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Obesity

Mission Possible

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Every family across the U.S. is confronting the same questions as state governments and federal agencies: why have we all gained so much weight and what are we going to do about it (1–8)? The century-long, slow, silent, and deadly increase in body weight now impacts every family in the U.S. The world has caught the obesity bug, 1.5 billion times.

Obesity explains why Mom is injecting herself twice a day with insulin and explains why health care costs have erupted while the basic health care that U.S. prisoners get for free is unavailable to 45 million free-living Americans. The obesity explosion explains about three-quarters of health care costs in the U.S. The future, the Centers for Disease Control warn, is more alarming than the present. Not only is it Mom who cannot afford basic diabetes supplies, such as blood testing strips and insulin needles, but now John, her 10-year-old son, cannot either. The "new epidemic" of childhood diabetes will wash across America in the wake of the heaviest young America has ever raised. Obesity may cost \$100 billion a year in the U.S., but that is nothing compared with the price tag of childhood obesity. When I grew up, I feared the doctor because I hated needles. John will grow up using needles every day but terrified as to how he will afford them. Without viable solutions to obesity, health care will become the exclusive right of the wealthy.

The predominant voice in the Perspectives articles published in this edition of *Diabetes* (9–11) is a shrill tone of retrospection, asking how we got to where we are today. Although these articles emit an odor of impending catastrophe, threading through the papers are rivulets of hope. "Hope" is a voice of consensus that speaks to the possibility of obesity being reversed by the end of this century.

Yesterday.

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The first area of consensus is that obesity, whether for the individual or the general population, results from positive energy balance. Obesity occurs when energy expenditure is persistently less than energy consumption. Through chair-based, electronic device-enriched living, a person sits during locomotion, at work, and at play, and in so doing expends 1,500 kcal/day less than the average individual a couple of generations ago. Total energy intake may not have declined but, in remaining constant, has rendered a modern person in positive energy balance by >1,500 kcal/day; it is undisputed that the quality of eating has become so poor that we rarely recognize what we eat or with whom. Overall, sustained positive energy balance has resulted from low levels of physical activity and food consumed in excess of needs.

The second area of consensus is that obesity engenders massive associated cost. The price of obesity can be expressed variably depending on the value system; obesity is costly whether it is expressed as health variables (e.g., rates of diabetes), psychological pain, social stigmatization, or money. Regardless of the lens through which it is viewed, obesity is expensive.

The third area of consensus is that there exists the "obesity paradox;" however straightforward obesity is in terms of its genesis (a century of inactivity coupled with worsening food quality), there is uncertainty regarding what to do about it. Although the market for obesity tablets, surgeries, fat-melting creams, and books offering eternal weight loss is likely to increase, most of these "solutions" only help the few and oftentimes exploit my obese patient, who is befuddled by the contrasting array of therapeutic promises. Realistically, we have no idea how to help the 1–2 billion individuals with obesity. This is equally true for both sides of the energy equation, whether the question is how best to sustain increased levels of activity (nonexercise activity and/or exercise) or how to solve the Einsteinian riddle of engineering a modern family to sit and together eat healthy food that they have cooked. Since there are so many therapeutic avenues for the obese patient, since there are such varied health-promoting community programs, and since obesity rates are increasing in all countries, races, and ages, it is self-evident that the optimum approach for reversing obesity has yet to be discovered.

Today.

In 1886, Steiner (12) wrote that "single cultural epochs of humanity appear before us in history, and we endeavor to learn the inner dependence of one evolutionary stage upon another." Today we stand (or more likely sit) at a bifurcation in modern history where one of two paths will be followed.

The first path is that a new norm will evolve whereby modern *Homo sapiens* carries an extra 50 lb of fat compared with her grandmother; has type 2 diabetes, hypertension, and joint problems; and would die sooner were it not for the fact that she had taken a metabolic polypill from the age of 10 years. Better still, her 6-year-old daughter takes a second-generation tablet that adjusts her mood to enable her to sit in front of a computer for 12 h/day without her even becoming obese. Path 1 = pick-a-polypill-or-two.

The second path is equally unrecognizable as the first. Here people stroll or cycle to work, play tennis at lunchtime, have meetings on the move, attend conference calls and answer e-mails from energy-efficient treadmills, date in person, and eat food that has seen sunshine while sitting next to people who have, too. In this vision, companies are rewarded for health innovation and children are healthy in body and mind. Path 2 = self-determination.

The papers published today beg us to choose one of these paths. Many may choose a lifelong polypill cocktail, as they have no conceptual fear of lifelong pharmaceutical regulation of body and mind and believe that reversing obesity cannot occur through collective self-determination. Others may wish to contemplate an alternative future whereby obesity is reversed and our health reaffirmed as our own.

Tomorrow.

Despite the lack of a plan, the ingredients to resolve obesity through self-determination exist. The first step is to generate a single voice. It is straightforward for the major scientific bodies such as the obesity, diabetes, and cardiovascular organizations to share a vision, resources, opinions, and political lobbying. This avoids duplication, which is common at present in the U.S. This consensus would provide a clearly defined scientific knowledge base. Modern informational technology exists to build real-time expert texts on obesity etiology, biology, and treatment.

Consensus of scientific opinion could then be used to bring other partners to a shared position. Such partners for change include architects, the food industry, clothing manufacturers, the pharmaceutical industry, media companies, furniture companies, and health insurers. Thus, organization and establishing a clear and unified voice constitute the first step to solving obesity.

The second component for resolving obesity is defining models of success. Many people believe that obesity represents a succession of poor personal choices. However, why would 1–2 billion individuals choose to have obesity and metabolic and joint disease and experience social stigmatization and psychological torment whereas they did not a century ago? It is clear that obesity solutions must invoke not only personal action but also population-wide environmental reengineering to directly promote daylong physical activity and healthy eating. Just as individual solutions are examined for weight loss, similarly, population-wide models need to be devised and evaluated.

To distinguish successful from unsuccessful programs, a series of common protocols are needed that allow obesity interventions (personal or population) to be evaluated and compared in a common scientific language; that language needs to include health as well as economic and psychosocial variables. In so doing, ineffective solutions can be cast aside and more effective solutions defined and then refined. National and international registries of successful obesity solutions will emerge.

Thus, it is self-evident that effective solutions that impel John and his Mom to become healthy include personal approaches as well as office, home, and community redesign. Successful obesity solutions will inevitably embrace the unlimited creativity and will of the individual while surrounding him or her with an environment that renders personal health inevitable.

The third component in an obesity solution is implementation. Many people believe that obesity cannot be reversed. This is untrue. History repeatedly demonstrates that profound societal change can be effected. Less than 150 years ago it was legal to own African slaves in North America, and today a presidential candidate is African American. Likewise, less than 150 years ago, Oscar Wilde was imprisoned for being homosexual, and last year Elton John married David Furnish. History repeatedly demonstrates that phenomenal societal change is achievable. There is no logical reason as to why obesity should be an exception; we just need to believe, as a united scientific community, that it is

possible. Then, as a united scientific community, we precipitate implementation, for it is in our power to do so, and we need to for our children.

History also dictates that movements that effect social change are always multidimensional. The collective determination of a united scientific community, politicians, and the populous therefore needs to converge. History is clear; major societal issues can be resolved using well-established consensus, clear and effective strategies, and multilayered, multidimensional solutions. Once effective solutions have been defined ([Fig. 1](#)), it takes skilled, forward-thinking leadership and national will to implement them.



FIG. 1. Obesity: mission possible.

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Every family in modern America is touched by the pain and ill health of obesity; thus, its solution is worthy of our collective commitment, investment, and unending resolve. Obesity resolution is not a "mission impossible" but merely one dream and one step away—yours.

FOOTNOTES

Presented are the views of the author alone and not necessarily those of the American Diabetes Association or the Mayo Clinic.

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