

NUTRIENT AND PROMOTION PROFILE MODEL

Supporting appropriate promotion
of food products for infants and
young children 6–36 months
in the WHO European Region



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ABSTRACT

There is growing international concern about the suitability of some commercial food products for infants and young children (FIYC) sold across Europe. Sweet purées and snack foods dominate the market, deriving a high proportion of energy from free sugar (including fruit juice) or because intense maceration (puréeing) has released intrinsic sugars from within plant cell walls. Additionally, many products do not adhere to WHO's recommendation to introduce food at 6 months and are marketed as suitable from 4 months, potentially displacing breast milk. Existing guidelines for FIYC fall short, resulting in the marketing and sale of unsuitable products. Member States have therefore called for action to end the inappropriate promotion of FIYC.

WHO will support Member States, industry, policy-makers and other stakeholders via this nutrient and promotion profile model (NPPM) to ensure appropriate products with suitable, clear promotional materials are available for infants and young children aged 6 months to 3 years.

The NPPM sets out nutrient and promotional requirements across different product categories. It may be adopted in full or locally adapted to evaluate product suitability, inform product reformulation and guide policy reform to support public health goals for optimal infant nutrition and development.

KEYWORDS

NUTRIENT PROFILE MODELLING
COMPLEMENTARY FEEDING
FOODS FOR INFANTS AND YOUNG CHILDREN
CHILDHOOD OBESITY

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ABBREVIATIONS

EC	European Commission
EU	European Union
FIYC	food products for infants and young children
NPM	nutrient profile model
NPPM	nutrient and promotion profile model

EXECUTIVE SUMMARY

There is growing international concern about the suitability of some commercial food products for infants and young children (FIYC) sold across Europe. In particular, sweet purées and sweet snack foods dominate the market, deriving a high proportion of their energy from free sugar (including fruit juice) or because intense maceration (puréeing) has released intrinsic sugars from within plant cell walls. Additionally, many products do not adhere to WHO's recommended age of food introduction of 6 months and are marketed as suitable from 4 months, potentially displacing intake of breast milk. Existing regulatory guidelines for FIYC are outdated and insufficient, resulting in marketing and sale of many unsuitable products. Calls have therefore been made by Member States at the World Health Assembly to end the inappropriate promotion of FIYC.

WHO will support Member States, industry, local or national policy-makers and other stakeholders via this nutrient and promotion profile model (NPPM) to ensure appropriate products, with suitable and clear promotional materials (marketing and labelling), are available for infants and young children from 6 months up to 3 years of age.

The NPPM sets out nutrient and promotional requirements across different product categories. It may be adopted in whole or locally adapted for the purpose of evaluating the suitability of currently available products, to inform product reformulation and to guide policy or legislative reform to support public health goals for optimal infant nutrition and development.



INTRODUCTION

Nutrient profiling is defined by WHO as “the science of classifying or ranking foods according to their nutritional composition for reasons related to preventing disease and promoting health” (1). Nutrient profiling enables food classification and can be used through policy to improve overall dietary quality for the purposes of achieving public health goals. Restricting the marketing of inappropriate FIYC for health reasons (via mandatory or voluntary policies) requires a nutrient profile model (NPM) to guide policy on how to classify products and assess whether marketing is appropriate.

The universal belief that the health and development of infants and young children is critically important underpins this model. Usual rules governing product composition, labelling and promotion should, therefore, not apply to FIYC (that is, food products marketed as suitable for children under the age of 3 years). Governments should prioritize legislation to prevent commercial interests from damaging the optimal health and development of this very young and dependent demographic in our society.

Purpose and scope

This NPPM aims to support policy changes for FIYC to ensure both high nutritional quality and appropriate marketing, in line with internationally recognized diet and health goals for infants and young children aged 6–36 months.

The NPPM and accompanying NPPM toolkit provide an evidence-informed, up-to-date and user-friendly framework for governments and policy-makers to develop effective legal and policy measures to ensure sale of appropriate FIYC in their own countries.

A discussion paper was previously published in 2019 on the appropriate marketing of FIYC, along with an earlier draft NPM. The draft version of the NPM was validated against product data from Denmark, Spain and the United Kingdom and was pilot-tested in a further seven WHO European Region Member States. Details of the draft model development, literature reviews and product validation results were previously reported in detail (2).

This report provides details of the updated nutrient and promotional (labelling and marketing) requirements across FIYC product categories and will enable policy-makers, manufacturers and other stakeholders to assess product suitability and support improvements in product formulation and promotional strategies.

The model was updated through consultation with users of the draft model and other stakeholders across the WHO European Region using up-to-date published evidence (see Annex 1 for details).

Concerns with current FIYC composition and promotion

A number of concerns exist about the suitability and marketing of some FIYC, including:

- high total sugar content and sweet taste profile:
 - frequent addition of free sugars (e.g. addition of mono and disaccharides, syrups, honey and fruit juice or juice concentrate, etc.);
 - frequent high fruit content (100% fruit) resulting in high total sugar content (e.g. large proportion of fruit purée used in breakfasts, desserts, vegetable purées, meals and snacks); and
 - liberation of intrinsic sugars from plant cell walls during maceration/puréeing increasing the readily available sugar content and sweet taste;
- addition of salt or high sodium content;
- high fat content, particularly in some snack foods;
- low nutrient or energy density in purées aimed at younger ages/early weaning:
 - energy density is often lower than breastmilk (i.e. high natural or added water content);
 - simple fruit or vegetable purées, without any protein source/dairy may have a low density of important nutrients such as iron or iodine;
- sold as suitable from 4 months of age, contrary to WHO recommendations to exclusively breastfeed for the first 6 months of life, potentially displacing milk intake;
- claims of “no added sugars” but a significant proportion of energy is derived from sugar (e.g. via fruit);
- frequent marketing of very smooth/puréed foods beyond 12 months of age but:
 - introduction of texture is important for chewing development;
 - most infants can accept textured foods from 12 months; and
 - ongoing exposure to purées, with high liberated sugar content is a concern for oral health and development of sweet taste preference;
- frequently misleading product names which imply vegetable or savoury flavours, or high dairy, vegetable or cereal content, but high fruit content and sweet taste. For example:
 - “peppers, broccoli and apple purée” containing 80% apple, 10% pepper and 10% broccoli;
 - “baby porridge with mango” containing 50% apple, 20% mango and 30% rehydrated oats; and
 - “apricot and banana baby rice: containing only 3% rice flour;
- proliferation of marketing messages including health and nutritional claims or other promotional messages that:
 - undermine public health messages such as the age of food introduction, the importance of increasing textures and food variety, and limiting snack food use;
 - undermine confidence in or displace home-prepared foods (e.g. “nutritionally balanced by experts”);
 - imply that features of the product are desirable or advantageous (such as “fits into little fingers”, “no bits”, “full of goodness” and “organic”, etc.);
 - imply perfection or rely on the so-called “health halo” (common perception) that foods sold for infants are inherently nutritionally superior to adult products or home-prepared foods.

Another significant issue is that products aimed at older children do not include a minimum age recommendation of 3 years and are, therefore, likely to be given to infants and young children. Without alignment for nutritional content regulations or requiring products for older children to carry a minimum age recommendation on the front of packs, there is likely to be significant crossover, and inappropriate products will be bought and given to young children. This will undermine the value of applying NPPM

requirements. Furthermore, current inappropriate products aimed at young children (such as 100% dry fruit snacks marketed for ages 12 months and over) will simply be able to remove the age guide and claim they are targeted at older children. It is, therefore, essential that products for older children have clear age guidance on the front of the pack to avoid undermining FIYC regulations and protect the health and development of the youngest members of society.

Many FIYC are nutritionally adequate and already meet the NPPM requirements. However, frequent use of, or reliance on, low-quality (e.g. low energy density and high sugar content) products may not provide the appropriate nutritional intake for healthy growth and development. This is particularly important at the start of weaning (from 6 months) when food intake is likely to be low and because of the relative difficulty of compensating for the fact that up until weaning, breastmilk provides adequate nutrients (3,5). Many FIYC (e.g. fruit purée) for first weaning are high in sugar and low in fats, proteins and other important nutrients such as iron, and these products may not be appropriate at the start of solid food introduction.

Outdated existing guidance and legislation for FIYC in the WHO European Region

In the WHO European Region, Codex Alimentarius guidelines and European Union (EU) directives ensure that FIYC are safe and adhere to specified minimum or maximum nutrient thresholds (6,7). The market has diversified and proliferated extensively since these guidelines and regulations were developed. The issues noted above are not addressed in existing legislation or guidelines. Furthermore, existing EU labelling requirements (7) are very brief, are outdated in terms of new food packaging (e.g. pouches with spouts), and do not regulate highly persuasive marketing and health claims.

In 2016 the World Health Assembly approved WHO guidance on ending the inappropriate promotion of FIYC through resolution WHA69.9. The aims of the guidance are to protect breastfeeding, prevent obesity and chronic diseases, promote a healthy diet and ensure caregivers receive clear and accurate information on infant and young child feeding. Resolution WHA69.9 requested that WHO provide technical support to Member States in implementing the guidance recommendations, including the development of nutrient profiling tools.

This work sits within the WHO *European food and nutrition action plan 2015–2020* which focuses on “food and nutrition as the leading factors in health and well-being in the European Region, with particular attention to the associated burden of NCDs”. The plan cites the “pervasive marketing to children of foods and drinks high in energy, saturated fats, trans fats, sugar or salt and inappropriate marketing of follow-on foods and complementary feeding for infants and young children” as specifically within its scope (8). In 2017 WHO published an implementation manual guide for ending inappropriate promotion of foods for infants and young children and specified what “inappropriate promotion” means (details on inappropriate promotion are in Annex 2) (9).

A review of existing guidelines and regulations for FIYC in 2019 (2) identified inconsistent requirements and concluded that the regulations are generally insufficient and do not reflect the modern market, where the range and form of products has proliferated greatly over the past few years. Updated regulations and legislation are required to ensure product contents, promotions and labelling do not undermine important public health recommendations.

The resulting NPPM is aligned to the European Programme of Work 2020–2025 (10) and is intended to address multiple current issues with FIYC and the NPPM requirements. It supersedes elements of existing standards such as the Codex standard for processed cereal-based foods for infants and young children (Codex/STAN 074-1981) (6) and the European Commission (EC) Directive 2006/125/EC on processed cereal-based foods and baby foods for infants and young children (details provided in Annex 3) (7). New mandatory legal regulations are recommended to ensure widespread and consistent improvements in the content and marketing of FIYC.

The model does not make provision for micronutrient contents, so any existing local, regional or national requirements must be followed by manufacturers. The model may be locally adapted for micronutrient requirements according to local nutritional status, dietary habits or national policy on food fortification or supplementation.

Definitions of terms used in this model

A food product for infants and young children (FIYC) means a manufactured food or drink other than a breastmilk substitute which is marketed as suitable for feeding infants (less than 12 months old) and young children (12 to 36 months old).

Note that the following are not considered to be FIYC and are not within the scope of the NPPM (see Annex 4):

- products not marketed for children under 3 years of age;
- vitamin and mineral food supplements;
- products that function as breastmilk substitutes.

FIYC are considered to be marketed as being suitable for this age group if they (9):

- are labelled with the words “baby”, “infant,” “toddler” or “young child”;
- are recommended for introduction at an age of less than 3 years;
- have a label with an image of a child who appears to be younger than 3 years of age or who is feeding with a bottle; or
- are in any other way presented as being suitable for children under the age of 3 years.

Health claim means any representation that states, suggests or implies that a relationship exists between a food (or a constituent of that food) and health (see Annex 5).

Nutrition claim means any representation which states, suggests or implies that a food has particular nutritional properties, including but not limited to the energy value and the content of protein, fat and carbohydrates, as well as the content of vitamins and minerals (see Annex 5).

Marketing is defined as product promotion, distribution, selling, advertising, product public relations and information services.

Promotion is broadly interpreted to include the communication of messages that are designed to persuade or encourage the purchase or consumption of a product or raise awareness of a brand. Messages may be communicated in a variety of settings and via packaging, branding, and labelling. A detailed definition of promotional messages and cross-promotion may be found in Annex 6 and the WHO implementation manual for guidance on ending the inappropriate promotion of FIYC (9).

Added sugar is defined as all monosaccharides and disaccharides added to foods and beverages by the manufacturer, cook or consumer during processing or preparation.

Free sugars are defined as monosaccharides (such as glucose or fructose) and disaccharides (such as sucrose or table sugar) added to foods by the manufacturer, cook or consumer in addition to sugars naturally present in honey, syrups, fruit juices and fruit concentrates.

Liberated sugars are defined as those that are released or “liberated” from within plant cell walls during processing such as heat-treatment, maceration or puréeing. Liberated sugars have the same function as free sugars in terms of contributing to the sweet taste of foods and the speed at which sugars are absorbed into the blood stream. For example, fruit purée is particularly high in liberated sugar. Feeding fruit purée alone, or using it as an ingredient in other foods, means foods taste very sweet and blood sugar levels can rise rapidly.

Banned free sugars and sweeteners are defined as:

- i. all mono- and disaccharides (including sugars derived from fruits, sugarcane, palms or root vegetables, etc.);
- ii. all syrups, nectars and honey (including molasses, agave, maple, blossom nectar, malted barley syrup, brown rice syrup, etc.);
- iii. fruit juices or concentrated/powdered fruit juice, excluding lemon or lime juice (e.g. pear juice, concentrated apple juice or powdered mango juice); and
- iv. all non-sugar sweeteners (e.g. saccharin, acesulfame, aspartame, sucralose or stevia, etc.).

Total sugar includes any intrinsic sugars contained within plant cells walls, liberated sugars, free sugars and sugars naturally present in milk (largely lactose).

Fruit juice describes fruit that is prepared with the edible pulp removed. Fruit juice is not permitted in any FIYC product and is defined as a free sugar.

Permitted fruit includes 100% fruit, where all edible components are retained. Dehydrated 100% fruit is only permitted in limited quantities in some product categories because of high sugar content. Tomatoes, avocados and coconut are not classed as fruit and their use is unrestricted.

SUMMARY OF COMPOSITION (FOOD AND NUTRIENT) REQUIREMENTS

In general, composition requirements aim to reduce the sugar content and sweet taste profile of products. This will be achieved through banning the addition of free sugars, limiting the total sugar content or fruit content in certain categories and through requiring front-of-pack high-sugar labels for some products with sugar-rich ingredients (e.g. fruit purée). Thresholds are also in place to ensure appropriate energy density, salt, protein and fat contents across product categories.

For meaningful impact on reaching public health goals for infants and young children, these requirements should be mandatory and written into relevant legislation.

Details of requirements across product categories can be viewed in Table 1. Further explanations and justifications for requirements are provided in the section NPPM further details: explanations on the NPPM requirements.

- i.** No addition of free sugars and sweeteners, including:
 - a.** all mono- and disaccharides;
 - b.** all syrups, nectars and honey;
 - c.** fruit juices or concentrated/powdered fruit juice (excluding lemon or lime juice); and
 - d.** non-sugar sweeteners.
- ii.** Confectionery should not be marketed.
- iii.** Flavoured or sweetened drinks should not be marketed.
- iv.** Maximum 15% energy from total sugar in meals and snacks.
- v.** Limited use of fresh and dry fruit in some food categories.
- vi.** Minimum energy density for dry cereals (80 kcal/100 g) and savoury meals (60 kcal/100 g).
- vii.** Maximum energy for snacks is 50 kcal per serving.
- viii.** Maximum sodium content 50 mg/100 kcal (or 100 mg if cheese is in the product name).
- ix.** Minimum content by weight of named traditional protein sources in meals.
- x.** Minimum protein content for meals, and cereals/snacks made with milk.
- xi.** Industrially produced trans-fatty acids are not permitted.
- xii.** Total fat maximum 4.5 g/100 kcal for most products, except in some meals.

SUMMARY OF PROMOTIONAL (LABELLING AND MARKETING) REQUIREMENTS

In general, promotional requirements aim to improve messaging to caregivers around product age suitability, improve product naming, warn of high sugar content, and limit use of health, nutrient and marketing claims.

For meaningful impact on reaching public health goals for infants and young children, these requirements should be mandatory and written into relevant legislation.

Details of requirements for age limits and front-of-pack sugar labels across product categories can be viewed in Table 1. Details of other promotional requirements are provided in Table 2 and further explanations and justifications for requirements are provided in the section NPPM further details: explanations on the NPPM requirements.

- i. Minimum age recommendation of 6 months and products must not encourage (either implicitly or explicitly) early food introduction.
- ii. Maximum age recommendation of 12 months for puréed foods.
- iii. Front-of-pack indicator labels for high total sugar content:
 - a. > 30% energy in fruit or vegetable purées, desserts and dry fruit snacks
 - b. > 40% energy in dairy foods.
- iv. Product name clarity: indicate contents in descending order and not hide sweet tastes or high fruit content.
- v. Ingredient list clarity: state proportion (%) of added water/stock, fruit content and traditional protein source.¹
- vi. Packaging with a spout should state clearly that contents should be decanted and not directly sucked.
- vii. Remove most compositional (nutritional), health and marketing claims.
- viii. Include relevant statements to protect and promote breastfeeding.

Note that in order to be effective and to clearly distinguish FIYC from other commercially available foods for older children, other products for older children should be clearly labelled as suitable from 3 years of age. This particularly applies to snack foods with total energy from sugar > 15% or other breakfast/dessert foods with high sugar content that are likely to be given to younger children.

¹ Traditional protein sources include any meat, offal, poultry or fish.

INDUSTRY: OPPORTUNITY FOR ACTION

The NPPM provides guidance for food producers to ensure that existing products are suitable, and for improving the content and/or promotional materials of any unsuitable products. These requirements will help to maintain high product standards and support international goals for diet and preventing noncommunicable diseases.

Alongside adhering to the content and promotional requirements provided in the NPPM (summarised above), food producers should be proactive in making the following changes to support evidence-informed dietary and health goals for infants and young children aged 6 to 36 months:

Uphold public health recommendations for food introduction from around 6 months:

- re-label products sold as suitable from 4 months to suitable from 6 months (redefine “stage 1” foods to be suitable from 6 months)
- do not imply any food introduction before 6 months

Support public health goals to **reduce intake of free sugars** and **improve product quality** and **support taste development** by:

- lowering the total sugar content of products
- lowering fruit content of products, particularly puréed fruit
- reformulating to remove free sugars (including fruit juice and concentrated juice)
- producing fewer sweet snacks, desserts and breakfasts with high fruit content

First weaning foods should include more vegetable and savoury flavours:

- prepare single or mixed vegetable purées without the addition of fruit
- refrain from masking the flavour of less sweet or bitter vegetables with sweet vegetables and fruit
- produce more single-flavour foods (particularly vegetables) for ages 6–12 months

More early weaning foods (6–12 months) should be nutrient dense and include cereals, legumes, protein sources and fats rather than be simple watery vegetable purées or sugar-rich fruit purées:

- avoid the unnecessary addition of water/stock to purées (for instance to facilitate easy serving through a spout) to maintain higher nutrient and energy density
 - focus on savoury meals (with the addition of cereals and fat and protein sources) as well as vegetable purées for ages 6–12 months
-

Avoid unnecessary puréeing and increase product textures to encourage chewing development and limit the release of intrinsic sugars from fruit and vegetable cell walls during processing:

- produce fewer highly blended foods and more foods with texture for 6–12 months and beyond
 - avoid using puréed ingredients in foods sold for young children (12–36 months) as greater textures can be tolerated. This will also minimize exposure to liberated sugars
-

Go beyond minimum legal labelling requirements to provide full nutrient and ingredient information:

- some products sold in different countries contain different nutrient data (e.g. total sugar and salt content for the same product is not given when sold in the Eurasian Economic Union but reported for the product when sold in the EU)
-

Refrain from using content, health and marketing claims on product packaging, in particular:

- remove “no added sugar” claims, particularly on products with high total sugar content
 - remove statements about texture that imply idealism in smoother products
 - remove statements implying idealism in, or the need for, convenience foods, snacks or dessert products
-

NUTRIENT AND PROMOTION PROFILE MODEL (NPPM)

How to use the NPPM

The NPPM is divided into two Parts. Part A details product content (nutrient) requirements by product category along with front-of-packet age recommendation and indicator labels for high sugar contents (Table 1), and Part B details other promotional (packet and marketing) requirements (Table 2). Both parts are intended to guide policy-makers, industry and other stakeholders in evaluating the suitability of existing products and making positive changes through product reformulation, packaging changes and legislation.

STEP 1: Identify the category for a product (Table 1), referring to the “details and examples” column if necessary.

STEP 2: Cross-check nutrient data, the ingredient list and the recommended product age range against NPPM Part A (Table 1). Note that some products may not include all relevant data to assess suitability; in this situation use what data you have and note where gaps exist. Evaluate products as eaten, using manufacturers’ preparation instructions for dry products, ingredients and meal components where possible. Where preparation instructions are not given, evaluate products as sold but be aware that some thresholds may be unmet or exceeded because of this.

- i. Use the ingredient list to evaluate addition of free sugars, the proportion of fruit and proportion of protein source (for meals).
- ii. Use nutritional information to evaluate energy density and thresholds for other nutrients.
- iii. Use pack information to evaluate recommended portion sizes for snacks.
- iv. Determine if the recommended age is appropriate.
- v. Determine if the total sugar content would require a front-of-pack indicator label.

Useful calculations

- Convert kJ to kcal: $\text{kJ} \times 0.239$
 - Calculate energy density (kcal/100 g): $(\text{kcal} \div \text{specified product or portion weight}) \times 100$
 - Calculate nutrients per 100 kcal: $(\text{fat grams per specified product weight} \div \text{kcal per specified product weight}) \times 100$ e.g. *2.1 g fat and 110 kcal per 160 g serving: $(2.1 \div 110) \times 100 = 1.9 \text{ g per } 100 \text{ kcal}$*
 - Calculate total sugar % energy: $(\text{total sugar grams per specified product weight} \div \text{kcal per specified product weight}) \times 400$
 - Convert salt grams to sodium milligrams: $(\text{salt grams} \div 2.5) \times 1000$
-

STEP 3: Cross-check promotional materials (packaging and other associated marketing materials such as websites) against requirements in NPPM Part B (Table 2).

- i. Check for presence of compositional, nutritional, health or marketing claims.
- ii. Check suitability of product name (front of pack and/or legal product name).
- iii. Check that the ingredient list reports the proportions of specified foods.
- iv. Check for instructions not to consume food via spout if sold with spout.
- v. Check for suitable preparation instructions for dry foods, meal components or ingredients.
- vi. Check for statements that protect or promote breastfeeding.

NPPM Part A: content and front-of-pack labelling

Table 1. NPPM Part A: content and front-of-pack labelling

Product group	Code	Subcategory description	Details and examples	Content and labelling requirements ¹⁴									
				Energy density (kcal/100 g) as eaten	Sodium (mg/100 kcal) as eaten	Total sugar (% E)	Added free sugar or sweetener ¹	Total protein (g/100 kcal) & protein weight	Total fat (g/100 kcal) (no trans) ²	Fruit content ³ (% weight)	Age label (months) ⁴	Front-of-pack high-sugar flag ⁵ (% energy)	Labelling and promotional requirements
Dry cereals and starches	1	Dry or powdered cereal ⁶ /starch to be eaten or cooked with milk or water	To be prepared with milk (or equivalent non-sweet liquid) or water (or protein-free liquid) e.g. instant porridge, muesli, baby rice, dry pasta. Includes plain fresh pasta etc. Excludes crackers/rusks etc. (cat. 5.2)	≥ 80	≤ 50	/	None	≤ 5.5g (if contains milk) ^{12,13}	≤ 4.5g or ≤ 3.3g (if to be eaten with milk)	≤ 10% dry weight	6–36	≥ 30%	
Dairy foods	2	Dairy-based foods, desserts and cereals	The largest ingredient is dairy and fruit < 5% e.g. porridge, rice pudding, yogurt, fromage frais, custard. (If fruit content > 5% use cat.3.1)	≥ 60	≤ 50 (100 if named cheese)	/	None	/	≤ 4.5 g	≤ 5% (max. 2% dry)	6–36	≥ 40%	
Fruit & vegetable purées/smoothies and fruit desserts	3.1	Fruit-containing product, including breakfast/dairy	Any product containing > 5% fruit ⁷ (except dry cereals, low fruit dairy, or snacks) e.g. apple purée, fruit and yogurt, fruit custard, porridge with > 5% fruit	≥ 60	≤ 50	/	None	/	≤ 4.5 g	/	6–36 (6–12 for purée)	≥ 30%	
	3.2	Vegetable only product	Single or mixed vegetables or legumes e.g. spinach & pea purée, mashed potato & carrot. Excludes foods containing added starch/fat/dairy (cat. 4.1)	≤ 25% added water	≤ 50	/	None	/	≤ 4.5 g	None	6–36 (6–12 for purée)	≥ 30%	
Savoury meals/meal components: combinations of starches, vegetables, dairy and/or traditional protein^{5,6,7}	4.1	Food WITHOUT protein ⁸ or cheese named	Vegetables/legumes and/or cereals/starches. May contain a protein source, dairy or fats e.g. vegetable rice, lasagne, pesto sauce for pasta	≥ 60	≤ 50	≤ 15%	None	≥ 3 g ^{12,13}	≤ 4.5 g	≤ 5% (max. 2% dry)	6–36 (6–12 for purée)	/	
	4.2	Food WITH CHEESE named but no protein	Cheese and no other proteins are in the product name e.g. cheese pasta, tomato & mozzarella pasta sauce	≥ 60	≤ 100	≤ 15%	None	≥ 3 g ^{12,13}	≤ 6 g	≤ 5% (max. 2% dry)	6–36 (6–12 for purée)	/	
Traditional protein sources include any meat, offal, poultry or fish	4.3	Food with protein ⁸ source NOT named first	Protein source is not the first named food, e.g. pea & lamb curry, tomato & beef sauce for pasta	≥ 60	≤ 50 (100 if named cheese)	≤ 15%	None	≥ 3 g ≥ 8% ^{12,13}	≤ 4.5 g	≤ 5% (max. 2% dry)	6–36 (6–12 for purée)	/	
	4.4	Food with protein ⁸ source named FIRST	e.g. Rabbit & potato, beef soup, tasty chicken risotto, chicken & cheese pasta, beef sauce for pasta	≥ 60	≤ 50 (100 if named cheese)	≤ 15%	None	≥ 4 g ≥ 10% ^{12,13}	≤ 6 g	≤ 5% (max. 2% dry)	6–36 (6–12 for purée)	/	
	4.5	Protein ⁸ source is ONLY named food	Puréed cooked meat. May contain a small quantity of grain/starch not in product name e.g. "rabbit" or "lamb" with some added rice flour or corn starch	≥ 60	≤ 50	≤ 15%	None	≥ 7g ≥ 40% ^{12,13}	≤ 6g	≤ 5% (max. 2% dry)	6–36 (6–12 for purée)	/	

All requirements apply to all categories as detailed in **NPPM Part B**

Snacks and finger foods	5.1	Fruit	Fresh fruit or whole dry fruits or pieces e.g. plain dry apple slices or raisins. Excludes pulverised/puréed dry fruits (cat. 7)	≤ 50 kcal per serve	≤ 50	/	None	/	≤ 4.5 g	100%	6–36	≥ 30% (dry fruit only)	All requirements apply to all categories as detailed in NPPM Part B
	5.2	Dry or semi-dry snacks and finger foods	Any grain, starch, pulse/lentil or root vegetable snack such as cracker, bread, biscuit, pastry, cake or pancake etc. Includes rusks, crackers and biscuits to be eaten dry or pulverized with liquid	≤ 50 kcal per serve	≤ 50	≤ 15%	None	≤ 5.5 g (if biscuit and contains milk) ^{12,13}	≤ 4.5 g	/	6–36	/	
Ingredients	6	Ingredients	Ingredients for cooking or adding to food in small quantities e.g. olive oil, stock cubes	/	≤ 50	/	None	/	/	None	6–36	/	
Confectionery	7	Confectionery	Chocolates, sweets, liquorice, marzipan, fruit chews ¹⁶ etc.	Not appropriate for promotion									
Drinks	8	Drinks	Fruit juice and other sweetened or flavoured drinks. ¹¹ Excludes 100% fruit/vegetable purée, breastmilk substitutes or unsweetened milk/milk alternatives	Not appropriate for promotion									

Footnotes to Table 1

¹ Added free sugars and sweeteners include:

- i. all mono- and disaccharides (including sugars derived from fruits, sugarcane, palms or root vegetables, etc.);
- ii. all syrups, nectars and honey (including molasses, agave, maple, blossom nectar, malted barley syrup and brown rice syrup, etc.);
- iii. fruit juices or concentrated/powdered fruit juice, excluding lemon or lime juice (e.g. pear juice, concentrated apple juice or powdered mango juice). See footnote 3 on permitted fruit use; and
- iv. non-sugar sweeteners (such as saccharin, acesulfame, aspartame, sucralose or stevia, etc.).

² No product may contain industrially produced trans-fatty acids.

³ Notes on fruit:

- i. tomatoes, avocados and coconut are not classed as fruits for this purpose;
- ii. unsweetened whole or chopped fruits and dry whole or chopped 100% fruits are permitted as per category 5.1; and
- iii. blended, pulped, puréed or powdered 100% fruits (i.e. not juice) (including puréed/powdered dried fruit) are only permitted in specified quantities by weight, as they are high in liberated sugars.

⁴ Notes on recommended age ranges displayed on packs and all related promotional materials:

- i. no product should state or imply product suitability for babies under 6 months of age, including through use of images;
- ii. products that are blended/puréed should have an upper age limit of 12 months. This applies to puréed and smooth products sold for babies before they are able to chew or accept more textured foods (e.g. puréed fruit/vegetables, processed oatmeal porridge or a blended meal). Naturally smooth and unmacerated foods such as yogurt, risotto or porridge are exempt; and
- iii. a narrower age range than indicated may be displayed on packs according to product consistency (e.g. 18–36 months for crunchy snacks).

⁵ Note that traditional protein sources include any meat, offal, poultry or fish.

⁶ Note that the front-of-pack and legal product names and order of foods may differ. Follow the front-of-pack names for product categorization where possible.

⁷ For meal components (e.g. pasta sauce): thresholds apply to foods as eaten, where preparation details are provided.

⁸ A front-of-pack indicator, label or flag is required when the total energy from sugar exceeds specified thresholds [30% total energy = 7.5 g / 100 kcal; 40% total energy = 10 g / 100 kcal]. The label should conform to pre-specified requirements, e.g. be clearly positioned and with moderate size text.

⁹ Minimum 25% cereal for rusks, crackers and biscuits.

¹⁰ Fruit chews include any dried and processed fruit products such as fruit gums, bars or fruit strips/leathers/roll-ups (i.e. a dense chewy food made from fruit juice or pulped and dehydrated/dried fruit).

¹¹ Includes any drinkable product containing crushed, blended, pulped or puréed fruit/vegetable, fruit/vegetable juice and/or water, with or without added free sugar or sweetening agents. Including 100% juices, reconstituted juice from concentrate, smoothies with added juice or water, drinks made from cordials, energy drinks, ices and soft drinks.

¹² Evaluate total protein adequacy using pack nutrient information (to calculate g / 100 kcal) and the ingredient list (percent weight of protein source), where possible. Note that meal components (such as sauces) are exempt from point iii and iv:

- i. any dry cereal products (category 1) containing a high-protein food (e.g. milk or milk-equivalent) must have ≤ 5.5g/100kcal total protein;
- ii. any biscuits or rusks etc. (category 5.2) made with the addition of a high-protein food (e.g. milk or milk-equivalent), and presented as such (e.g. in product name, or named/pictured on packet), must have ≤ 5.5 g / 100 kcal total protein;
- iii. total protein (g / 100 kcal) must be ≥ 3 g / 100 kcal for all savoury meals, or ≥ 4 g if the protein source is named first (e.g. chicken risotto), or ≥ 7 g if the product only names a protein source (e.g. rabbit purée); and
- iv. total protein weight must be higher than 8%, 10% or 40% of the total product weight in product categories 4.3, 4.4 and 4.5, respectively (e.g. beef lasagne (cat. 4.4) must contain 10% beef by weight).

¹³ Additional mandatory protein requirements to be followed by food producers during manufacturing. Note that it is not necessary to assess these criteria using packet information while applying the NPPM. The following requirements are as stipulated in CODEX Standard CXS 74-1981 (section 3.3) and EC Directive 2006/125/EC (Annex II, section 1):

- i. any dry cereal products (category 1) made with a high-protein food (e.g. milk or milk equivalent) must have ≤ 5.5 g total protein, of which ≥ 2 g / 100 kcal may be added protein (e.g. from dairy sources);
- ii. any biscuits or rusks etc. (category 5.2) made with the addition of a high-protein food (e.g. milk or milk equivalent), and presented as such (e.g. in product name, or named/pictured on packet) must have ≤ 5.5 g / 100 kcal total protein and the added protein shall not be less than 0.36 g / 100 kJ (1.5 g / 100 kcal);
- iii. each source of protein named in the front-of-pack or legal product name of meals must be ≥ 25% by weight of the total named protein weight. For example, chicken and rabbit risotto (category 4.4) must include at least 25% chicken and 25% rabbit by weight of the total protein weight;
- iv. protein from dairy must be ≥ 2.2 g / 100 kcal if cheese is mentioned in the product name; and
- v. protein from the named source (meat, offal, poultry or fish) must be ≥ 2.2 g / 100 kcal in category 4.3, ≥ 4 g in category 4.4 and ≥ 7 g in category 4.5.

¹⁴ Products with vitamin, mineral and amino acid additions must adhere to existing EC requirements or other local, regional or national guidelines, where applicable.

NPPM Part B: promotional messages (packets, labelling and marketing)

Table 2. NPPM Part B: promotional messages (packets, labelling and marketing)

Promotional requirement	Details and examples
No compositional, nutritional, health or marketing claims	<p>No compositional, nutritional, health or marketing claims are permitted on packs or related marketing materials (promotional communications, websites, etc.). Refer to Table 3 for examples of non-permitted claims.</p> <p>Note the following composition statements are permitted:</p> <ol style="list-style-type: none"> statements relating to common allergens (such as containing or being “free from... [gluten, dairy/lactose, or nuts]” etc.) statements relating to religious or cultural requirements (such as “meat-free”, “vegetarian”, “contains meat”, “Kosher”, “Halal”, etc.) descriptive words may be used <i>within</i> the ingredient list (such as “organic carrots” and “wholegrain wheat flour”)
Product name clarity¹	<p>The front-of-pack product name and legal product name must:</p> <ol style="list-style-type: none"> clearly represent or name the main or largest ingredients, where appropriate, except when the largest ingredient is implied in the name (such as milk in porridge or rice in risotto); list ingredients in an appropriate order (to indicate decreasing proportional content); and indicate when fruit or vegetables (single or in combination) comprise the majority of the product by weight. Note that fruit or vegetables are considered to be the largest ingredient if the sum of all fruits or vegetables is the largest ingredient, and the front-of-pack name must indicate this (see example (iii) in footnote 1) <p>Note that all ingredients do not need to be listed in the product name</p>
Ingredient list clarity	<p>The ingredient list must clearly indicate the proportion (%) of:</p> <ol style="list-style-type: none"> the largest single ingredient (including water/stock, except when used for rehydration of legumes/grains etc.) the amount of added water/stock (except when used for rehydration of legumes/grains etc.) the total or individual proportions of fresh or dried fruit the amount of fish, poultry, meat or other traditional source of protein
Instructions not to consume soft foods via pack spout	<p>Ready-to-eat puréed foods sold in packs with a spout must include a clear statement to discourage caregivers from allowing infants and young children to suck the food directly via the spout, such as: “Infants and young children should not be allowed to suck directly from the pouch/container”</p>
Suitable preparation instructions	<p>Preparation instructions for dry cereals/starches, ingredients and meal components must state that the liquid used to reconstitute the product, or accompanying foods served, should have no added sodium or free sugar (including fruit juice)</p>
Promotion and protection of breastfeeding	<p>In relation to breast feeding:</p> <ol style="list-style-type: none"> no cross-promotions are permitted between products that function as breastmilk substitutes, and commercially available complementary foods marketed as suitable for infants and young children > 6 months; all products must include a statement on the importance of continued breastfeeding for up to two years or beyond and the importance of not introducing complementary feeding before 6 months of age; no products should include any image, text or other representation that is likely to undermine or discourage breastfeeding, or that makes a comparison to breastmilk or that suggests that the product is nearly equivalent or superior to breastmilk; all products must state the suitable age of introduction (> 6 months); no products should include any image, text or other representation that might suggest use for infants under the age of 6 months (including references to milestones and stages); and no product should convey an endorsement or anything that may be construed as an endorsement by a professional or other body, unless this has been specifically approved by relevant national, regional, or international regulatory authorities.

Footnote to Table 2

¹ Improved product name examples:

- 30% apple, 20% sweet potato and 10% spinach:
 - before: “spinach and sweet potato”; after: “apple, sweet potato and spinach”
 - name ingredients in an appropriate order and indicate that apple is the main ingredient.
- 35% carrot, 30% parsnip, 20% potato and 15% chicken:
 - before: “chicken and vegetable meal”; after: “root vegetable and chicken dinner” or “carrot and potato mash with chicken”
 - Indicate that vegetables are the largest ingredient.
- 30% pear, 20% apple, 20% rice/oats/dairy and 10% strawberry:
 - before: “baby rice/porridge/yogurt with strawberry”; after: “pear and apple porridge/rice/yogurt with strawberry” or “fruity rice/porridge/yogurt”
 - Indicate that fruit is the largest ingredient, strawberry is not the primary fruit and rice/oats/yogurt is not the largest ingredient.

Table 3. Examples of prohibited compositional, health and marketing claims on promotional materials (pack labels and other marketing materials)

Composition and nutrition claims	<p>Statements relating to the presence or absence of ingredients generally perceived to be harmful or beneficial, for example:</p> <ul style="list-style-type: none"> • “no...”, “no added...”, “low in...” [sugar, salt, condiments, artificial flavour/colour, maltodextrin, modified starch, additives/preservatives, GMO, junk, etc.] • “contains only naturally occurring...” [sugars, salt, etc.] <hr/> <p>Statements relating to the natural or healthful nature of ingredients, for example:</p> <ul style="list-style-type: none"> • “contributes one of your five-a-day [fruit/vegetables]” • “contains three types of vegetables”, “contains vegetables” • “organic food”, “natural”, “fresh”, “100% natural”, “real fruit/vegetables” <hr/> <p>Statements implying nutritional idealism, high nutrient content or presence of nutrients generally not considered in home-prepared foods. No product should imply that commercial foods are nutritionally superior to home-prepared foods or otherwise undermine important public health recommendations. for example:</p> <ul style="list-style-type: none"> • “nutritionally balanced”, “perfect/unique balance of vitamins/minerals”, “ideal nutrients”, “provides good nutrition to children” • “contains...” “a source of...” [minerals, vitamins, iron, vitamin B₁₂, a host of nutrients, dietary fibre, omega-3, probiotics, prebiotics, protein, amino acids, phospholipids, DHA, carbohydrate, arachidonic acid, etc.]
Health claims	<p>Statements relating to beneficial health or development resulting from the food or ingredients, for example:</p> <ul style="list-style-type: none"> • “good for...”, “supports...”, “improves...”, “...needed for...” [healthy growth, development, digestion, appetite, learning to chew, learning to hold, constipation, defecation, bones and teeth, enteric flora, the brain, eyes, vision, skin health, thyroxine synthesis, red blood cell synthesis, preventing iron deficiency anaemia, collagen synthesis, metabolism, cognitive development, immune system etc.] <hr/> <p>Statements relating to the general healthful nature of ingredients or recipes, for example:</p> <ul style="list-style-type: none"> • “healthy” • “goodness of cereals”, “extra goodness with wholegrain oats”, “infant cereal is the ideal foundation to a healthy and balanced diet”, “perfectly balanced to support growth” • “draws inspiration from the Mediterranean approach to health and well-being”
Marketing claims	<p>Statements relating to ideal taste, for example:</p> <ul style="list-style-type: none"> • “delight for tiny taste buds/tiny tummies”, “tasty/yummy/delicious”, “suitable for picky eaters”, “in my home the whole family loves them”, “my flavours are a new journey for tiny taste buds”, “exotic dishes are full of variety and flavour”, “simple flavour” <hr/> <p>Statements relating to high product quality, for example:</p> <ul style="list-style-type: none"> • “picked at the peak of ripeness”, “bursting with goodness and flavour”, “individually steam cooked”, “we use over 27 different fruits and vegetables”, “we only use specially selected ingredients” <hr/> <p>Statements relating to ideal food texture, for example:</p> <ul style="list-style-type: none"> • “smooth”, “no bits/chunks”, “easy-to-swallow texture that is great for helping your little one as they start to explore solid foods”, “perfectly smooth texture has been specially developed as an ideal first weaning food” • “I’m textured”, “yummy crispy bits will encourage your baby to begin to chew”, “ideally suited to promote exposure to textures” <hr/> <p>Statements relating to convenience or lifestyle, for example:</p> <ul style="list-style-type: none"> • “convenient”, “great for a busy and active life”, “ideal for breakfast or meals on the go”, “simply to top up between meals” • “great way to make fruit fun” • “closest thing to homemade with all of the goodness and none of the guilt” • “inspired by my favourite home-cooked recipes”

Statements conveying ideals on optimum feeding, for example:

- “making the right feeding choices for you and your baby”
- “helps to build confidence and enjoyment with food”
- “we’ve been pioneering research into infant and toddler nutrition for over 50 years to help you give your baby the best start in life”
- “carefully prepared by our baby-food experts”
- “grown by farmers we know and trust”
- “nothing unnecessary”, “no junk”, “nothing nasty”
- “encourages self-feeding”, “perfect for small hands”
- “perfect/ideal/optimum... way to feed/introduce foods”
- “breakfast is one of the most important meals of the day”
- “we guarantee our products provide the best possible start for your baby”

Statements encouraging dismissal of public health recommendations, for example:

- “the government advises that you don’t need to wean your little one until they are 6 months old. Every baby is different!”
- “the Department of Health and the World Health Organization recommend exclusive breastfeeding for the first six months. However, if you choose to wean earlier, our ingredients are suitable from 4 months”

Statements/labels implying product or brand support from experts and trustworthy or influential individuals, groups or organizations.

No product should convey an endorsement or anything that may be construed as an endorsement by a professional or other body, unless this has been specifically approved by relevant national, regional or international regulatory authorities. For example:

- “quality approved by Mums”
- “approved by nutrition experts/celebrities”
- “endorsed by paediatricians/national child’s association”

Statements conveying other idealistic or charitable attributes of the product or brand, for example:

- “committed to giving 10% of profits to help fund food education charities”
 - B corporation certification, Hain Celestial or other corporate certification implying superior or other ethical or charitable brand attributes and unrelated to product nutrition or content
-

NPPM further details: explanations on the NPPM requirements

Energy density

The existing EC directive does not contain a minimum energy requirement for meals (7) but we identified a concern that many products have low energy density, particularly meals. A United Kingdom-based review reported that the water content of many commercial baby foods is likely greater than homemade foods (11) meaning that energy density is likely to be lower (12). In our pilot exercise examining products on sale across Europe (2), we also found that many purée and meal products had lower energy density than has previously recommended for complementary feeding (at least 0.8 kcal / g) (13) and of breast-milk (0.69 kcal / g) (11). In our validation study, around half of all meal purées (sold as suitable from 4 or 6 months) examined on sale in the United Kingdom and Denmark did not reach the minimum energy requirement of 60 kcal / 100g; however, non-puréed meal products (typically sold as suitable from 12 months) tended to meet the criteria (2).

Manufacturers should be encouraged to reduce and declare the water content of products to increase

energy density and quality of soft foods and purées. Setting a minimum energy density of 60 kcal /100 g for many purées will also encourage manufacturers to add less water for cooking and blending and will therefore ensure higher quality and better value products. The restrictions on adding sugars will ensure that this increase in energy density is not achieved through an increase in sugar content. The threshold of 60 kcal / 100 g was set as a minimum for most categories to reflect the average puréed food energy density observed in the pilot exercise (2). This threshold will remain under regular review and will be increased if necessary.

No threshold was set for vegetable-only purées, so that manufacturers are not dissuaded from preparing purées of naturally low-energy vegetables and are not encouraged to add sweet/starchy vegetables, fruit or fats to achieve the minimum energy threshold.

NPPM requirements relating to energy density

- Dry cereals and starches must have a minimum energy density requirement of 80 kcal/ 100 g (as eaten) to ensure foods are more energy dense than milk and to align with existing EC requirements (7);
- Most non-dry products are required to have minimum energy density of 60 kcal /100 g;
- Vegetable purées do not have a minimum energy density requirement as they often have a naturally high water content. Different flavours and vegetables should still be offered during weaning (6 to 12 months). A maximum added water requirement is included for vegetable purées to ensure that they are not too low in energy.
- Snacks and finger foods must be a maximum of 50 kcal per serving in order that they do not displace meals.

Sodium

Several national dietary recommendations in the WHO European Region advise limiting salt for infants and young children to prevent accustoming them to a high-salt diet. Lower sodium thresholds than are currently used in the EC 2006 directive (7) for cereal foods are proposed in the NPPM, and these apply to all food categories. We judge this lower sodium level to be feasible and achievable during product reformulation based on our 2019 assessment of products sold across 10 Member States (2).

NPPM requirements relating to sodium

- Most products should contain a maximum sodium content of 50 mg / 100 kcal (salt 0.125 g / 100 kcal).
- Some foods may contain 100 mg / 100 kcal sodium (salt 0.25 g / 100 kcal) if cheese is named within the front-of-pack product name.

Sugar

Existing sugar recommendations and definitions

WHO recommends that population intake of free sugar should be no more than 10% energy intake, with an ideal recommended intake of under 5% (14). The European Society for Paediatric Gastroenterology, Hepatology and Nutrition Committee on Nutrition recommends that intake of free sugar is even lower than 5% below the age of 2.(15)

WHO defines free sugars as “monosaccharides and disaccharides added to foods and beverages by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates” (14). The United Kingdom Scientific Advisory Committee on Nutrition has expanded on the WHO definition of free sugars to stipulate exclusions for naturally-present lactose (milk sugar) and sugars contained *within* the cellular structure of foods (particularly fruits and vegetables) (16). In the United Kingdom, the definition of free sugars includes blended, pulped, puréed or extruded fruit, which is a logical extension and interpretation of the WHO definition (17). However, liberated sugars from blended, pulped, puréed or extruded fruit are not explicitly included in the WHO definition of free sugars. The intense maceration (puréeing) and heat treatment used in the production of many FIYC liberates sugars from plant cell walls (11,18). Similarly to fruit juices, fruit purées can be considered free sugars and frequent intake may negatively affect oral health and influence taste preferences.

Why the NPPM focuses on total sugar and addition of free sugars, rather than free sugar content

Existing recommendations for sugar intake focus on free and added sugars, for which there is consistent evidence of adverse health effects, rather than total sugars. There are arguments that intrinsic sugars (contained within the cell walls of fruits and vegetables) are less likely to be over-consumed and contain a range of other beneficial nutrients (15). However, this argument cannot be applied in the context of many FIYC where products rely on intense maceration (puréeing) processes which liberate intrinsic sugars. Similarly, products often rely on the addition of fruit purée or concentrates to sweeten foods and yet still claim “no added sugars” on packs to give the appearance of being a healthy product.

Furthermore, assessing free sugar contents of FIYC and applying limits through the NPPM would prove impossible at present, with only total sugar and the ingredients being required on packs in many Member States in the WHO European Region.

The NPPM, therefore, focuses on limiting use of free sugars as an ingredient and limiting total sugars, in addition to a range of other strategies to control fruit use, with the aim of lowering the overall sweet taste and total sugar content of products.

In summary, the NPPM focuses on total sugar content and addition of free sugars as ingredients, rather than free sugar content, for the following reasons:

- many countries already mandate reporting of total sugar content so this can easily be assessed;
- addition of free sugars can be identified from the ingredient list;
- total free sugar (added plus liberated sugars) content is difficult to calculate, and data are not available on packs, presenting clear challenges in applying free sugar limits in the NPPM; and
- many FIYC are highly puréed, heat treated or use dry, pulped or powdered fruits. Such processing liberates sugar from within plant cell walls meaning that total sugar contents will be a good indication of free (added plus liberated) sugar content.

FIYC and sugar concerns

A ban on all intrinsically sweet foods (including fruit) is neither feasible nor desirable. However, the addition of free sugars including concentrated fruit juice, and the high fruit content of many foods, has resulted in a very sweet and sugary product profile in the marketplace. For instance, our previously reported analysis of 2634 products sold in 10 Member States showed that mean energy from total sugar in all products ranged between 29% and 44%. Total energy from sugar was worryingly high in fruit purées, with average sugar content in each country being greater than 70% and reaching almost 100% energy from sugar in some blended fruit products. Furthermore, addition of free sugars was a concern, where between 21% and 58% of baby and infant snack foods sold across Europe contained free sugars (2,19). Many FIYC also state “no added sugar” or “contains only naturally occurring sugar” on packs, giving the appearance of being healthy while having a high fruit content and resultant sweet taste and high sugar content.

The NPPM recommends limiting fruit content in meals and the 2019 review of products (2) identified a 5% maximum to be feasible. The 2019 product review also provided evidence to support front-of-pack high-sugar indicators. These thresholds were set close to the mean and median total sugar content of product categories for United Kingdom products, so that over 40% of products did not exceed the threshold (2). The aim was to balance optimal sugar levels for health against feasibility in product composition, as many fruits are intrinsically rich in sugar.

Front-of-pack indicators for high sugar content

WHO recommends front-of-pack labelling to help consumers to make healthier food choices and recommends government-led policy with input from key stakeholders through an iterative and collaborative process (20). A recent WHO manual also provides guidance for countries on the selection and testing of evidence-informed front-of-pack nutrition labelling systems (21). Information may be colour-coded (e.g. red, amber, green) for different nutrients such as salt or sugar, may be presented as an overall food score (e.g. A to E), may state high nutrient content (e.g. “high in sugar”) or may provide a health warning (e.g. “drinking beverages with added sugar(s) contributes to obesity, diabetes and tooth decay”).

A recent comprehensive systematic review and meta-analysis of 156 studies concluded that mandatory front-of-pack labelling policies for traffic light indicators, nutrition scores, nutrition warnings or health warnings changes purchasing behaviour towards healthier products, and away from those less healthy (22). The study also identified at least 31 countries where interpretive front-of-pack label systems (i.e. those that indicate product healthfulness, rather than present simple nutrient values) had been introduced, including six countries with mandatory warning labels on products and three countries with mandatory colour-coded systems.(22)

NPPM requirements relating to sugar and fruit content

To address concerns about sugar contents across different product categories, a range of requirements have been set:

- no added sugars or sweetening agents are permitted in any food, including:
 - i. all mono- and disaccharides (including sugars derived from fruits, sugarcane, palms or root vegetables, etc.);
 - ii. all syrups, nectars and honey (including molasses, agave, maple, blossom nectar, malted barley syrup, brown rice syrup, etc.);
 - iii. fruit juices or concentrated/powdered fruit juice, excluding lemon or lime juice (e.g. pear juice, concentrated apple juice or powdered mango juice; see Table 1, footnote 3 on permitted fruit use); and
 - iv. non-sugar sweeteners (such as saccharin, acesulfame, aspartame, sucralose or stevia etc.);
 - the total sugar content for savoury foods and non-fruit snack foods cannot exceed 15%;
 - the maximum permitted fruit content for dry cereals is 10%, and for dairy foods and meals is 5% (of which a maximum of 2% may be from dried fruit); and
 - a front-of-pack indicator, label or flag is required when the total energy from sugar exceeds specified thresholds:
 - i. 30% total energy (7.5 g / 100 kcal) for dry cereals and starches (category 1), fruit and vegetable purées/ smoothies and fruit desserts (category 3) and dry fruit snacks (category 5.1); and
 - ii. 40% total energy (10 g / 100 kcal) dairy foods (category 2).
-

Protein

Existing EC guidelines (7) specify a minimum protein content in grams per 100 kcal and also as a percent of product weight, to ensure meals that contain traditional protein sources (meat, offal, poultry and fish) in the product name include a minimum amount of the specified protein, rather than protein from cheaper alternative sources. These requirements have been adopted in the NPPM. Evaluation of products in the pilot study (2) found that meals generally included enough *total protein* (grams per 100 kcal) but that a substantial number of meal products (naming a traditional protein source in the name) did not meet the minimum standard for *weight of protein source*. Concern remains that some FIYC containing meat, fish or dairy have lower protein content than homemade equivalents and may not sufficiently contribute to intake of important nutrients such as iron.

Protein requirements in the NPPM are somewhat complex and differ depending on product type and where the protein source is listed in the product name for meals. This ensures that products naming protein first have higher protein content than products naming another food item first in the product name. For example, “chicken risotto” will have a higher protein and chicken content than “mushroom and chicken risotto”.

The minimum protein density (g / 100 kcal) and protein content (% of product weight) can often be checked against reported nutrient information and the ingredient list on packs, although some countries do

not require the proportion of protein source to be listed in the ingredients. Other protein requirements adopted from existing EC guidelines are intended to guide manufacturers and cannot usually be checked using packet information. These additional requirements are only provided in a footnote to the model but manufacturers should pay close attention to meeting all requirements to ensure high product quality.

NPPM requirements relating to protein

- Any dry cereal products (category 1) containing a high-protein food (e.g. milk or milk-equivalent) must have ≤ 5.5 g / 100 kcal total protein;
 - Any biscuits or rusks etc. (category 5.2) made with the addition of a high-protein food (e.g. milk or milk equivalent), and presented as such (e.g. in product name, or named/pictured on packet), must have ≤ 5.5 g / 100 kcal total protein;
 - Total protein (g / 100 kcal) must be ≥ 3 g / 100 kcal for all savoury meals, ≥ 4 g if the protein source is named first (e.g. chicken risotto), or ≥ 7 g if the product only names a protein source (e.g. rabbit purée). Meal components such as sauces are exempt;
 - Total protein weight must be higher than 8%, 10% or 40% of the total product weight (in product categories 4.3, 4.4 and 4.5, respectively); e.g. beef lasagne (category 4.4) must contain 10% beef by weight. Meal components such as sauces are exempt; and
 - Additional mandatory protein requirements to be followed by food producers during manufacturing are detailed in footnote 13 of Table 1 and are as stipulated in CODEX Standard CXS 74-1981 (section 3.3) and EC Directive 2006/125/EC (Annex II, section 1).
-

Fat

Sufficient fat intake and appropriate fatty acid composition of foods is essential for healthy growth and development. The *WHO Guiding principles for complementary feeding of the breastfed child* proposes that 30–45% of the energy derived from fat is “a reasonable compromise between the risks of too little intake (such as inadequate essential fatty acids and low energy density) and excessive intake” (23).

The WHO recommend intake of total fat for adults is a maximum of 30% energy with saturated fat being a maximum of 10%. Dietary fat recommendations from WHO for infants and young children are not specified, although intake should be “similar” to adults (24). Fat requirements in the NPPM are set at a maximum of 4.5 g / 100 kcal for most products and 6 g / 100 kcal for those with higher protein source (meat/fish) content. This is equivalent to 40% or 54% energy from fat, respectively.

The model does not include saturated fatty acid limits because arguments persist around recommended intakes of saturated fatty acids, lack of evidence for intakes in babies and whether any health effects may depend on specific fatty acid structures and food sources rather than total intake (25). Validation work from 2019 suggests that introducing a maximum saturated fat content in terms of 10% energy contribution would affect most meals containing cheese, many other meals containing meat and many snack products. However the affected snack products would no longer be suitable for sale because of high sugar contents (2).

NPPM requirements relating to fat

- Most products should not exceed 4.5 g / 100kcal total fat.
 - Dry cereals that are intended to be consumed with added milk should not exceed 3.3 g / 100 kcal total fat.
 - Meals containing cheese, naming a protein source first or puréed meat (intended to be eaten with other foods) should not exceed 6 g /100 kcal total fat.
-

Product age range

Previous WHO calls to end the inappropriate promotion of foods for infants under 6 months of age have been ignored by most large food manufacturers, with many products being marketed as suitable from 4 months of age. In the UK, almost half of FIYC (from the four largest manufacturers) were marketed from 4+ months (2). Continuing to permit such labels seems likely to support common perceptions about suitable age of food introduction and encourage earlier food introduction, potentially displacing intake of milk.

Based on the evidence reviewed by WHO and summarized here, commercial products should not be marketed as suitable for infants under 6 months old as: (i) breast-milk provides adequate nutrition for most infants; (ii) early complementary foods are not more nutrient- or energy-dense than usual milk; and (iii) there is insufficient evidence of clear benefits for introducing foods before 6 months of age.

There is currently no upper age limit for heavily processed (smooth and puréed) products, but with increasing age and the development of fine and gross motor skills, infants or young children do not need such smooth foods and can accept greater exposure to textured foods. This further develops chewing ability and children can become accustomed to home-style and family foods. Furthermore, ongoing exposure to highly macerated fruits and vegetables in purées increases unnecessary exposure to liberated sugars in products, presenting issues such as blood glucose rises, oral health and the development of sweet-taste preference. Puréeing also changes food flavour and appearance and may lead to overeating, as foods can rapidly be swallowed without chewing (26).

NPPM requirements relating to recommended product age

- No product should state or imply product suitability for babies under 6 months of age, including images.
 - Products that are blended/puréed which are typically eaten unpuréed should have an upper age limit of 12 months. This applies to puréed and smooth products sold for babies before they are able to chew or accept more textured foods (e.g. puréed fruit/vegetables, processed oatmeal porridge or a blended meal). Naturally smooth and unmacerated foods such as yogurt, risotto or porridge are exempt.
-

Labels and promotional messages

Health, nutrition or other pack claims should not be permitted on FIYC so that the promotion of commercial foods does not undermine public health messages or caregivers' confidence in home-prepared foods, or imply that features of the product are desirable or advantageous. Product labels and names should provide clear information on contents and not mislead consumers. For instance, front-of-pack product names are often misleading about high quantities of cheaper, sweeter ingredients (e.g. apple or pear purée) and imply higher content of cereal, dairy, protein (meat or fish etc.) or vegetables. This particularly applies to puréed products and to breakfast or dairy foods such as yogurt or porridge where the main ingredient(s) is fruit.

FIYC rely on the consumer assumption that they are specifically formulated and are healthier and superior to other commercial products for older children or adults. Many promotional messages and claims are designed to mislead or distract consumers from undesirable qualities, for example by emphasizing use of organic ingredients, convenience, taste or smooth texture. Unrestricted marketing places unfair burdens and pressures upon caregivers, whereby claims imply nutritional perfection or other beneficial attributes that could undermine confidence in providing simple home-prepared foods.

Refer to page 53–56 of *Ending inappropriate promotion of commercially available complementary foods for infants and young children between 6 and 36 months in Europe* for further discussion on FIYC marketing issues (2).

NPPM requirements relating to promotional messages and packaging

- No compositional, nutritional, health or marketing claims.
- Product name clarity.
- Ingredient list clarity.
- Instructions not to consume soft foods via pack spout.
- Suitable preparation instructions.
- Promotion and protection of breastfeeding.

Micronutrients

Micronutrients are not included in the NPPM. The bioavailability of micronutrients in foods, micronutrient content and bioavailability in breast-milk, volume of breastmilk or formula consumed and individual nutritional requirements across ages will differ, meaning different micronutrient requirements may be required for different ages or products. Some regions may wish to retain existing, or establish new, product requirements for micronutrients to ensure sufficient intake from foods (e.g. iron from protein sources) or via fortification.

Snacks and desserts

The proliferation of snack and dessert FIYCs normalises the concept of between-meal snacks and providing sweet desserts after meals. Snacks and desserts alone are unlikely to provide essential or balanced nutrition for development (e.g. iron) and should be used in moderation, particularly for infants (under 12 months) when nutrient-rich rather than carbohydrate- or sugar-rich foods are required for optimal development. The NPPM does not include specific recommendations on the use of or the labelling on snack or dessert products. However, local adoption of NPPM requirements may consider prevalence of snacks or dessert products and caregiver attitudes or understanding about frequency of use.

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ANNEX 1.

How the draft NPM (published in 2019) was updated into this NPPM

The draft nutrient profile model was published in 2019, developed using WHO guidelines on NPM development (1) and informed by a literature review and a detailed validation/pilot test of 2634 products on sale across 10 European countries (2). The draft NPM has been used to evaluate appropriate promotion of FIYC on sale in Poland (3,4).

In late summer 2021 the University of Leeds WHO Collaborating Centre in Nutritional Epidemiology re-examined the NPM and drafted proposed model updates and simplifications. These were presented and discussed among attendees of a WHO Expert Meeting on Nutrient Profile Models for infants and children in September 2021.

A subsequent country consultation exercise with interviews and a questionnaire was undertaken early in 2022 to collate feedback on the draft NPM suitability and proposed model updates across WHO European Region Member States. Invited interviewees provided context on country-level policy, readiness to implement the NPPM and perceived barriers or facilitators to policy change. A questionnaire was more widely shared among attendees of the expert meeting to collate feedback on local suitability of the NPPM requirements and food categories, and perceived barriers and facilitators to implementing the model to support policy changes. Feedback was synthesized and informed the final NPPM categories and product requirements.

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ANNEX 2.

What is inappropriate promotion of foods for infants and young children?

What is considered inappropriate promotion of foods for infants and young children (1)?

- Promotion of foods for infants and young children is considered inappropriate if it interferes with breastfeeding, contributes to obesity and noncommunicable diseases, creates a dependency on commercial products, or otherwise is misleading.
- Recommended breastfeeding practices can be undermined by inappropriate promotion in various ways. These include promotion of products as being suitable for infants under 6 months, as being equivalent or superior to breast-milk, as an effective replacement for breast-milk, or by using brands/labels/logos that are the same or similar to those used for breast-milk substitutes.
- Promotion of products that contain high levels of sugar, salts or fats may contribute to childhood obesity and noncommunicable diseases; such promotion should clearly be considered inappropriate.
- Promotion of foods not recommended in national food-based dietary guidelines is likewise inappropriate. Promotion is also inappropriate if the product fails to adhere to all applicable standards for safety and nutrient composition or discourages a diverse diet based on a wide variety of foods, including minimally processed fruits, vegetables and animal-source foods, or if it undermines the use of suitable home-prepared and/or local foods.
- Promotion is inappropriate if it is misleading, confusing or could lead to inappropriate use through, for example, health and nutrition claims. Promotional claims idealize the product, imply that it is better than family foods and mask the risks. Promotional claims put unprocessed family foods at a disadvantage. Nutrition and health claims shall not be permitted for foods for infants and young children.

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ANNEX 3.

Notes on where the NPPM supersedes or differs from existing CODEX and European Commission standards

Note that CODEX [CODEX/STAN 074-1981 REVISED 2017 ON CEREAL BASED FOODS] and EC Directive Annex I requirements are identical in terms of nutrient requirements.

EUROPEAN COMMISSION DIRECTIVE 2006/125/EC of 5 December 2006 on processed cereal-based foods and baby foods for infants and young children

- The NPPM differs from the directive Article 8(a) labelling requirement that products may state an age of introduction from 4 months.
- Annex I. Essential composition of processed cereal-based foods for infants and young children
 1. Cereal content definition (> 25% of final dry mix weight) is specified in the NPPM.
 2. Protein and lipid content requirements for different dry cereal product categories are detailed within the NPPM but cereal categories are not differentiated. The NPPM has one cereal category instead of 4 [dry cereals to be eaten with milk, without milk, dry pastas etc., rusks and crackers].
 3. "Rusks, biscuits and crackers" have a maximum fat content of 3.3 g / 100 kcal, presumably because they can be reconstituted with milk. The NPPM has adopted a higher threshold of 4.5 for all snack foods for simplicity and because the higher fat threshold may better accommodate product reformulation if added sugars are removed.
 4. The total fat content for cereal products intended to be made up or eaten with milk (or equivalent unsweetened liquid) is 3.3 g / 100 kcal, or 4.5 g / 100 kcal if intended to be made up or eaten with water (or equivalent protein-free liquid). If total fat \geq 3.3 g / 100 kcal: (i) the amount of lauric acid shall not exceed 15% of the total lipid content; (ii) the amount of myristic acid shall not exceed 15% of the total lipid content; (iii) the amount of linoleic acid (in the form of glycerides = linoleates) shall not be less than 70 mg / 100 kJ (300 mg / 100 kcal) and shall not exceed 285 mg / 100 kJ (1200 mg/100 kcal). The above details were not adopted within the NPPM for simplicity, as: (i) the fat requirements only relate to products that lie between 3.3 and 4.5 g / 100 kcal; (ii) requirements only apply to products intended to be made up with water; and (iii) such products form only a small part of the complementary diet.
 5. Carbohydrate requirements for products with added sugar are superseded by the NPPM requirement to disallow products with added sugars.
 6. Mineral, vitamin and trace element requirements, except sodium, are not detailed in the NPPM. A footnote is included that products must adhere to existing EC requirements or other local, regional or national guidelines, where applicable. The sodium threshold of 100 mg/ 100 kcal was lowered to 50 mg /100 kcal in the NPPM. Note that the Codex and EC Directive requirement that sodium salts may only be added to processed cereal-based food for technological purposes is unclear/open to misuse and was not adopted into the NPPM.

- Annex II. Essential composition of baby foods for infants and young children
 1. Protein requirements for foods containing traditional protein sources named singularly or in combination have been adopted in the NPPM. EC directive requirements for protein contents of “meals” “sauces” and “sweet dishes” are vague and open to misuse/misinterpretation. The NPPM now includes protein requirements for different meal categories.
 2. Carbohydrate requirements have not been transferred to the NPPM:
 - 2.1 Some requirements relate to drinks, and are now disallowed in the NPPM.
 - 2.2 The requirement for fruit-only dishes and desserts/puddings to contain < 20 g / 100 g and < 25 g / 100 g carbohydrate, respectively, are replaced by the focus on added sugars and front-of-pack sugar flags in the NPPM.
 - 2.3 The NPPM does not set maximum carbohydrate thresholds to avoid the addition of low energy density foods (or water) to products.
 3. Fat requirements have been adopted in the NPPM.
 4. Mineral, vitamin and trace element requirements, except sodium, are not detailed in the draft NPM. A footnote is included that products must adhere to existing EC requirements or other local, regional or national guidelines, where applicable. The sodium requirements of 200 mg / 100 kcal or 200 mg / 100 g (or 300 mg if cheese is the only named ingredient) has been lowered to 50 mg in the NPPM (or 100 mg if cheese is listed in the product name).
- Annex III relates to amino acid composition of casein in cereal-based foods. Such details are not included in the NPPM.
- The directive states that “only the nutritional substances listed in Annex IV may be added in the manufacture of processed cereal-based foods and baby foods.” The NPPM does not make reference to this.

REGULATION (EU) No 609/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 June 2013 on food intended for infants and young children, food for special medical purposes, and total diet replacement for weight control and repealing Council Directive 92/52/EEC, Commission Directives 96/8/EC, 1999/21/EC, 2006/125/EC and 2006/141/EC, Directive 2009/39/EC of the European Parliament and of the Council and Commission Regulations (EC) No 41/2009 and (EC) No 953/2009.

- Requirements were reviewed for “Processed cereal-based food and baby food” (Chapter 1, Article 1, part b). These micronutrient requirements are not detailed with the NPPM but footnote is included that products must adhere to existing EC requirements or other local, regional or national guidelines, where applicable.

ANNEX 4.

Products outside the NPPM scope

Products not marketed for babies and infants

Products not specifically marketed for children younger than 3 years of age or whose labels state that they are intended only for pregnant women, mothers or children older than 3 years

Vitamin and mineral food supplements

Vitamin and mineral food supplements, whether to be consumed as tablets/drops or added to foods at home (such as home fortification products, micronutrient powders or lipid nutrient powders)

Products that function as breast-milk substitutes

These should not be *promoted* at all. These include any milks (or products that could be used to replace milk, such as fortified soya milk alternatives), in either liquid or powdered form, that are specifically marketed for feeding infants and young children up to the age of 3 years. This includes milk or milk-like formulations commonly marketed for infants from 6 months of age and prepared in accordance with relevant international or national standards. The upper age indication on the product label varies country to country but is usually between 12 and 36 months. Any milk product that is marketed or represented as suitable as a partial or total replacement of the breast milk part of the young child's diet is a breast-milk substitute and, therefore, falls under the scope of the International Code. This product always replaces breast milk, as breastfeeding is recommended to continue for 2 years or beyond. Follow-up formula should therefore also not be promoted. These provisions also apply to growing-up milk (also known as growing-up formula, toddler milk or formulated milk), which is targeted at infants and young children from 1 year (sometimes younger) to 3 years old. Often, the product name is similar to a company's formula products, with a figure "3" added on. Where growing-up milks are marketed as suitable for feeding young children up to the age of 36 months, they fall under the International Code definition of "breast-milk substitute" read together with WHA resolution 58.32 from 2005, which recommends breastfeeding should continue for up to 2 years or beyond

Other foods and beverages promoted as suitable for feeding a baby during the first 6 months of life when exclusive breastfeeding is recommended (including baby teas, juices and waters) are also considered to be breastmilk substitutes

ANNEX 5.

Health and nutrition claims

Health claim means any representation that states, suggests or implies that a relationship exists between a food or a constituent of that food and health. A health claim includes but is not limited to the following:

- i. a nutrient function claim that describes the physiological role of the nutrient in growth, development and normal functions of the body;
- ii. any other function claim concerning specific beneficial effects of the consumption of foods or their constituents that relate to a positive contribution to health or to the improvement of a function or to modifying or preserving health; or
- iii. a reduction of disease risk claim relating to the consumption of a food or food constituent, in the context of the total diet, to the reduced risk of developing a disease or health-related condition. In this context, health means a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

Nutrition claim means any representation which states, suggests or implies that a food has particular nutritional properties including but not limited to the energy value and to the content of protein, fat and carbohydrates, as well as the content of vitamins and minerals. The following do not constitute a nutrition claim:

- a. the mention of substances in the list of ingredients;
- b. the mention of nutrients as a mandatory part of nutrition labelling;
- c. quantitative or qualitative declaration of certain nutrients or ingredients on the label if required by national legislation.

ANNEX 6.

Types of promotion

Promotion is broadly interpreted to include the communication of messages that are designed to persuade or encourage the purchase or consumption of a product or raise awareness of a brand. Promotional messages may be communicated in a variety of settings, including in-store promotions and via traditional (such as television) and digital mass media. Marketing promotion also includes the packaging, branding and labelling of a product. In addition to promotional techniques aimed directly at consumers, measures to promote products to health workers or to consumers through other intermediaries are included. There does not have to be a reference to a brand name of a product for the activity to be considered as advertising or promotion. Cross-promotion (also called brand-crossover promotion or brand stretching) is an additional form of marketing promotion included in this definition of marketing in which customers of one product or service are targeted with promotion of a related product. Promotional messages and cross-promotion that this NPPM applies to are further defined in the WHO guidance on ending the inappropriate promotion of foods for infants and young children and implementation manual (1).

Practices commonly used to promote foods for infants and young children

1. Advertising activities and materials:
 - a. media advertisements (e.g. TV, radio, online, print materials); and
 - b. any audio-visual material meant to promote relevant products using TV/radio/print as a mean of dissemination (e.g. TV/radio commercials, billboards, posters, newsletters, pamphlets, promotion in books, magazines, journals or newspapers).
2. Online promotions on internet (e.g. Facebook, Twitter or other social media).
3. Non-advertising promotion activities:
 - a. promotion or sales inducement at the location/place where designated products are sold (e.g. special displays/offers/sales, discount coupons and rebates, loss-leaders and tie-in sales);
 - b. promotion in communities and public places (e.g. banners, free product distribution/ company gifts, discount coupons); and
 - c. promotion in health-care facilities and by health workers (e.g. donation or acceptance of company equipment/services/gifts/other incentives, use of health facilities for commercial events/contests/ campaigns, distribution of any gifts or coupons to parents/caregivers/families, etc.);
4. Labelling, messaging and packaging, including health and structural claims, recommending or promoting bottle feeding, and pictures, images and wording suggesting appropriate use of the product for infants less than 6 months old.
5. Cross promotion of products, including through misleading labelling, and direct contact of company representatives with mothers and other caregivers via social media.

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The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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