

One of the most difficult challenges in weight loss is keeping the weight off over the long term

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A new report combining perspectives from a range of obesity experts identifies genetic, epigenetic and neuro-hormonal differences between individuals as one of the key challenges associated with weight loss and long-term weight control. The authors, led by Paul MacLean, PhD, and Rena Wing, PhD, reinforce that maintaining weight loss over the long term can be a major challenge. They recommend a number of novel approaches to improve obesity therapeutics, including more emphasis on an individualized approach to weight-loss treatments and maintenance, and the integration of physiology and behavioral psychology to identify effective and sustainable interventions.

"Despite advancements in our understanding of obesity, weight regain after weight loss remains the most substantial problem in obesity treatment – with both the body and the mind conspiring against individual efforts to maintain weight loss," said Dr. MacLean, co-chair of the National Institutes of Health (NIH) working group who authored the report, "Innovative Research to Improve Maintenance of Weight Loss," published in the January 2015 issue of the journal *Obesity*.

"There are many differences in individuals ranging from genetic to behavioral that lead some to do well on one approach, whereas others do not. Therefore, what works for a friend or coworker may be very different from a weight-loss program that's most effective and sustainable for you over the long term."

The NIH Working Group report summarizes the results from a recent conference and includes various perspectives from experts in integrative physiology, genetics, endocrinology, and behavioral and cognitive sciences.

The report is accompanied by a commentary in Obesity by research and treatment pioneers and TOS past presidents, George Bray, MD, of Pennington Biomedical Research Center and Thomas Wadden, PhD, of the University of Pennsylvania. In their commentary, Drs. Bray and Wadden called individualized weight-loss strategies "promising," highlighting it as the most important issue identified by the working group to bridge the divide between basic and clinical sciences and better target obesity treatments.

"In all weight loss trials, whether behavioral, dietary, exercise or pharmacological, some individuals lose a great deal of weight, others an average amount, and some even gain weight," they say in their response.

Drs. Bray and Wadden go further to call the area of personalized treatment an "essential focus" that should be combined with political and societal actions to change our food and activity environments, which currently exacerbate the struggle for most people who are trying to lose weight and keep it off.

"Personalized medicine is not a new idea; it is one that is applied and encouraged across many areas of medicine. Why not apply it to obesity treatment?" said Chris Ochner, PhD, TOS Public Affairs co-chair and Assistant Professor of Pediatrics and Psychiatry at the Icahn School of Medicine at Mount Sinai. "Weight loss is not a sprint; it's a marathon."

Working group co-chair Dr. Wing also stresses that current treatment approaches to improving maintenance of weight loss often do not adequately counter the many physiological and behavioral changes that

occur when a person loses weight.

"Development of more effective approaches to weight-loss maintenance requires the integration of physiological and behavioral perspectives and a more concerted collaboration between basic and clinical researchers," she said.

TOS agrees that collaboration between physiological and behavioral researchers is needed to advance the science behind individualized treatments and develop better weight-maintenance strategies. In 2013, the Society launched the Bio-Behavioral Research Section to encourage greater research into the complex interactions between biological, behavioral and environmental factors that influence obesity. The Section, led by Chair Myles Faith, PhD, of the University of North Carolina at Chapel Hill, strives to bridge people, ideas and methodologies from distinct scientific "silos."

"Understanding individual differences in treatment response requires expertise in biology and behavior," Faith said. "Seasoned clinicians, who are keenly observing and working to harness the strengths of individual patients every day, are an integral piece of the puzzle. Individual responses to treatment are at the scientific 'heart' of the matter for understanding weight-loss maintenance."

The NIH working group report in full seeks to identify barriers to successful weight loss, review strategies that have been previously employed to improve success, and recommend novel solutions that could be investigated in future long-term weight control studies. In addition to more personalized weight-loss strategies, the authors recommend further exploration into the following areas to improve weight-loss maintenance:

- Pharmacological strategies to counter the physiological changes that occur after [weight loss](#), which require adjustments to the

drug development process (e.g. pairing different medications or combining medication and behavioral approaches).

- New ways to improve adherence to physical activity programs.
- Foods engineered to maximize palatability and satiation to improve long-term adherence to a lower-calorie diet.
- Strategies to decrease the perceived reward value of foods and increase impulse control.
- Technologies (e.g. smart phones, tablets, GPS) and social networking to keep individuals engaged and goal-oriented.

More information: MacLean, P. S., Wing, R. R., Davidson, T., Epstein, L., Goodpaster, B., Hall, K. D., Levin, B. E., Perri, M. G., Rolls, B. J., Rosenbaum, M., Rothman, A. J. and Ryan, D. (2014), "NIH working group report: Innovative research to improve maintenance of weight loss." *Obesity*. doi: 10.1002/oby.20967

Bray, G. A. and Wadden, T. A. (2014), "Improving long-term weight loss maintenance: Can we do it?". *Obesity*. doi: 10.1002/oby.20964

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