**EURRECA/WHO Workshop report: "Deriving micronutrient recommendations: updating best practices"**

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**Abstract**

This paper describes the outcomes of the workshop "Deriving micronutrient recommendations: updating best practices" which took place in Brussels in April 2012. The workshop was organised jointly by the EURRECA (EURopean RECommendations Aligned) Network of Excellence and the World Health Organization (WHO)- Regional Office for Europe. The delegates included, among others, representatives from nutrient recommendation setting bodies (NRSBs) across Europe. The current paper focuses on the gaps and needs of NRSBs as identified by the workshop participants: i) practical tools and best practices to adapt dietary reference values, ii) comparable nationally representative food consumption data (including updated and complete food composition databases), iii) adequate financial resources and technical capacity, iv) independence and transparency in expert selection, research conduct and communication of research results and v) clear correspondence of terminology used at national levels.

**Keywords:** Nutrient Recommendation Setting Bodies, EURRECA, micronutrient, dietary reference values

**List of abbreviations**

DG Research: Directorate-General for Research and Innovation

DRVs: Dietary Reference Values

EC: European Commission

EFSA: European Food Safety Authority

EU: European Union

EURRECA: EURopean micronutrient RECommendations Aligned

NDA: EFSA Panel on "Dietetic products, Nutrition and Allergies"

NRSBs: nutrient recommendation setting bodies

WHO: World Health Organization

SAB: Scientific Advisory Body

The “EURopean micronutrient RECommendations Aligned” (EURRECA) Network of Excellence (FOOD-CT-2006-36196) (01/01/2007-30/06/2012), which was funded by the Directorate-General for Research and Innovation (DG Research) of the European Commission (EC) was established to review and undertake the alignment of methodologies for the derivation of micronutrient dietary reference values (DRVs), in European Union (EU) populations. A final workshop was organized by EURRECA and the World Health Organization (WHO) Regional Office for Europe with the aim to review the methodology behind deriving DRVs and to identify current gaps and challenges faced during this process by national nutrient recommendation setting bodies (NRSBs) in Europe. The EURRECA/WHO workshop: “Deriving micronutrient recommendations: updating best practices” was convened on 18–19 April 2012 in Brussels, Belgium, and hosted by EC DG Research. The workshop’s objectives were to: (1) Share current practices, highlight variability in current recommendations and discuss the observed differences; (2) Present and discuss the added value of EURRECA’s proposed methodology for setting micronutrient recommendations; (3) Identify common priorities and needs for setting micronutrient requirements in Europe; and (4) Demonstrate the use of some of the EURRECA tools/databases relevant to the process of setting recommendations. The workshop’s invitees were representatives and experts linked to NRSBs in 30 countries of the WHO European Region (both EU and non-EU countries), EURRECA partners and representatives of selected inter-governmental organizations. Apart from plenary sessions, parallel sessions were organised in which the NRSB delegates discussed current practices and methodologies for setting country-specific micronutrient DRVs, as well as perceived gaps and needs in this process. Four

micronutrients (iodine, iron, folate and vitamin D) were chosen as examples to discuss the feasibility of EURRECA's framework for deriving and using DRVs (see Fig. 1a for the version discussed during the workshop).The framework was revised following the comments of the NRSBs representatives during the workshop and evolved into its final form presented in Figure 1b. The methodological aspects of the final version and its application in case-studies for six micronutrients (folate, iodine, iron, selenium, vitamin D and zinc) will be published in the EURRECA final report [1].

**Gaps and needs as perceived by national NRSBs**

The following topics (in *italics*) were discussed during the parallel sessions on the second day of the workshop and several gaps and needs emerged as important for NRSBs.

*Role and remits of NRSBs.* NRSBs are acting at the interface of risk-benefit assessment and management, with DRVs being their evidence-based managerial instrument. At the regional level, the WHO Regional Office for Europe provides advice on policy priorities (e.g. [2]) and EFSA's mandate is to propose DRVs for the EU Member States to the EC [3]. Most Member States in the WHO European region have a NRSB that advises on national DRVs taking into account differences in populations, e.g. generic factors like body size/composition, energy intake/expenditure, and nutrient specific factors such as sunlight exposure (relevant for vitamin D). NRSBs differ in their statutory responsibilities and operate within diverse regulatory frameworks among countries. Where a Scientific Advisory Body (SAB) exists, the processes of decision-making for setting DRVs are more explicit. However, where no SAB or other recognised

professional body exists, the links between science and regulatory realities are not clearly specified [4].

*Best practices to adapt DRVs*. To adapt internationally recommended DRVs to the national context in an efficient and timely manner, some countries have established collaborations, e.g. the Nutrition Societies from the three German speaking countries (Germany (D), Austria (A) and Switzerland (CH)) collaborate in the DACH, and Denmark, Finland, Iceland, Norway and Sweden have established nutrition recommendations for the Nordic countries. NRSBs in other countries (e.g. in the case of Slovenia or Hungary) may lack the financial resources or capacity and rely on DRVs from culturally similar or neighbouring countries that have similar health problems and presumably similar nutrition issues. Some countries have developed elaborated algorithms to adapt DRVs [5]; others have developed frameworks for considering evidence [6]; sharing such best practices and methodologies could be helpful to NRSBs in other countries, especially in culturally-similar nearby ones. EURRECA framework and tools could serve this purpose.

*Need for comparable nationally representative food consumption data.* Most EU countries have established nutrition surveillance systems (e.g., the EFSA Comprehensive European Food Consumption Database http://www.efsa.europa.eu/en/datexfoodcdb/datexfooddb.htm) whereby dietary assessment methods and food composition databases need frequent updates to account for the variable micronutrient contents due to e.g., voluntary fortification/enrichment in the

food supply chain. Countries outside the EU often lack such a system that would allow them to better identify nutritional inadequacies and to target intervention programs and currently rely on non-systematic investigations on dietary intake or nutritional status in selected groups or clinical populations. In order to obtain comparable data in the EU and Europe at large, a need for use of harmonized nutrition surveillance methodologies was clearly recognised.

*Adequate financial resources and technical capacity.* Apart from the required high level of technical scientific expertise, the currently limited available financial and human resources prohibit NRSBs from carrying out comprehensive exercises to adapt internationally recommended DRVs to national needs. Some countries also expressed a concern that it is difficult to find experts with knowledge of specific nutrients within their own country. To make use of the available resources efficiently, and to facilitate the evidence-informed approach to adapting DRVs and nutrition policies, NRSBs need easy access to the underlying evidence bases (e.g. scientific publications, summary reports) but also available tools, such as the EURRECA framework [1], to help them through the process of deriving DRVs.

*Independence and transparency*. NRSBs often rely on expert advice from nutritionists and clinicians, as well as other disciplines. Some workshop participants expressed the increasing difficulties in identifying expertise in risk-benefit assessment and management due to real or perceived conflicts of interest (e.g. concurrent food industry posts). Analogous to pharmaceutical companies, food (ingredient) industries have interests in

creating market opportunities for enrichment and supplements, and this might, even unintentionally, drive advice from industry-liaised experts towards higher DRVs and enrichment/supplement policies rather than behavioural policies. Such tendencies might lead to adverse effects, especially when the range between DRVs and upper or safe limits of intake is relatively small (e.g., vitamin A and selenium; vitamin D and folate [7]). Therefore, transparency in the remits of the NRSBs, selection of experts, involvement of stakeholders, and the consultation process are crucial to the trust of consumers in public health nutrition strategies set by the governments. However, independency was identified as a critical factor also for the generation of knowledge (nature of hypothesis can be oriented by interest in creating market opportunities), or communication of results (publication bias may arise when non-significant or negative results are not communicated).

*Standardized terminology.* Positioned between the derivation of DRVs and their translation to nationally applicable policy advice, workshop participants experience difficulties because of the diversity in terminology regarding DRVs in the scientific literature. They expressed the need for the use of clearly defined terminology by risk assessors that integrate scientific data to derive DRVs. However participants did not consider that a common terminology throughout Europe is feasible at the moment. In view of the bridging role of NRSBs to national application of DRVs and the need to communicate these to professionals (e.g., dieticians, clinicians), they felt that for national applications the terminology used at national level (in the spoken language) should be used. A theoretically preferable common European terminology might initially enhance

miscommunication and misinterpretation of DRVs in professional practice. In light of these concerns, the creation of a glossary of terms and definitions of the different scientific terminologies, as well as their equivalence in different European languages would be helpful [1].

**Next steps**

This EURRECA/WHO workshop was organised as a closing meeting of EURRECA. The current paper reports on the outcomes of the workshop regarding its third objective "Identify common priorities and needs for setting micronutrient requirements in Europe" and imprints the consensus reached by the workshop participants.

EURRECA has been aware of the relevance of its work to the NRSBs from its very beginning, which has resulted in research into the organisation of NRSBs in Europe [8], populations at risk of low micronutrient intake [9] and potential policy options, with case studies that involved some of the NRSBs [10]. To further facilitate the derivation of DRVs, EURRECA has highlighted the topics that require additional research and has identified which nutrients/health outcomes should be prioritised for research by age- or population- group [11]. The EURRECA/WHO workshop further supported the main objective of EURRECA towards alignment of methodologies to derive DRVs: NRSBs from EU- and non-EU countries came together, discussed the methods they use, identified the difficulties they face and agreed on their current needs for the derivation of DRVs.

Many of the perceived difficulties are related to the risk assessment process in the pan-European context, e.g., in EFSA, and its application in a national context: more

specifically, the appraisal and use of nationally produced research data and expertise for deriving DRVs and the translation of these DRVs into national values or their use in national policy-making. These difficulties could be overcome by creating a closer interrelationship between experts participating in the pan-European DRV-setting process (e.g. EFSA) and national experts. This interaction should be realised in all stages of the DRV-setting process (see in Figure 1b) and future meetings allowing for fruitful collaborations and exchange of knowledge would be fruitful to enhance public health nutrition in Europe.

Some of the above-mentioned needs clearly relate to issues addressed in projects such as the Joint Programming Initiative-A healthy diet for a healthy life (it will contribute significantly to the construction of a fully operational European Research Area on the prevention of diet-related diseases and strengthen leadership and competitiveness of the food industry to increase knowledge and deliver innovative, novel and improved concepts), and in the EC-funded project EURO-DISH (2012-2014) (it aims to provide recommendations on the needs for food and health research infrastructures in Europe), the European Strategy Forum on Research Infrastructures (http://ec.europa.eu/research/infrastructures) (it aims to support a coherent and strategy-led approach to policy-making on research infrastructures in Europe, and to facilitate multilateral initiatives leading to the better use and development of research infrastructures, at EU and international level) and the Horizon2020 programme (http://ec.europa.eu/research/horizon2020) (the EU's new programme for research and innovation, running from 2014 to 2020 with an €80 billion budget).

**Disclaimer**

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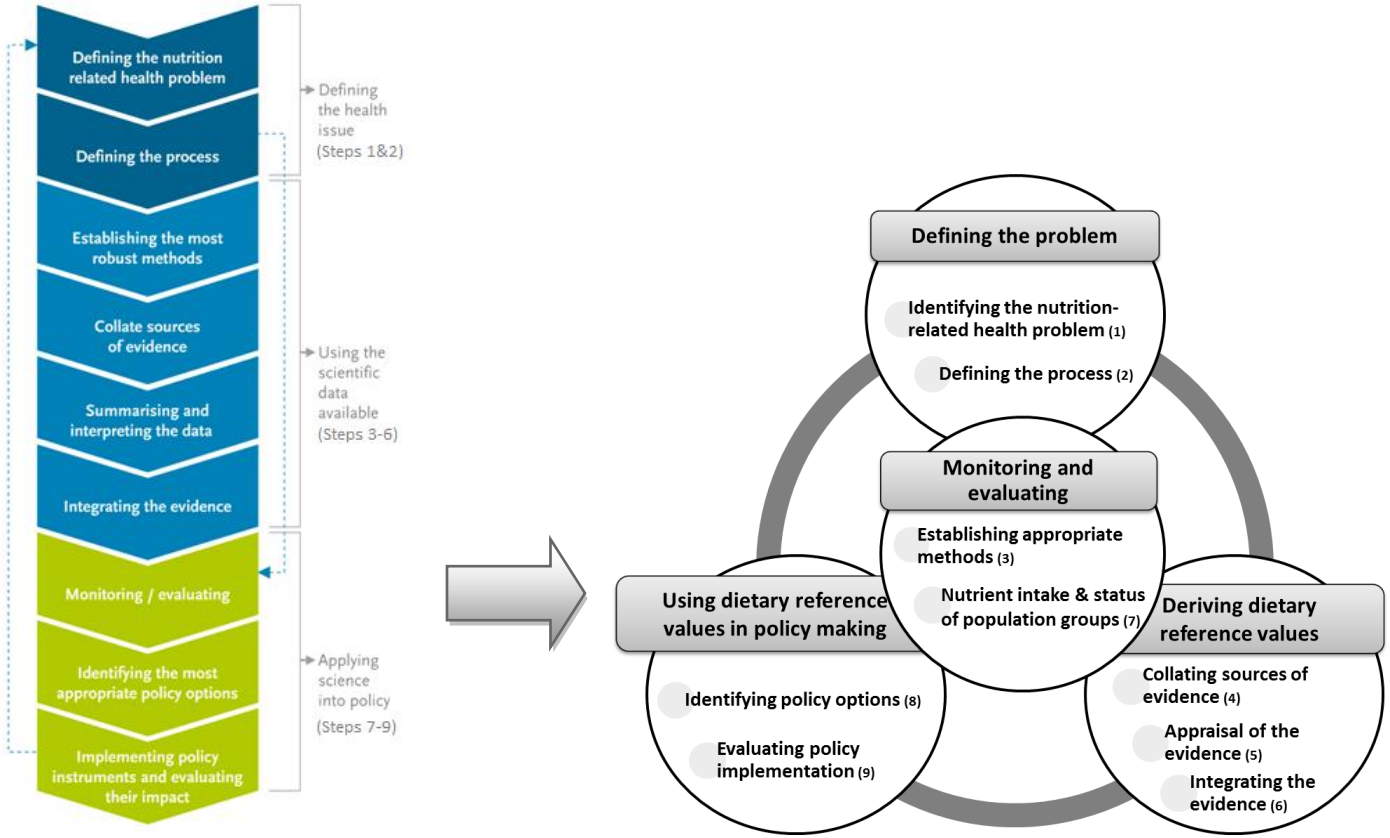
Reference List


1. Harmonising the process of deriving aligned micronutrient recommendations: the EURRECA Network of Excellence. Critical Reviews in Food Science and Nutrition 2013;XX: XX.
2. WHO Europe: European Action Plan for Food and Nutrition Policy 2007-2012 http://www.euro.who.int/__data/assets/pdf_file/0017/74402/E91153.pdf. 2008;
3. EFSA: Scientific Opinion on principles for deriving and applying Dietary Reference Values. http://www.efsa.europa.eu/en/efsajournal/pub/1458.htm. EFSA Journal 2010;8: 1458 [30 pp.]-
4. Timotijevic L, Barnett J, Brown K, Shepherd R, Fernandez-Celemin L, Domolki L, Ruprich J, Dhonukshe-Rutten RA, Sonne AM, Hermoso M, Koletzko B, Frost-Andersen L, Timmer A, Raats MM: The process of setting micronutrient recommendations: a cross-European comparison of nutrition-related scientific advisory bodies. Public Health Nutrition 2011;14: 716-728.
5. Federación Española de Sociedades de Nutrición Alimentación y Dietética (FESNAD): Ingestas Dietéticas de Referencia (IDR) para la población española. 2010;
6. Scientific Advisory Committee on Nutrition (SACN): A Framework for considering evidence. http://www.sacn.gov.uk/pdfs/sacn_framework_may_2012.pdf. 2012;
7. EFSA: Tolerable upper intake levels for vitamins and minerals (Scientific Committee on Food Scientific Panel on Dietetic Products, Nutrition and Allergies http://www.efsa.europa.eu/en/ndatopics/docs/ndatolerableuil.pdf. 2006;

8. Timotijevic L, Barnett J, Brown K, Shepherd R, Fernandez-Celemin L, Domolki L, Ruprich J, Dhonukshe-Rutten RA, Sonne AM, Hermoso M, Koletzko B, Frost-Andersen L, Timmer A, Raats MM: The process of setting micronutrient recommendations: a cross-European comparison of nutrition-related scientific advisory bodies. Public Health Nutrition 2011;14: 716-728.
9. Roman-Viñas B, Ribas-Barba L, Ngo J, Gurinovic M, Novakovic R, Cavelaars A, de Groot LC, van't VP, Matthys C, Serra ML: Projected Prevalence of Inadequate Nutrient Intakes in Europe. Ann Nutr Metab 2011;59: 84-95.
10. Brown KA, Timotijevic L, Barnett J, Ruprich J, Rehurkova I, Hermoso M, Andersen LF, Lillegaard IT, Fernandez-Celemin L, Larranaga A, Loncarevic-Srmic A, Raats MM: Micronutrient recommendation stakeholders' beliefs on dietary guidelines: a qualitative study across six European countries/regions. Eur J Clin Nutr 2011;65: 872-874.
11. Claessens M, Contor L, Dhonukshe-Rutten R, de Groot L, Fairweather-Tait SJ, Gurinovic M, Koletzko B, Raats MM, van Ommen B, van 't Veer P: EURRECA – Principles and future for deriving micronutrient recommendations. Critical Reviews in Food Science and Nutrition 2013;XX: XX-XX.

**Figure 1** Development of the EURRECA "micronutrient requirement process flowchart" (a) into the final EURRECA "framework for deriving and using dietary reference values for micronutrients" (b). Following the comments of the EURRECA/ WHO workshop participants in April 2012, the initial stepwise linear model was refined into nine activities that are clustered under four stages.




(a) (b)