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LETTER TO THE EDITOR

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# Response to the Letter to the Editor by Athinarayanan

**TO THE EDITOR:** We thank Dr. Athinarayanan for her interest in our review [1] and appreciate the opportunity to respond.

We agree that patients face many challenges maintaining long-term body weight reduction, including widespread misconceptions regarding the long-term effectiveness of lifestyle interventions for obesity, along with the body's physiological response to weight loss, which can lead to reduced energy expenditure and increased appetite [2]. Limited access to treatment is also a barrier to successful long-term weight management [3]. However, we dispute Dr. Athinarayanan's suggestion that dietary carbohydrate restriction (or any other lifestyle intervention) is a proven, effective strategy for weight maintenance after treatment with antiobesity medications (AOMs). Evidence from numerous randomized controlled trials (RCTs) shows that, even with ongoing lifestyle counseling, weight regain is typically observed after AOM cessation [1]. Accordingly, long-term use of pharmacotherapy is recommended for weight maintenance [1]; therefore, weight management after deprescription was outside of the scope of our review.

Our review recommended a variety of healthy dietary patterns for patients treated with AOMs and highlighted the importance of individualized lifestyle goals. A low-carbohydrate diet was not excluded from our recommendations, and we provided guidance for clinicians whose patients prefer this dietary pattern. However, when considering the potential impacts of dietary patterns on long-term health outcomes such as cardiovascular disease and mortality, there is more evidence to support a recommendation for moderate-carbohydrate dietary patterns such as the Mediterranean and healthy plant-based diets [1, 4]. Indeed, we feel that the strength of the evidence to specifically recommend a low-carbohydrate dietary pattern is low. The carbohydrate-insulin model is an interesting but controversial theoretical model that is challenged by scientific evidence that supports alternate theories of obesity pathophysiology [2, 5]. As evidence of the efficacy of low-carbohydrate dietary patterns on weight maintenance, Dr. Athinarayanan cites nonrandomized studies, including a report from the National Weight Control Registry, a prospective cohort study of individuals who, prior to study entry, had maintained a weight reduction of at least 30 lb for 1 year or more. Of note, only 11% of registry participants reported losing weight with a low-carbohydrate dietary approach [6]. We appreciate the work of Dr. Athinarayanan and colleagues, which includes descriptive, nonrandomized studies of outcomes among patients with type 2 diabetes who self-selected a telehealth-based continuous care program leveraging a low-carbohydrate dietary pattern [7, 8]. We also appreciate their recent retrospective analysis of the impact of deprescription of glucagon-like peptide-1 agonist therapy for type 2 diabetes on weight maintenance in a subset of these program participants [9]. Additional RCTs are needed to rigorously evaluate the efficacy of different lifestyle interventions, including a low-carbohydrate approach, after AOM deprescription. However, we anticipate that weight regain would occur, as has been observed previously in numerous trials, because obesity is a chronic and relapsing disease [1].

In summary, we agree that dietary recommendations should be personalized for patients treated with AOMs and recognize that, for select patients, a low-carbohydrate dietary pattern may be preferred; however, we are unable to specifically recommend a low-carbohydrate dietary pattern over other dietary patterns. Given the wealth of evidence from RCTs that weight regain is typical after AOM cessation, even with continued lifestyle counseling, we support efforts to optimize long-term access to evidence-based obesity care.

## CONFLICT OF INTEREST STATEMENT

Jaime P. Almandoz has received consulting fees from Boehringer Ingelheim, Eli Lilly and Company, and Novo Nordisk A/S; received payment or honoraria for lectures from Clinical Care Options, the Institute for Medical and Nursing Education, and PeerView; and served in a leadership or fiduciary role with The Obesity Society Governing Board. Thomas A. Wadden has received consulting fees from Novo Nordisk A/S and WW International, Inc. (formerly Weight Watchers). Colleen Tewksbury has received payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from the Academy of Nutrition and Dietetics and the Commission on Dietetic Registration; received support for attending meetings and/or travel from the Academy of Nutrition and Dietetics; served in a leadership or fiduciary role for the Academy of Nutrition and Dietetics Weight Management Dietetic Practice Group Executive Committee; and served as a spokesperson for the Academy of Nutrition and Dietetics. Caroline M. Apovian has received institutional grants from GI Dynamics Inc. (now Morphic Medical), Novo Nordisk A/S, and the Patient-Centered Outcomes Research Institute; received consulting fees from Cowen and Company, LLC; received payment or honoraria for lectures from Rhythm Pharmaceuticals, Inc.; participated on advisory boards for Altimmune, CinFina Pharma, Currax Pharmaceuticals, EPG Communication Holdings, Form Health, L-Nutra, NeuroBo Pharmaceuticals, Inc., Novo Nordisk A/S, PainScript, Palatin Technologies, Inc., Pursuit By You, ReShape Lifesciences, Inc.,

Riverview School, and Roman Health Ventures Inc.; served in a leadership or fiduciary role with the World Obesity Federation; and received stock or stock options from Gelesis and Xeno Biosciences. Angela Fitch has received consulting fees from Eli Lilly and Company, Jenny Craig, Novo Nordisk A/S, Sidekick Health, and Vivus; received payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Novo Nordisk A/S; received payment for expert testimony from the state of Massachusetts; received support for attending meetings and/or travel from the Obesity Medicine Association and Pfizer Inc.; served in a leadership or fiduciary role with the Obesity Medicine Association; and received stock or stock options from Eli Lilly and Company and Novo Nordisk A/S. Jamy D. Ard has received grants or contracts from Boehringer Ingelheim, Eli Lilly and Company, Epitomee, KVK Tech, Nestlé Health Science, UnitedHealth Group R&D, and WW International Inc.; received consulting fees from Brightseed, Eli Lilly and Company, Intuitive, Level2, Nestlé Health Science, Novo Nordisk A/S, OptumLabs R&D, Regeneron Pharmaceuticals, Inc., Spoke Health, and WW International Inc.; served in a leadership or fiduciary role for The Obesity Society and American Society for Nutrition Foundation; and received equipment, materials, drugs, medical writing, gifts, or other services from KVK Tech, Nestlé Health Science, and WW International Inc. Zhaoping Li has served on advisory boards for Abbott Laboratories. Jesse Richards has received grants or contracts from speakers bureaus for Eli Lilly and Company; received payment or honoraria for lectures from speakers bureaus for Novo Nordisk A/S and Rhythm Pharmaceuticals, Inc.; and served on an advisory board for Rhythm Pharmaceuticals, Inc. W. Scott Butsch has received grants from Eli Lilly and Company; consulting fees from Novo Nordisk A/S; payment from Med Learning Group and Potomac Center for Medical Education; and served on advisory boards for Abbott Laboratories, Eli Lilly and Company, Medscape, and Alfie Health. Irina Jouravskaya is an employee of Eli Lilly and Company. Kadie S. Vanderman is an employee of Syneos Health. Lisa M. Neff is an employee and stockholder of Eli Lilly and Company; has received grants or contracts from Aegerion Pharmaceuticals Inc.; and has served in a leadership or fiduciary role with Current Developments in Nutrition (journal) and the National Board of Physician Nutrition Specialists.

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