

# Guidance on energy and macronutrients across the lifespan

April 17 2024

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"Guidance on Energy and Macronutrients Across the Lifespan" by Pennington Biomedical's Dr. Steven Heymsfield and (pictured speaking at ObesityWeek 2023), along with colleague Dr. Sue Shapses of Rutgers University was recently published in the *New England Journal of Medicine*. Credit: Ernie Ballard/PBRC

In the long history of recommendations for nutritional intake, current research is trending toward the concept of "food as medicine"—a philosophy in which food and nutrition are positioned within interventions to support health and wellness. In the paper "[Guidance on Energy and Macronutrients Across the Lifespan](#)," Pennington Biomedical Research Center's Dr. Steven Heymsfield shares the latest clarity and recommendations in the rich and storied history of energy and macronutrient intake.

The [research paper](#) by Dr. Heymsfield and colleague Dr. Sue Shapses, Professor of Nutritional Sciences at Rutgers University and Director of the Next Center at the New Jersey Institute for Food, Nutrition and Health, was recently published in the *New England Journal of Medicine*, showcasing recommendations with increased clarity for protein, fat, carbohydrates, fiber and water intake at various stages in the human lifespan.

"Couple with the amount and pattern of the foods people eat, the primary macronutrients of protein, carbohydrates and fat can shape the major determinates of health throughout the lifespan," said Dr. Heymsfield, who is a professor of Metabolism & Body Composition at Pennington Biomedical.

"Even considering the incredible diversity of traits and [nutritional needs](#) across the global population, we can potentially provide effective care for all patients, including the growing number of patients with diet-related diseases, so long as we recognize the subtle effects of the key macronutrients."

Throughout the research document, the authors frequently reference the original, historic research for which they are providing the latest

incarnation and related knowledge. Focusing primarily on energy and three macronutrients—protein, carbohydrates and fat, and their subsequent substrates—[amino acids](#), glucose and [free fatty acids](#), the paper shows how these can fuel growth and maintenance throughout life.

For optimal health, the study provides dietary reference intakes for the three micronutrients at various stages: 0 to 6 months, 7 months to slightly less than a year old, one year to three, four to eight years, nine to 13 years, 14 to 18 years, over 19 years, and then additional recommendations for pregnancy and lactation.

The research goes on to provide recommendations to patients and caregivers on healthy eating patterns consistent with the energy and macronutrient guidelines and includes an [online calculator](#).

While the [energy requirements](#) and variable needs for the three main macronutrients and multiple micronutrients vary across the nine life stage groups, there are overarching nutritional goals for patients when choosing healthy food patterns. A variety of healthy meal pattern examples are available, but reoccurring components feature the inclusion of vegetables of all types, whole fruits, fat-free or low-fat dairy, lean meats, seafood, eggs, beans, and nuts, plant- and seafood-based oils, and grains, with at least half of those being whole grains.

The need to incorporate the three main macronutrient groups and micronutrients into the diets of the various life stage groups is a matrix that is further complicated as varying financial resources, personal preferences, cultural backgrounds and ethnic food traditions are accounted for. The paper structures a priority framework, offering better insights into those diets that can be tailored for specific diet-related chronic conditions, such as obesity or type 2 diabetes.

"The legacy of research into dietary nutrition continues to refine what

we know about our bodies and the capacity for a tailored diet, featuring key macronutrients to support our long-term health," said Dr. John Kirwan, Executive Director of Pennington Biomedical Research Center. "Dr. Heymsfield's recent paper in the *New England Journal of Medicine* is the latest contribution to this research history of contributing to the knowledge base, and further promotes the notion of 'food as medicine'—delivering the potential to improve health across the lifespan with bespoke, nutrient-rich diets."

**More information:** Steven B. Heymsfield et al, Guidance on Energy and Macronutrients across the Life Span, *New England Journal of Medicine* (2024). [DOI: 10.1056/NEJMr2214275](https://doi.org/10.1056/NEJMr2214275)

Provided by Pennington Biomedical Research Center

Citation: Guidance on energy and macronutrients across the lifespan (2024, April 17) retrieved 21 May 2024 from <https://medicalxpress.com/news/2024-04-guidance-energy-macronutrients-lifespan.html>

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