Introduction to Dietary Reference Values (DRVs)

Ambroise Martin

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Conflict of interest regarding this presentation:

I have no conflicts of interest to report in relation to this presentation.
REQUEST FROM THE EUROPEAN COMMISSION – 2005

BACKGROUND AS PROVIDED BY THE EUROPEAN COMMISSION

• Scientific advice on nutrient intakes as a basis for Community action in nutrition (e.g. nutrition labelling)
• Advice of the SCF (1993)
• “...need to review and if necessary to update these earlier recommendations to ensure that the Community action in the area of nutrition is underpinned by the latest scientific advice.”

TERMS OF REFERENCE

• “First,...provide advice on energy, macronutrients and dietary fibre.”
• “Following on,...advise on population reference intakes of micronutrients in the diet and, if considered appropriate, other essential substances with a nutritional or physiological effect..” (e.g. water, choline)
• “Finally, ... food-based dietary guidelines.”
BASIS FOR SPECIFICITIES OF EFSA WORK ON DRVS

International context

European context

WG DRVs

NDA Panel
EFSA’S MISSION AND TASKS

- Provide scientific advice, opinions, information, and technical support for Community legislation and policies in all fields which have a direct or indirect impact on food and feed safety
- Collect and analyse data to allow characterisation and monitoring of risks
- Promote and coordinate development of uniform risk assessment methodologies
- Communicate risks related to all aspects of EFSA’s mandate

i.e. RISK ASSESSMENT
WHAT EFSA CANNOT DO

- Be responsible for food safety legislation
- Take charge of food safety/quality controls, labelling or other such issues
- Act as a substitute for national authorities
- Specifically for nutrition:
  
  *no role for recommendations on nutrition and management-related public health issues, except upon request from EU*

... not RISK MANAGEMENT!
TAKING INTO ACCOUNT THE CONTEXT OF THE NDA PANEL

Safety and suitability

Safety

Dietetic Products

Novel Foods

Dietary Reference Values

NDA Panel

21 Experts

Claims

Upper Levels

Food Allergy

Scientific advice

Evaluation of scientific substantiation

Supported by the EFSA Secretariat (Nutrition Unit)
CONSEQUENCES FOR WORK ON DRVs

- Preparation of the opinion by a specialised WG (including non-Panel experts and rapporteurs)
- But final adoption by the NDA Panel
- Other tasks with an influence on EFSA’s work on DRVs

**e.g. HEALTH CLAIMS ASSESSMENTS:**

- Delayed the work on DRVs (>4000 claims to be assessed!)
“DRVs are scientific references based on health criteria, taking into account dietary requirements and health outcomes. [...] They represent one of the bases for establishing nutrient recommendations and food-based dietary guidelines. Nutrient goals and recommendations may differ between countries depending on health needs, nutritional status and known patterns of intake of foods and nutrients in specific populations and the actual composition of available foods.”

PRINCIPLES FOR DRVS: DEFINITIONS

- Percentage of population
- Individual requirement
- Average Requirement
- 2 SD (requirement)
- 2 SD (requirement)
- Lower Threshold Intake
- Population Reference Intake
PRINCIPLES FOR DRVs: DEFINITIONS

- **Average Requirement (AR):** the level of intake that is enough for half of the people in a healthy group, given a normal distribution of requirement.

- **Population Reference Intake (PRI):** the level of intake that is enough for virtually all healthy people in a group (AR + 2 SD).

- **Lower Threshold Intake (LTI):** the level of intake below which, on the basis of current knowledge, almost all individuals will be unlikely to maintain metabolic integrity, according to the criterion chosen for each nutrient.
**PRINCIPLES FOR DRVS: DEFINITIONS**

- **Adequate Intake (AI):** the value estimated when a PRI cannot be established because an Average Requirement cannot be set
  - Should be seen as an expression of uncertainty
  - Generally transforms what is observed into a “reference” value
  - Expert judgement that this level of intake is not associated with negative health issues

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**Introduction to DRVs - FENS Meeting, Berlin, 22 October 2015**
PRINCIPLES FOR DRVS: DEFINITIONS

• *Reference intake range for macronutrients (RI):* for macronutrients, expressed as % of energy intake

• *Tolerable Upper Intake Level (UL):* maximum total chronic daily intake unlikely to pose a risk of adverse health effects to humans
  - Revision of UL not in the present mandate (compilation of ULs for the EU published in 2006)
  - Vitamin D, calcium and n-3 PUFA re-assessed in 2012 upon specific request
Estimating physiological requirement and metabolic demand

Estimating dietary requirements

Establishing recommendations for dietary intake

Establishing food-based dietary guidelines

Immediate jump from scientific assessment to nutrition management

APPROACH OFTEN USED BY SIMILAR COMMITTEES
“DRVs are scientific references based on health criteria, taking into account dietary requirements and health outcomes. [...] They represent one of the bases for establishing nutrient recommendations and food-based dietary guidelines. Nutrient goals and recommendations may differ between countries depending on health needs, nutritional status and known patterns of intake of foods and nutrients in specific populations and the actual composition of available foods.”

EFSA PROPOSAL IN 2010 FOR A NEW SCHEME

Separate scientific assessment
Reference values only based on the relation of nutrients to health

- Estimating the physiological requirement and metabolic demand
- Establishing the dietary requirement for nutrients
- Establishing dietary reference values
- Establishing nutrient goals and recommendations
- Establishing food-based dietary guidelines

From adaptation to a specific context
Taking explicitly into account further considerations (e.g., public health priorities, dietary habits, actual food composition, environmental considerations)
EFSA OBJECTIVES - CONSEQUENCES FOR WORK ON DRVS

Guidance of the EFSA Scientific Committee

General efforts for improving transparency in any scientific assessment:

- To explicitly mention the basis of any choice in the assessment
- Submission of all drafts to public consultation
- Publication of all comments received
- Publication of a technical report stating how the comments were taken into account
Scientific excellence:

- Systematic literature reviews (updated from EURRECA network or performed by external tenderer)
- Systematic come back to original pivotal studies
- Re-analysis of original data when needed or possible
- Though uncertainty was not systematically assessed, its consideration led to downgrading of some DRV(s) (e.g. from PRI to AI) or to providing a range rather than a single value
TAKING INTO ACCOUNT THE EUROPEAN CONTEXT

- No specific objective assigned to the task: but “to ensure that the Community action in the area of nutrition is underpinned by the latest scientific advice”
- Compilation of data on dietary intakes from EU Member States – nutrition issues are very diverse
- Use of reference weights/heights for children and adults based on data available in the EU

TAKING INTO ACCOUNT THE INTERNATIONAL CONTEXT

Request from the EC:

“... there is a need to review the existing EU Reference Intakes in the light of new scientific evidence, and taking into account the more recently reported national recommendations.”

• Overview of other reference values/recommendations in each opinion, e.g. WHO, IOM, NNR, DACH, Afssa, DH, ...


• Decision to keep the 1993 definitions, pertinent for reference values and populations
CONCLUSIONS - SOME STRIKING FACTS

• Very few recent studies specifically devoted to the issue of setting DRVs:
  need to re-analyse/interpret old studies in many cases

• Many intervention studies performed in the last decades not useful:
  their main objective often was to study whether intakes above current reference values may be useful for health, not to set DRVs

• Very difficult to change traditional habits:
  the distinction between references values and recommendations is not yet well perceived

• Reluctance to express the range within which the likely truth could be:
  weight of the tradition of the single value fitting for all
CONCLUSIONS - SOME STRIKING FACTS

• Improve the European character of the DRVs under EFSA leadership, transparently expressing uncertainty and any factor involved in uncertainty

• And let national expert committees decide what to recommend/do for nutrition policy within a specific context

➢ **This is still a huge scientific task**

• The “ideal situation” is still some way down the line

• Improvements will hopefully continue!