Abstract for Obesity Meeting 2022

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Title: Why we eat too much, have easier time gaining than losing weight, and do not expend enough energy: What to do about it.

In the USA, obesity has tripled since 1970's and is associated with a number of pathologies ranging from insulin resistance and type 2 diabetes to cardiovascular disease. Reducing obesity has been difficult whether by caloric restriction, pharmacological approaches, or bariatric surgery. Difficulties in preventing, ameliorating , and reducing obesity stem from our general lack of understanding the limitations of human physiology and psychology and challenges of societal obstacles. Five poorly understood human physiological limitations that increase the risk of gaining, and difficulty of losing, weight are : 1. Human genetic burden of almost limitless capacity to increase fat mass; 2. Absence of a mechanism that restrains overeating and increases energy expenditure to maintain healthy weight; 3. Capacity to increase stomach size with binging and weight gain; 4. Hormonal changes that promote fat gain after weight loss; and 5. Reductions in metabolic rate and physical activity that limit energy expenditure during negative energy balance. Psychological limitations include: 1. Capacity to register hunger mostly to volume, rather than energy content, of food, and fullness or satiation registering only meals eaten by mouth and processed through the gastrointestinal tract; 2. Social facilitation of overeating; 3. Trigger to overeat by the size or availability of food, and 4. Chaotic snacking causing protracted postingestive effects that may extend to 19 hours. Societal barriers include 1. Mechanisation of transportation and household chores; 2. Convenient availability of relatively inexpensive food; 3. Promotion of energy dense palatable foods by food and restaurant industries; and 4. Urban planning limiting the opportunities for walking. Solutions include 1. Deliberate restricting of eating to an 8 to 10 hour window within waking hours; 2. Using gastrointestinal signals of hunger and fullness to eat appropriate volumes of moderate-to low-caloric density healthy foods ; 3. Using activity tracking devices to sustain motivation for higher activity levels; 4. Daily weight monitoring to provide necessary body-weight feedback in the absence of a physiological feedback counterpart.