classify foods by a single nutrient or several nutrients;
  - b. the target population group;
  - c. whether the model needs to define foods with a favourable profile, an unfavourable profile or both;
  - d. whether the model should be designed to discriminate between foods within food categories or across all foods.
2. Decide whether to use an existing model (possibly with some limited adaptation) or develop a new model.

3. Decide on the scope of and exemptions to the model. Nutrient profile models need to be clear about which products are covered (and which are not), including, for example, whether the model should cover foods as sold or as eaten.
4. Decide the number of food categories that will be used in the model and weigh up the advantages and disadvantages of using many, few or even no categories.
5. Decide which nutrients and other food components should be involved, including the possible components and the advantages and disadvantages of many or few components. Participants noted that there were many reasons why nutrients might not end up in a model (e.g. non-availability of composition data, or co-linearity among nutrients, meaning that there is no need to keep all of them in the same model).
6. Decide the reference amount for the model. Theoretically, there are many different possible reference amounts that could be used in developing a nutrient profile model. However, in practice, the three main ways in which the amount of a food component is expressed in nutrient profile models are:
  - a. per 100 g of food;
  - b. per 100 kJ of food;
  - c. per serving of food.

Sometimes these are combined within a model.

7. Decide whether to use scoring or thresholds (or both) for the model.
8. Decide which numbers should be used. Three main ways have been used to decide which numbers should be used to determine thresholds or scores:
  - a. a pragmatic approach;
  - b. an approach that ensures consistency with, for example, legislation;
  - c. an approach derived from dietary recommendations.

Tips and guidelines to help countries decide whether they could adapt an existing model were provided:

- Reflect on the purpose and the associated main characteristics that are needed in a model.
- Identify and consider whether there are other relevant issues for the country (e.g. cultural issues).
- Gather information on existing models, and draw up a list of “possible” models.

It was suggested that a useful tool would be interactive software that highlights any existing models that overlap with the goals of the user. In addition, the manual highlights the fact that development or adaptation of a model requires some expertise.

Adapting a model involves:

- Appraising existing models by asking:
  - Is information about development and validation available?

- Who developed the model?
- How well does the development process stand up against the ‘principles’ of efficiency, transparency and validity?
- How easy would it be to adapt the model?
- Assessing a shortlist of models in terms of, for example:
  - how they classify foods
  - their practical application.
- Identifying modifications required and re-assessing the model.

### **Module 3: Validating a nutrient profile model**

Module 3 of the manual describes various approaches to validation of a nutrient profile model. That is, it considers different methods aimed at answering the question of whether the nutrient profile model classifies foods correctly. Although all validation methods described in the manual are technical, some are less data intensive than others. It is recommended that the simpler (i.e. less data intensive) validation methods should be applied during the development of all nutrient profile models, to assure robust classifications of foods. The more complicated approaches can be applied after the development of the nutrient profile model, to increase the evidence base supporting the model, and hence improve confidence in the model. There is no single nutrient profile model that has been validated using all of the methods described in the manual.

An important problem that affects all the validation methods outlined in the manual is a lack of a gold standard for defining a healthy food. One simple validation approach outlined in the manual involves comparing the classifications produced with the nutrient profile model with those from another nutrient profile model that has been designed for similar purposes and has already been validated. Because of the lack of a gold standard, this method of validation might be better referred to as “calibration”. If models disagree with one another, then the features of the models that lead to disagreement can be investigated.

Another simple method of validation is to identify a small number of “indicator” foods, and assess whether classifications using the nutrient profile model agree with the predetermined classifications of these foods. Indicator foods are those that have been identified as either “healthy” or “unhealthy” in advance of the validation, either by reference to nutrition professionals or food-based dietary guidelines.

The manual also describes other, more complicated, methods for validating nutrient profile models. These include assessments of construct validity against healthy and unhealthy diets, assessments of predictive validity against health outcomes in individuals, and experimental studies. Assessments of construct validity involve testing whether:

- healthy foods (as identified by the nutrient profile model) make healthy diets (as defined by an independent, preferably validated dietary quality index);
- unhealthy foods make unhealthy diets.

The healthy and unhealthy diets used in these assessments can be based on real data (collected in national dietary surveys) or theoretical data (modelled diets that achieve population dietary goals).

The problem with assessing the healthiness of foods by considering the healthiness of diets constructed from these foods is circularity in the argument. That is, because both

foods and diets that are high in saturated fatty acids can be described as unhealthy, unhealthy foods would be expected to correlate with unhealthy diets. One way to break out of this circularity is to assess whether consuming relatively large amounts of healthy foods (as defined by the nutrient profile model) protects against health outcomes such as obesity, diabetes, raised cholesterol and incidence of cardiovascular disease. Such assessments can be made by using a cohort study that has collected data on dietary intakes. However, access to data from such cohort studies is limited. A strong form of validation would be an experimental study that manipulates the diets of respondents to increase healthy or unhealthy food consumption, and then measures consequent changes in health of the respondents (e.g. obesity, raised cholesterol and raised blood pressure). At present, no such experimental studies have been conducted to validate a nutrient profile model.

#### **Module 4: Implementation, monitoring and evaluation of applications involving nutrient profile models**

Module 4 describes how an application (e.g. front-of-pack labelling or restrictions on broadcast advertising) of a nutrient profile model can be implemented, monitored and evaluated. The module was presented at the meeting and was broadly accepted by the attendees.

Implementation of a successful nutrient profiling application requires engagement from stakeholders. This engagement is often achieved by including a consultation period during the development of the application, but it can also involve an advisory board with stakeholder representation. Support from nutritionists and dietitians, and from academics in nutrition science can help in the promotion of the application beyond the boundaries of the development team. Such support can also help to deflect criticism of the application from affected parties. In some cases, involvement of industry stakeholders will be vital to the success of an application.

During the development of a nutrient profile model, the model is likely to be tested against a database of foods (see Module 3, above). However, food manufacturing is a dynamic business, and nutritional datasets can quickly become out of date. To monitor the suitability of the nutrient profile model as part of the application, it is prudent to update nutritional datasets regularly.

The application can be evaluated against a number of outcomes. In most instances, the impact of the application will be assessed against the targeted activity. For example, the success of an application aimed at restricting the broadcast advertising of foods might be evaluated by comparing the exposure of children to food advertising before and after introduction of the application. Further, the impact of an application could be assessed against changes in dietary quality or diet-related health outcomes (e.g. obesity, raised cholesterol and diabetes). Because of the wide-ranging environmental determinants of dietary quality, it is unlikely that a simple “before and after” study would be able to isolate the impact of the application against these outcomes. Therefore, these forms of evaluation would require a well-conducted experiment.

### **3 WHO intake, monitoring, assessment and planning programme**

The WHO intake, monitoring, assessment and planning programme (IMAPP) was developed for work related to fortification of micronutrients. IMAPP can be used to assess

dietary adequacy, design and implement appropriate fortification programs, and evaluate programs.

To use IMAPP, the following individual-level intake information is needed: nutrient intakes, intakes of food vehicles and a replicate intake observation on at least a subsample of individuals. Defaults are available if there were no replicate measures.

IMAPP uses harmonized average nutrient requirements based on estimated average requirements (EARs) for the United States (US) and Canada, and on the WHO/Food and Agriculture Organization of the UN (FAO) recommended nutrient intakes. The harmonized upper nutrient levels are based primarily on the upper tolerable intake level from dietary reference intakes. Nutrient requirements can also be user specified.

IMAPP could be used for applications related to nutrient profiling, such as:

- identifying nutrients of public health importance to include in a profiling scheme;
- simulating the effectiveness of an intervention using profiling (e.g. changes in intakes of targeted foods) using prevalence of inadequacy;
- measuring actual effectiveness by collecting dietary data before and after implementation.

The beta-test version of IMAPP became available in December 2010. More information on the program can be found by contacting [micronutrients@who.int](mailto:micronutrients@who.int).

## **4 Some experiences of developing and validating various nutrient profile models**

This section outlines the various models used by different countries.

### **4.1 United Kingdom model**

Dr Pete Scarborough described the experience of the British Heart Foundation Health Promotion Research Group at the University of Oxford in helping to develop and validate the UK's Food Standards Agency (FSA)/Ofcom model.

In Stage 1, in 2004, the FSA recruited researchers and a steering group who agreed on methods, identified the data sources available, and tested about 50 models. In Stage 2, the FSA built many different options that examined possible mixes of scoring, base and so on that led to the identification of a preferred model. In Stage 3, the model was consulted on and validated by comparing how the model scored various foods with expert opinions of 850 nutritionists and dietitians through an online questionnaire. The researchers also compared profiling of foods consumed in the 2000–01 national UK diet and nutrition survey with an overall assessment of the dietary quality of each survey participant.

The findings indicated that the number of healthy foods eaten did not vary across quartiles of dietary quality score, but that the number of unhealthy foods increased as dietary quality score decreased. Dr Scarborough noted that the best form of validation would be a cohort study in which incidence of disease could be compared to food intake assessed using the profiling model. Such a study design would avoid the sort of reverse causation bias that might be present in this cross-sectional analysis.

When developing the model initially, FSA/Ofcom tried to develop a list that was broadly representative of UK diet. They used the frequency of consumption of the food groups, then selected from the groups accordingly. However, it is not possible to say whether this list would be valid for developing a model in countries with different eating patterns.

## 4.2 French model

Professor Irene Margaritis, Head, Nutritional Risk Assessment Unit, Agence Nationale Chargée de la Sécurité Sanitaire de l'Alimentation de l'Environnement et du Travail (ANSES) presented an overview of the SAIN, LIM nutrient profile model developed by the Agence Française de Sécurité Sanitaire des Aliments (AFSSA).

The AFSSA model classifies foods on the basis of qualifying nutrients (e.g. fibre, vitamin C and calcium) and disqualifying nutrients (e.g. fat, sugars and salt/sodium), to obtain a “nutrient density score” and a “limited nutrient score”, both of which take into account a comparison with dietary reference values. The two scores are used to categorize foods in a two-dimensional system, to validate their eligibility for health claims.

Each food is classified into 1 of 4 categories:

- High SAIN–low LIM – Access to health claims and nutrition claims
- Low SAIN–low LIM – Access to nutrition claims
- High SAIN–high LIM – No claims with some exceptions
- Low SAIN–high LIM – No claims with some exceptions

Dr Margaritis noted that a separate formula is needed for drinks and foods that are over 97% lipids. This system is not in use, but was developed as a proposal for consideration by the European Union for regulating health claims.

## 4.3 Australian model

Dr Dorothy Mackerras of Food Standards Australia New Zealand (FSANZ) described some aspects of adapting the UK's FSA/Ofcom model for a different application (health claims) in a different location (Australia and New Zealand). She summarized the three features of FSANZ's proposed regulation of health claims:

- the need to substantiate the claimed relationship;
- a profiling system to describe how much of the nutrient that was the subject of the claim should be present;
- a profiling system to manage the characteristics of the vehicle that would carry the claim (commonly referred to as the FSANZ model, which FSANZ calls the nutrient profiling scoring criteria – NPSC).

Initially, FSANZ proposed a simple across-the-board threshold system based on serving size, but the system had problems. For example, some confectionary was eligible but some fruit was ineligible; this occurs because many of the recommended foods contain relatively high amounts of one of the less desirable nutrients in addition to the wide range of other nutrients (e.g. fruit contains sugars, bread contains sodium, and meat and dairy products contain saturated fatty acids). Consequently, FSANZ realized that a more complex system was needed.

Six models were tested and the FSA/Ofcom model was the closest match to the FSANZ requirements, based on various criteria. However, that model needed modifications to



allow unsaturated spreads and oils and low-fat cheeses to be eligible. Dr Mackerras noted that four rounds of public consultations had been held in the past four years. In addition, a range of changes had to be made to rules and definitions to align the model to the Australia New Zealand Food Standards Code. Users need to be familiar with a number of regulations in the code if they are to use the model correctly. FSANZ is currently defining a further refinement of the NPSC. Dr Mackerras also noted that the result never appears on the food label. For example, the NPSC scores a product on saturated fatty acids, total sugars, sodium, etc., but the only claim might be, for example, “source of iron, which helps maintain healthy blood”.

#### **4.4 United States proposals for a model for standards for marketing foods to children**

Dr Michele Maynard from the US Centers for Disease Control and Prevention (CDC) provided an overview of a set of tentative proposed nutrition standards that have been drafted for marketing foods to children 2–17 years of age. These standards have been developed by an interagency working group that includes the CDC, the Federal Trade Commission (FTC), the Food and Drug Administration (FDA) and the US Department of Agriculture (USDA). Dr Maynard noted that the resources used to develop the standard were:

- current regulations for health claims and nutrient content claims (21CFR Part 101 Food Labeling);
- the 2005 Dietary Guidelines for Americans;
- relevant reports from the US Institute of Medicine (e.g. on dietary reference intakes and nutrition standards for foods in schools).

Nutrients of concern identified for child health in the US are saturated fatty acids, trans fatty acids, added sugars and sodium. Three levels of standards are proposed. The first level includes foods that are exempt from marketing restrictions. These foods are considered to be part of a healthful diet; they may be marketed to children without meeting the other two standards:

- 100% fruit and fruit juices in all forms
- 100% vegetables and vegetable juices in all forms; must not exceed 140 mg of sodium per reference amount customarily consumed (RACC)
- 100% non-fat and low-fat milk and yogurt
- 100% whole grains
- 100% water.

The second level of standard states that if foods are marketed to children they must provide a meaningful contribution to a healthful diet. Two options are proposed for this standard:

- Foods must contain at least 50% by weight of fruit; vegetable; whole grain; fat-free or low-fat milk or yogurt; fish; extra lean meat or poultry; eggs; nuts and seeds; or beans; or any combination thereof.
- Food must contain a specific measurement per RACC; for example:
  - 0.5 cups fruit or fruit juice
  - 0.6 cups vegetables or vegetable juice
  - 0.75 oz. equivalent of 100% whole grain

- 0.75 cups milk or yogurt; 1 oz. natural cheese; 1.5 oz. processed cheese
- 1.4 oz. meat equivalent of fish or extra lean meat or poultry.

For the last level of standard, foods marketed to children must not contain more than specified amounts of saturated fatty acids, trans fatty acids, sugars and sodium:

- saturated fatty acids – 1 g or less per RACC and not more than 15% of calories
- trans fatty acids – 0 g per RACC (<0.5 g)
- sugars – no more than 13 g of added sugars per RACC
- sodium – no more than 200/240 mg per portion.

The standards for saturated fatty acids, trans fatty acids and sugars are based on healthy standards for children. Sodium is currently set at half the adult amount. The proposed standards were shared for consultation in December 2009 but have not yet been adopted in the US.

#### **4.5 Institute of Medicine process to develop a front of pack labelling system**

Professor Lindsay Allen summarized the process being used by the Institute of Medicine to develop a front-of-pack system. The system was scheduled for release the week after the meeting; hence, no details about the content of the report could be given.

The need to address obesity and increase in chronic disease, the proliferation of front-of-pack systems in the US and concern with inconsistent criteria led Congress to direct the CDC to work through the Institute of Medicine to recommend a front-of-pack system. The FDA is sponsoring the project. The committee consists of 10 members (nutritionists, marketing experts and social scientists), and it has held four meetings and one public hearing. In Phase 1 of the project, the committee reviewed front-of-pack systems currently available in the US and abroad, public health problems and the link to over- under-consumption of specific nutrients. The committee identified more than 30 different front-of-pack systems in the US and abroad. It evaluated the scientific basis of criteria underlying each system and considered the purpose, advantages and disadvantages of each, using criteria such as feasibility of monitoring, shelf labelling, difference from back-of-pack information and transparency. The Phase 1 report was to be published one week after the London meeting.

In Phase 2, the focus will be on consumer acceptance and understanding of a range of symbols, and on identifying a single front-of-pack system that could be recommended and implemented (regulated by the FDA). It will identify the icons that are most effective for consumers and how best to maximize their use. Phase 2 conclusions may have important influences, and it is possible that they might change the Phase 1 recommendations.

At the same time, the most recent edition of the US dietary guidelines was released. This report has a heavy emphasis on solid fats and added sugars, and has changed some of the “nutrients of concern”.

#### **4.6 Choices Program**

Professor Jaap Seidell from the University of Amsterdam provided a brief overview of how foods are classified under the Choices Program from the Choices International Foundation. To select the food groups in the Choices Program, the foundation reviewed current international food guidelines used in 21 countries: Australia, Belgium, Canada, China, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Malaysia,

Namibia, Netherlands, New Zealand, Singapore, Spain, UK and US. Based on this review, they opted for the classification shown in the table below.

Main food groups Beneficial products	Supplemental food groups Less beneficial products
Fruits and vegetables	Soups including bouillons
Bread, grains, potatoes, pasta	Meal sauces
Meat, fish, poultry, eggs	Water/emulsion based sauces
Milk and dairy products	Snacks: pastry and biscuits, savoury snacks (e.g. crisps), ice-cream, and sweets
Fats, oils and spreads	
Main course and sandwiches	Beverages

## 5 Overall discussion on validation of models

One participant disagreed with the view that comparing the performance of a model to the opinions of experts was a valid approach. The concern was that the results would be driven by the extremes of opinion and the centre – where disagreement might exist – would be obscured; thus, the “validation” would be a self-fulfilling prophecy. A cohort study was proposed as a better method. Another participant commented that nutrient profiling is a solution to a problem – until you know the problem you cannot look at the solution.

It was suggested that food-based dietary guidelines could be used to determine which foods should or should not be promoted. It was noted that all models claim to be based on food-based dietary guidelines, but there are a variety of ways to do this. The discussion concerned what would be the best way, and that WHO should develop one system that countries can adapt if needed, because some of the countries do not have the capacity to develop their own system.

## 6 Planning the field testing of the guiding principles and framework manual and the country process

Participants were asked about their interest and plans related to field testing of the manual and nutrient profiling in their respective countries.

### Brazil

Brazil is interested in the marketing to children and front-of-pack labelling. The country has some dietary survey data coming in April 2011; it also has mandatory labelling (e.g. of trans fatty acids). Brazil is unsure whether it needs to develop a new model or adapt an existing model. Nutrients of concern are the same as those identified in the WHO strategy.

### Mexico

Mexico has a national strategy on obesity. It has produced a guidance system for beverages; this is not conventional nutrient profiling, but is simply based on different categories, frequency and amounts that should be consumed. Mexico already has a procurement requirement on saturated and trans fatty acids, added sugars and total

calories and energy density (but this was rejected by industry, so percentage fat was used instead). A meeting in late October 2010 was planned, to discuss front-of-pack labelling.

### **Thailand**

Thailand has used nutrient profiling in the past. The country had high levels of dental caries in infants, due to a low level of breastfeeding and frequent use of infant formula. Follow-on formula also has high levels of sugars. Since advice from doctors was not effective in changing this situation, Thailand used nutrient profiling on sugars to show the relationship between caries and consumption of sugars. The country was then able to pass a law about labelling on snack food to show its content of salt, sugars, fat, energy, iron and vitamin A. But Thailand would also like to have health claims because many organisations give a seal on products that is confusing to consumers. Nutrient profiling might help with this. Some products already have information about the composition, but this is not the case for some traditional foods. A nutrient profile model could be used, for example, for assessment of foods targeted at children.

### **Philippines**

For the Philippines, the manual is timely because the country would like to validate what they have started to do, which is to have a seal or a certification on products. The Philippines would also like to be helped in targeting marketing to children.

### **Switzerland**

Switzerland has an action plan for 2 years, and has the same problems as other countries. The country would like to have a more effective front-of-pack system, because consumers cannot understand the information currently given on packs. Switzerland has undertaken some studies on this and on marketing to children. From November 2010 Switzerland was starting with a roundtable, which would be a way to use the WHO manual. The Swiss are interested in field testing the manual, but this will depend on cost and number of people involved.

### **Canada**

Canada is currently trying to encourage or facilitate standardization of existing nutrient profile models in a nonregulatory context and is unsure whether stakeholders will agree to the use of other systems. The country will also review the Institute of Medicine report. Ten provinces have their own separate guidelines for schools, but these are not aligned; industry would like more alignment. Many health stakeholders are calling for the federal government to take a leadership role in the development of criteria for various applications, including front-of-pack labelling, marketing to children and school food guidelines. The situation in Canada is similar to that of Switzerland concerning commitment and time required to participate in the field testing.

One participant expressed concern that each country could be developing its own model. He asked why, given that all countries have the same objective (i.e. decreasing the risk of chronic diseases), we cannot all focus on saturated fatty acids, trans fatty acids, sugars and sodium?

### **Tools for those developing nutrient profiling**

Participants compiled a list of tools that might be needed for those who develop a nutrient profile model, taking into consideration the discussions at the different sessions of the meeting. The following is a preliminary list of possible tools discussed:

1. Help from IMAPP to identify:
  - a. prevalence of inadequacy (protein and micronutrients)
  - b. prevalence of intakes likely to be excessive (macronutrients and micronutrients)
  - c. impact on these prevalences of projected changes in foods purchased (simulations).
2. Food composition tables containing foods that would be profiled.
3. A database of reference serving sizes for types of foods that would be profiled.
4. Dietary surveys to know nutrients of concern.
5. User-friendly software that asks questions and makes recommendations (perhaps suggest existing models).
6. Training modules, to be used in developing nutrient profiling expertise.
7. Methods of categorizing foods.
8. A list of nutrient profiling schemes that have been successfully implemented.

It was also suggested that it would be useful to provide hypothetical or actual case studies for a developed and for a developing country, for different applications. Similarities and differences could then be highlighted.

Participants noted that information on trans fatty acids in a nutrition composition database was lacking. It was also suggested that a paper addressing the issue of how to deal with added sugars might be useful.

### **Proposed methods for the field testing**

Proposed steps for the field testing of the manual were discussed. The aims of the testing would be to:

1. improve understandability and practicality of the guiding principles document;
2. help identify other tools needed to implement the procedures outlined in the manual.

Methods: a range of different countries (some developed, some developing). It was noted that participants should have agreed in principle to the need for a nutrient profile model in connection with a specified application or applications.

### **Preliminary protocol for the country process**

A preliminary proposed protocol for the country process was presented for discussion. The proposed steps for the country process are as follows:

- Step 1 – Identify countries interested in participating in the process.
- Step 2 – Included countries to identify the applications for which they are already developing or intend to develop a nutrient profile model; for example:
  - labelling (especially front-of-pack);

- food marketing to children;
- the public procurement of foods (particularly in schools);
- health claims.
- Step 3 – Countries to clarify:
  - what public health problems the application is designed to address;
  - who will be affected by the application (the target group);
  - whether they want to identify foods with a favourable profile, an unfavourable profile or both;
  - whether they want to discriminate between foods within categories or across all foods or both;
  - whether the nutrient profile model needs to be adaptable to a range of applications.
- Step 4 – Countries to choose at least two models (per application) that they might be able to adapt.
- Step 5 – Countries to:
  - identify adaptations that will make the chosen models more suitable for their purposes;
  - identify the pros and cons of adaptation;
  - develop their own model, where adaptation is not possible.
- Step 6 – Countries to:
  - develop or adapt a number of models to test;
  - test how the models (adapted or new) classify foods commonly consumed by their population, and compare this classification against food-based dietary guidelines.  
(Countries will need food-based dietary guidelines and food composition data for a range of commonly consumed foods; basic food intake data would also be useful.)
- Step 7 – Countries to use this assessment to identify further modifications and repeat Step 6.
- Step 8 (optional) – Countries to undertake modelling of models against actual or theoretically healthy diets; this requires data on food composition and food intake.

Over the next few months, the guiding principles manual will be revised to improve its understandability and practicality; also, more examples from developing countries will be incorporated, where available. Participants agreed that the manual is comprehensive but provides many possible options. Tools needed to implement the procedures outlined in the manual will be identified.

WHO will provide a meeting report within a few weeks for comments from participants and aims to post it on the web in early 2011.

WHO also invites countries to confirm in the next few weeks their intent to participate in the field testing of the manual. Countries will also be asked to confirm for what applications they hope to develop or adapt a nutrient profile model.

## **7 Conclusions and next steps**

The next step will be field testing of the guiding principles manual in the countries that have expressed interest. The results obtained from the field testing will be used to update the manual and produce a revised edition. The updated manual will be reviewed at a technical meeting to be held in Brazil in late 2011, to prepare the final version of the manual.

# Annex A

## Participants

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