Applications and uses of the AMDR:

Examples of Federal use in surveillance, regulation, and dietary guidance

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Overarching notes

- AMDR is not required directly in regulations/legislation in Canada or USA
- Nutrient reference values are an important scientific input, but only one among multiple sources of evidence that are considered

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Surveillance: assessment of nutrient intakes

- Chapter 13 in 2002/2005 macronutrient report included recommendations to use akin to AI / UL for individuals; and EAR/UL for populations

Using the Acceptable Macronutrient Distribution Range

Although primarily directed at individuals, the Acceptable Macronutrient Distribution Range (AMDR) also permits assessment of populations. By determining the proportion of the group that falls below, within, and above the AMDR, it is possible to assess population adherence to recommendations and to determine the proportion of the population that is outside the range. If significant proportions of the population fall outside the range, concern could be heightened for possible adverse consequences. Planning and public health messages can then be instituted to attempt to attain a low prevalence of intakes below or above the AMDR.

- Challenges: Data underlying the values

https://nap.nationalacademies.org/read/10490/chapter/15#945

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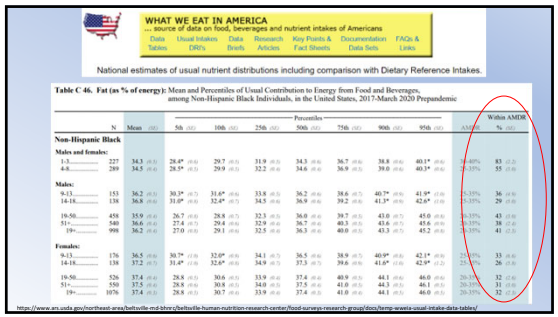

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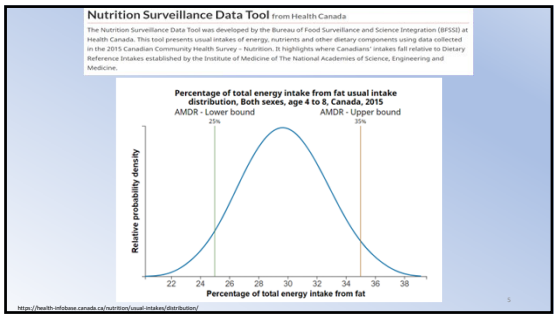

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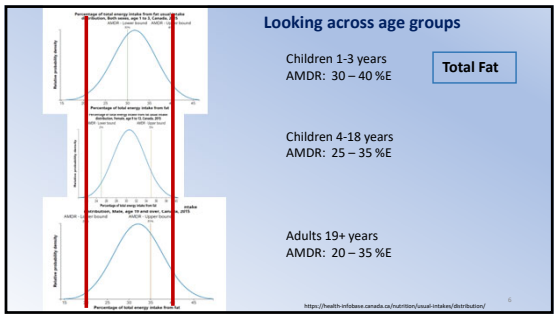

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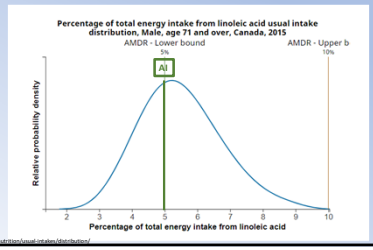
Linoleic and alpha-linolenic acid: AI vs. AMDR



https://health-infobase.canada.ca/nutrition/usual-intakes/distribution/

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Regulation example: Nutrition Facts

- Regulations refer to "Daily Value", not DRIs
- Challenges: AMDRs are a range, not a single reference value

https://www.canada.ca/en/health-canada/services/food-nutrition/nutrition-labelling/nutrition-facts-tables.html

https://www.fda.gov/food/food-labeling-nutrition/changes-nutrition-facts-label

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Consideration of AMDRs in establishing Daily Values

Example	Daily Value	Relationship to AMDR
USA Nutrition Facts label	Fat 78 grams	78 g = **35%** of 2000 kcal Total fat AMDR for 4-18 years: 25 – **35 %**E Total fat AMDR for 19 + years: 20 – **35 %**E
Canada Foods intended for children ≥ 1 year of age but less than 4 years of age	Fat 44 grams	44 g = **40%** of 1000 kcal Total fat AMDR for 1-3 years: 30 – **40 %**E
USA Nutrition Facts label	Carbohydrate 275 grams	275 g = **55%** of 2000 kcal Total carbohydrate AMDR for all ages: 45 – 65 %E

https://www.fda.gov/food/nutrition-facts-label/daily-value-nutrition-and-supplement-facts-labels

https://www.canada.ca/en/health-canada/services/publications/drugs-health-products/consultation-updating-requirements-table-daily-values-nutrition-labelling.html

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Dietary Guidance: DRIs are used as one of many inputs

- Dietary guidance is food-based
  - One way DRIs can inform food-based recommendations is as an input to food pattern modelling
  - AMDRs can be used as benchmarks
    - For a representative or single diet, the aim is to have mean macronutrient content fall within the AMDR boundaries
    - For a distribution of simulated diets, the aim is to have an acceptable proportion of diets with macronutrient content within the AMDR boundaries
- Challenges: one input amongst many considerations

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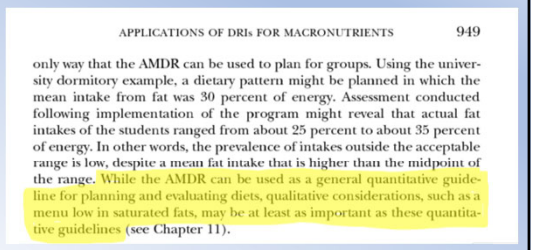

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only way that the AMDR can be used to plan for groups. Using the university dormitory example, a dietary pattern might be planned in which the mean intake from fat was 30 percent of energy. Assessment conducted following implementation of the program might reveal that actual fat intakes of the students ranged from about 25 percent to about 35 percent of energy. In other words, the prevalence of intakes outside the acceptable range is low, despite a mean fat intake that is higher than the midpoint of the range. While the AMDR can be used as a general quantitative guideline for planning and evaluating diets, qualitative considerations, such as a menu low in saturated fats, may be at least as important as these quantitative guidelines (see Chapter 11).

https://nap.nationalacademies.org/read/10490/chapter/15#949

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Summary of main steps used in international approaches to food pattern modelling

(1) Classify foods into food groups and subgroups

(2) Choose important parameters on which healthy eating patterns are based

(3) Decide how discretionary calories will be treated, if not considered previously

(4) Select nutrient- and/or food-based targets to assess healthy eating patterns

(5) Develop food composites on the basis of food groupings, using national nutrition survey data and nutrient value databases

(6) Using an iterative method, identify the number of servings of each food group or subgroup that meets nutritional goals and the desired energy level

(7) Assess the adequacy of the healthy eating patterns in comparison with the selected targets

(8) Simulate diets using individual foods and assess the distribution of nutrients of interest

International approaches to developing healthy eating patterns for national dietary guidelines doi: 10.1093/nutrit/nuz058

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Experience has shown that modelled diets have rarely required adjustment to meet AMDRs

- Modelled diets that meet requirements for essential nutrients and minimize risks from nutrients of concern generally have macronutrient content that naturally falls within the boundaries of the AMDR
  - Typically seen when developing single/representative diets and with distributions of simulated diets for adults
- OR the nature of the adjustments that would be required to increase the proportion of diets within the AMDR boundaries are often not practical or justifiable
  - Sometimes seen with distributions of simulated diets for children (AMDR ranges are narrower than for adults)

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