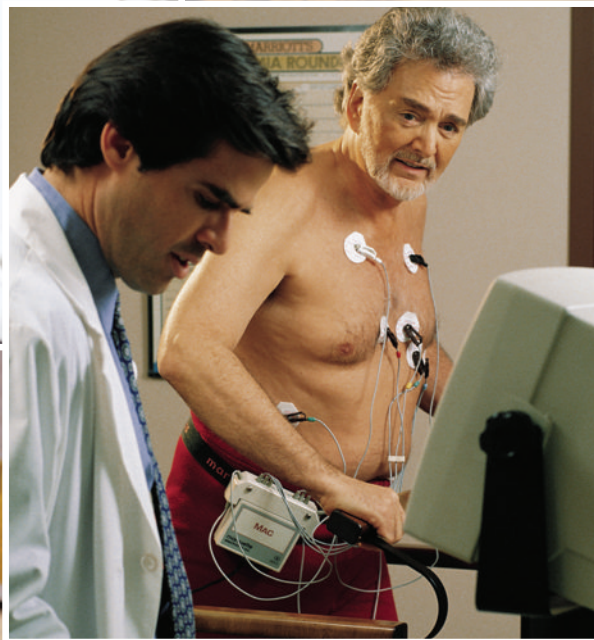


Health & Productivity

MANAGEMENT

Special Edition Vol. 1, No. 2

- **Obesity: the New Threat to American Health**
- **No Magic Pill: 'Diet' Mentality Doesn't Work, Lifestyle Changes Do**
- **The Big Picture: US Employers Combat Weight-related Health Costs**
- **Looking Ahead: Technology Solutions for Healthier Lifestyles**



SPECIAL ISSUE — OBESITY

obesity linked to diabetes, heart disease, high blood pressure, cancer, depression, stroke
disability claims up with rise in obesity

65% of population is overweight

obese adults incur higher annual health care costs

higher absenteeism rates linked to obesity

it's a **BIG** issue

Overweight and obese individuals are at increased risk of life-threatening illnesses such as diabetes, high blood pressure, heart disease and cancer. If current trends continue, nearly every working adult will struggle with weight.

Though the statistics are staggering, there are solutions. Mayo Clinic Health Management Resources works with organizations to target obesity and help people adopt healthier lifestyles that result in lower health risks.

We can motivate your population with easy-to-use online health risk assessments and healthy weight programs that are personally tailored to individual needs; encourage them with broad-based health messages in print; and even reach out to your people with one-on-one telephonic lifestyle coaching.

We put the full Mayo Clinic experience behind the development of all our health management solutions, to empower your people to live healthier ... and empower you to take control of health care costs.



Call us today to find out how we can help you battle the obesity epidemic.
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MAYO CLINIC
Health Management Resources

Health & Productivity MANAGEMENT

Special Edition, October 2004, Vol. 1, No. 2

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At A Glance

This is the second *Special Issue of Health & Productivity Management*, devoted to a single topic that could not be timelier for employers or for the health of the population in general – obesity. And to examine the multiple dimensions of this risk factor that may lie at the nub of a complex of serious metabolic and cardiovascular health problems, IHPM is very pleased to have the world-leading reputation and expertise of Mayo Clinic and its own Health Management Resources team taking the lead.

Obesity was just beginning to make it onto the employer healthcare radar screen when we reported the findings from our HPM survey two years ago in a regular quarterly issue of this magazine (Vol. 1, No. 3). Since then, it has risen rapidly higher in corporate consciousness – making this Special Issue the essence of timeliness!

Co-editor for this issue is Dr. Philip Hagen, a regular columnist in this magazine who serves as both Vice-Chair of the Mayo Clinic Division of Preventive and Occupational Medicine and Medical Director of Mayo Clinic Health Management Resources. Phil starts things off with a searching look at the new threat posed to our national health – as well as to corporate healthcare budgets – by the “epidemic” of obesity.

Dr. Michael Jensen notes that diet and inactivity are poised to become the leading preventable cause of death, and that obesity and its related health risks constituting “metabolic syndrome” require us to focus on the different effects of fat on health.

Dr. Donald Hensrud contributes two important pieces: the first reminds us that influences on body weight start with genetics, which, in turn, are influenced in the long run by environmental factors – i.e., body weight was stable for millennia – until very recently – because physical activity was a way of life. His second piece explodes diet myths and “quick fixes” to point out that weight control begins in the brain and requires a long-term commitment to healthful living – helped for some by appropriate medications and even surgery, but not replaced by them.

Dr. Matthew Clark emphasizes the need to break down barriers to dealing with obesity – such as treating depression, setting behavioral change goals and monitoring progress toward reaching them, and providing organizational support – all to enable weight loss and prevent weight regain. Lu Ann Heinen, a guest contributor from the National Business Group on Health, provides some “big picture” perspective on the estimated overall cost of obesity to American business, and offers a specific tool developed to help employers calculate the likely cost to themselves.

Dr. Philip Hagen returns to look at the organizational/cultural support needed to help employees make the lifestyle changes needed to reduce obesity in the working population – where small changes for large numbers of people can have a big impact on overall health and medical costs.

And Dr. Brooks Edwards concludes this Special Issue with an encouraging look at how advances in information technology in the form of on-line behavioral change programs (such as at General Mills) can be tailored to individual needs and readiness, and track progress – using technologies like Remote Patient Monitoring and Instant Messages.

We thank Mayo for making possible this invaluable educational tool to help employers better understand and deal with the newest and one of the most difficult health issues they face. This publication is just the first step in what we intend to be a growing collaboration with Mayo to include on-site health management initiatives that also will measure impacts on workplace productivity. **IHPM**

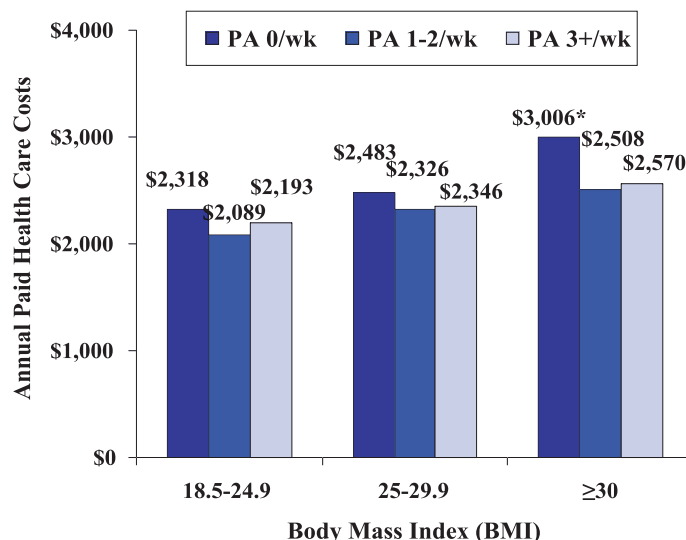


Sean Sullivan
President & CEO
Institute for Health and Productivity Management

Increased physical activity can compensate for some of the adverse effects of obesity

Relationship of Body Mass Index and Physical Activity to Health Care Costs Among Employees

Adjusted Annual Paid Health Care Costs by Physical Activity and BMI Weight Categories



*Sedentary obese health care costs (BMI ≥30) significantly greater than those for moderately active and very active obese, $p < .01$. Trends for normal weight (BMI 18.5-24.9) and overweight (BMI 25-29.9) were similar but not statistically different.

Key Findings

- Obese physically active individuals averaged \$436-\$498 less than obese sedentary employees ($p < .01$).
- Obese individuals appeared to benefit most from additional physical activity in terms of reduced health care costs.
- Savings associated with increased physical activity by sedentary obese populations were estimated at 1.5% of total health care costs
- Normal and overweight employees showed less impact on costs from additional physical activity
- Wellness programs should promote moderate physical activity (at least 1-2 times/week) among sedentary obese populations and facilitate the maintenance of this behavior.

This study examined the relationship between physical activity and health care costs by different weight groups (normal weight, overweight and obese). The study sample consisted of 23,490 manufacturing employees, average age 46.1 years and 78.5% male who completed at least one Health Risk Appraisal during 1996 to 1997. Employees with primary diseases (heart problems, cancer, diabetes, past stroke or chronic bronchitis/emphysema) and those determined to be underweight (BMI < 18.5) were excluded.

Health care costs included medical and pharmaceutical paid amounts incurred during two full years 1996 to 1997. Generalized linear models were used to compare annual health care costs across physical activity levels (0, 1-2 or 3+ times/week) and weight groups defined according to National Health, Lung and Blood Institutes BMI criteria (normal weight, 18.5~24.9; overweight, 25~29.9; obese, ≥30) adjusting for age, gender, chronic diseases (allergy, arthritis or back pain) and overall health status (low or high risk).

Results indicated that physically moderately active (1 to 2 times/week) and very active (3+ times/week) employees had approximately \$250 less paid health care costs annually compared with sedentary employees (0 times/week) across all weight categories. The difference was approximately \$436-\$498 in the obese subpopulation.

Reference:

Wang F, McDonald T, Champagne L, Edington D. Relationship of Body Mass Index and Physical Activity to Health Care Costs Among Employees. *Journal of Occupational and Environmental Medicine*. 2004; 46(5):428-436.

Health & Productivity

MANAGEMENT

SPECIAL EDITION

UPFRONT

1 PUBLISHER'S NOTEBOOK AT A GLANCE

FEATURES

2 RELATIONSHIP OF BODY MASS INDEX AND PHYSICAL ACTIVITY TO HEALTHCARE COSTS AMONG EMPLOYEES

Healthcare costs for the sedentary obese (Body Mass Index ≥ 30) are significantly greater than those for moderately active and very active obese people. Increased physical activity can compensate for some of the adverse effects of obesity, including reducing healthcare costs.

4 OBESITY: THE NEW THREAT TO AMERICAN HEALTH

Obesity's growing impact on our health and the resulting demands on employee assistance programs require all sectors of society to take action in halting the decades-long rise in unhealthy weight – and eventually reversing this trend.

6 WHAT SCIENCE CONTRIBUTES TO THE OBESITY BATTLE

As Mayo researchers focus on how fat stores and releases energy, and how fat is related to arthritis and sleep apnea, they're facing a challenge in understanding what impact hormones produced by fat have on the health problems resulting from obesity.

9 GENETICS, GENOMES AND GLOBAL TRENDS: WHAT'S SIZING UP AMERICA?

Thousands of years ago, our ancestors' very existence depended on eating whenever possible and expending energy only when necessary. We're still hard-wired the same way, but today's high-calorie diets and sedentary lifestyles are putting health at risk.

12 NO MAGIC PILL: 'DIET' MENTALITY DOESN'T WORK, LIFESTYLE CHANGES DO

In the struggle with obesity, fad diets don't work. Healthy eating and exercise do. The Mayo Clinic Healthy Weight Pyramid focuses on the calorie content and healthfulness of foods – plus a daily dose of physical activity – to maintain optimal weight and health.



18 BREAKING DOWN BARRIERS TO WEIGHT-LOSS SUCCESS

Proven behavioral strategies dramatically increase chances of successful weight loss, especially in these hectic times as stress and possibly depression become barriers to reaching and retaining a healthy weight.

21 THE BIG PICTURE: US EMPLOYERS COMBAT WEIGHT-RELATED HEALTH COSTS

Whether you choose to be involved or not, as an employer you are already caught up in the war against obesity. Increased health benefit costs from overweight employees are straining the system when, in fact, some of their medical issues are preventable and associated medical costs avoidable.

25 ORGANIZATIONAL SOLUTIONS TO OBESITY

From a business perspective, obesity is expensive. Forward-looking businesses and organizations are taking action, as small but sustained health changes in large groups can have a substantial impact on health and productivity.

28 LOOKING AHEAD: TECHNOLOGY SOLUTIONS FOR HEALTHIER LIFESTYLES

Online weight-loss programs offer personalized advice that allows overweight or obese employees to adopt healthier behaviors. A case in point – General Mills used a multi-modal approach, including Mayo Clinic's online Healthy Weight behavior change program, to help overweight workers modify their lifestyles.

Obesity: the **new threat** to American health

Our healthcare delivery system has a tendency to view those who enter it through the lens of specific clinical diagnoses and to treat them accordingly – i.e., seek to improve the conditions diagnosed by improving the clinical markers associated with them.

Take type 2 diabetes – a condition that nearly everyone agrees is becoming an epidemic in the United States, with prevalence rates increasing rapidly even among children. There are agreed-on clinical measures by which to determine success in managing diabetes – the most common being hemoglobin A1C and blood sugar levels (although clinicians also pay attention to blood pressure and lipid levels as part of what is coming to be known as “metabolic syndrome”).

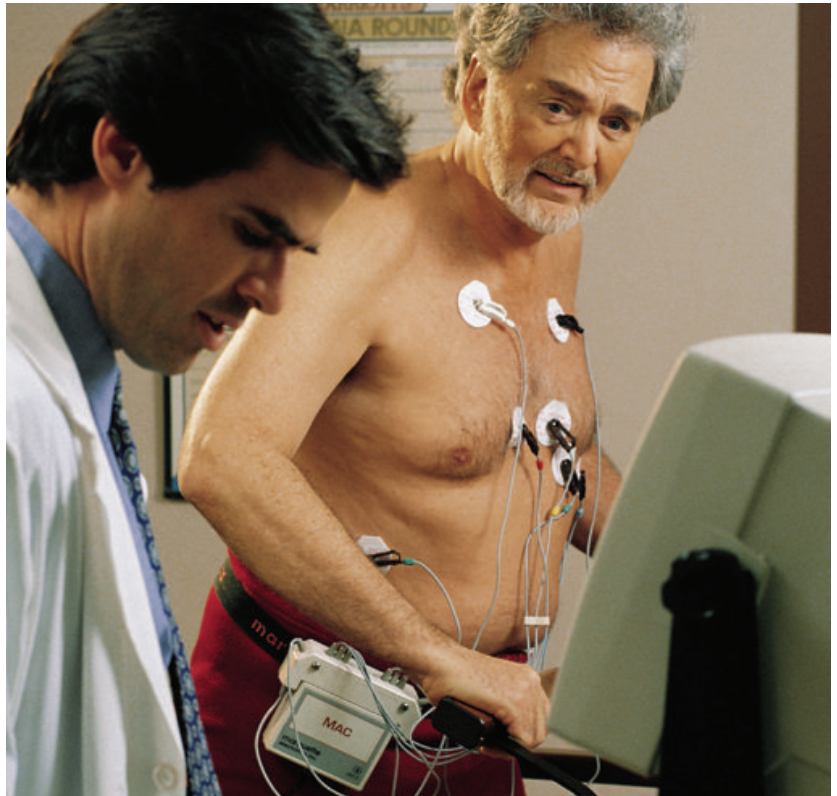
In a project undertaken in partnership with a leading healthcare system, for example, the Institute for Health and Productivity Management (IHPM) is linking measures of A1C as a primary indicator of how well individuals’ diabetes is being managed, with self-reported measures of the impact their diabetes is having on their ability to work.

But something very important is missing from the healthcare system’s otherwise excellent medical claims database, which exemplifies the problem of clinical “tunnel vision” in managing all prevalent chronic medical conditions – they have no data on diabetics’ BMI (Body Mass Index – a measure combining height with weight to determine a “healthy” weight range).

This is an important omission because BMI is now being seen as a critical measure itself of what we could call “diabetic risk,” or a predisposition to develop type 2 diabetes. BMI is a measure of healthy vs. unhealthy weight – the higher the BMI, the unhealthier the weight.

Paralleling the epidemic of diabetes in the US – and inextricably linked with it – is another “epidemic” now getting even greater attention – obesity.

Because obesity – or being more than just a little overweight – has not been a clinical diagnosis, physicians have



not paid adequate attention to its marker – BMI – as a clinical measure of health (i.e., the absence of disease). Yet, physicians know that once “overweight” becomes mildly obese – or especially if mildly obese becomes severely obese – the individual is “pre-diabetic” or at increased risk for type 2 diabetes and on the way to serious trouble, because diabetes is a chronic disease with serious consequences if not carefully managed. And the unfortunate part of this story is that it doesn’t have to be told at all; there are few better examples – no pun intended – of an ounce of prevention being worth a pound of cure!

The chain of “health management” – as distinguished from “disease management” – must begin with the first link,

By Philip Hagen, MD, Medical Director, Mayo Clinic Health Management Resources
Sean Sullivan, JD, Co-founder & CEO, Institute for Health and Productivity Management

and for diabetes and other elements of “metabolic” health that link is healthy weight and the prevention of obesity. Its links to many other chronic conditions than just diabetes – heart disease, osteoarthritis, depression – are leading some researchers to rank it just behind smoking as a health-risk factor. And now that the federal government has just designated obesity a “disease,” it will start appearing on more clinical radar screens, as well.

To tackle this pervasive health-risk factor with its many ramifications for the functionality of the workforce, IHPM is very pleased to have an associate with impeccable credentials – Mayo Clinic.

Dr. Phil Hagen and the team from Mayo who put together the content of this Special Issue of *Health & Productivity Management* have worked with us to produce a work of true, and new, value in the field of health and disease management – on the most important population health issue for employers and the nation at large.

Phil is a regular contributor to the magazine, where his columns have set the stage for this Special Issue – which he now will introduce:

In this special issue, my colleagues and I at Mayo Clinic along with the National Business Group on Health will review the magnitude of the obesity problem, with a special emphasis on what this epidemic means for employers.

Dr. Michael Jensen and Dr. Donald Hensrud, two physician obesity specialists and researchers, then review the science of obesity from its cellular and genetic origins, to its societal causes – and what physicians and patients can do to treat it.

Because many of the causes of obesity have to do with health choices, we have asked a Mayo Behavioral Medicine specialist and researcher, Dr. Matthew Clark, to outline winning strategies for people to use in dealing with the obesity problem – including deciding whether it is the right time to try. Because of my own experiences as a Preventive and Occupational Medicine specialist, I have tackled the population approach to weight loss – namely, dealing with it at an organizational level because of its effects on absenteeism, presenteeism and productivity.

LuAnn Heinen and the National Business Group on Health Institute on Obesity have been working for a number of years to identify the hidden costs of obesity to business and in her article she outlines what they have discovered.

Finally, we’ve asked Dr. Brooks Edwards, a Mayo Cardiologist, researcher in the area of congestive heart failure and heart transplant, and leading medical editor for our online health information and tools, to look to the future of weight management – especially how the Internet may play a role.

Fortunately, we know that small changes in large seg-

ments of the population can effect great gains for the country as a whole. Science, medicine, business, government and society have the necessary tools and motivation to deal with the staggering problem of obesity.

But it will take a concerted, well-planned, years-long campaign using all available avenues of communication, education, activation and involvement of all sectors of society to halt our collective – decades-long – rise in BMI and eventually reverse the trend. **IHPM**

Dr. Philip Hagen is Vice Chair, Mayo Clinic Division of Preventive and Occupational Medicine, and Medical Director, Mayo Clinic Health Management Resources. Dr. Hagen also is an assistant professor in Internal Medicine, Mayo Clinic College of Medicine, and is board-certified in internal medicine and preventive medicine. Dr. Hagen attended Mayo School of Graduate Medical Education, where he received his MD degree in 1983. He completed his residency and fellowship training at Mayo Clinic, Rochester, in internal and preventive medicine in 1986 and 1988 respectively, and was appointed to the Mayo Clinic staff in 1988. For more than a decade, Dr. Hagen has been involved in the production of books, newsletters and computer-based health information and the development of Mayo Clinic’s electronic medical record software. Dr. Hagen became the medical director for Mayo Clinic Health Management Resources because of his interest in helping people make lifestyle changes through health education.



Sean Sullivan is co-founder, President and CEO of the Institute for Health and Productivity Management. The Institute works with all the major stakeholders in health care – purchasers, providers, and health plans – to create greater value for employers as measured by improved employee health and performance in the workplace. Mr. Sullivan previously was President and CEO of The National Business Coalition on Health for five years. During that time, the National Coalition’s membership grew to more than 100 employer coalitions in 40 states representing 8,000 employers and became the leader of the employer-driven movement toward a value-based health care system.



He previously spent 10 years as a Washington-based policy analyst, as a fellow at the American Enterprise Institute and as Executive Vice President of New Directions for Policy. He is the author of articles and monographs on health policy and health care market trends, and has testified on these subjects before Congress and state legislatures.

He holds degrees in economics from Harvard, and law from Stanford.

What Science Contributes to the Obesity Battle

In my work in obesity research and with patients over the past 20 years, it has become evident that we are losing ground in the battle to prevent the health consequences of obesity. A study by the Centers for Disease Control and Prevention (CDC) raises this warning flag.

Recent CDC statistics show poor diet and inactivity are poised to become the leading preventable cause of death among Americans – causing an estimated 400,000 deaths in 2000. The study estimates that 64 percent of all Americans are overweight, including more than 30 percent who are considered obese.

Obesity is defined as a medical condition in which the patient has an abnormally high proportion of body fat, as estimated by body mass index (BMI). BMI is a calculation in which weight in kilograms is divided by height in meters squared. A BMI between 18.5 to 25 is considered normal, 25 to 30 is gauged as overweight. A person with a BMI of 30 or higher is considered obese. Nearly 36 percent of the adults age 20 or older have a BMI of 30 or higher.

The cause of obesity is simple. The imbalance of caloric intake with energy used during the day leads to weight gain because the body stores the calories it doesn't use. These calories become fat.

A variety of factors can lead to obesity. Each individual carries different risks based on activity level, age, sex and genetic makeup. There is not a "fat" gene per se, but if one or both of an individual's parents are obese, the chances of being overweight increase by 25 percent to 30 percent. The genes may affect the amount of body fat a person's body stores and where that fat is distributed, but the genetic makeup doesn't guarantee obesity.



Obesity-Related Health Risks

With obesity come a number of potential health risks. Obesity is linked to very high rates of chronic illnesses. A person with obesity is at higher risk of developing:

- High blood pressure
- Diabetes
- Abnormal blood fats
- Coronary artery disease
- Stroke
- Osteoarthritis
- Sleep apnea
- Some types of cancer

By Michael Jensen, MD, Department of Endocrinology, Mayo Clinic, Professor of Medicine, Mayo Clinic College of Medicine

Studies of a group of 10,000 people across the United States illustrate the impact of this higher risk of developing these illnesses. Data from RAND Health's Healthcare for Communities study reveals obese persons have an increase in chronic conditions of 67 percent (specifically diabetes, hypertension, asthma, heart disease, and cancer). Along with this comes the expected increase in healthcare costs: obese people have approximately 36 percent higher health care expenses than the general baseline population and 77 percent greater expenses for medications.



Helping your people understand the impact of their **lifestyle choices** on their health, and offering support to **take control** of their lifestyles, can be a good **first step**.

Although almost everyone with a BMI in the obese range has elevated health risks, the level of risk and type of risk vary from person to person. Research reveals that how much fat you have is not as important as where you store it.

Excess fat in the abdominal region (that is out of proportion to total body fat) is a predictor of health complications and morbidity. It's associated with an increased risk of type 2 diabetes, dyslipidemia, hypertension and cardiovascular disease. The shape of one's body also has received a great deal of attention from the scientific community. People whose body shapes could be described as apple-shaped store fat around the waist and upper abdominal area and chest, where internal organs such as the liver and intestines

are located. Abdominal fat can be in two compartments that we describe as visceral (intra-abdominal) and subcutaneous.

The results of a large number of studies suggest that fat in the abdominal area is the most strongly correlated with the risk factors mentioned above. In particular, research is finding that subcutaneous fat cells in the abdominal region have a greater impact on a person's blood sugar levels and lipid levels, a precursor of diabetes. This appears to have to do with abnormalities of the function of these fat cells which have differing levels of proteins that help with fat metabolism. This is why apple-shaped bodies often have a higher risk of diabetes, heart disease, stroke, high blood pressure and gallbladder disease.

Pear-shaped people store fat below the waistline and do not have as high a risk of developing the health problems that apple-shaped people do. Pear-shaped people usually lose fat in the upper body, so their overall shape doesn't change much when they lose weight.

Downward Health Spiral

Unfortunately, with obesity there is a cumulative effect in which high fat levels can trigger several disorders in the body – this is called metabolic syndrome.

Metabolic syndrome includes the combination of several of these disorders:

- High visceral fat mass: central fat, primarily at the waist;
- Resistance to insulin: inability of insulin-sensitive tissues (muscle, fat, liver) to respond to insulin;
- Hypertension: high blood pressure;
- Abnormal vascular behavior: blood vessels don't dilate normally, leading to high blood pressure;
- Thrombotic risk: risk of blood clot that could cause stroke;
- Hyperglycemia: diabetes;
- Dyslipidemia (high blood sugar): one or more abnormal blood fat (cholesterol and triglyceride) levels – high levels of fats (lipids) or low levels of high-density lipoprotein (HDL) cholesterol are associated with the buildup of plaques in arteries (atherosclerosis).

The risk for heart attack, stroke and diabetes goes up greatly when a patient has three or more factors. Metabolic

The good news is that metabolic syndrome is reversible. The key is treating the underlying cause of the syndrome – insulin resistance – through weight loss and increased exercise.

syndrome is becoming more prevalent, especially in US adults age 40 and older. According to findings from the third National Health and Nutrition Examination Survey, as many as one in four American adults and 40 percent of adults age 40 or older have metabolic syndrome, an increase of 61 percent over the last decade.

Rescue Measures

The good news is that metabolic syndrome is reversible. The key is treating the underlying cause of the syndrome, insulin resistance. This is accomplished through weight loss and increased exercise, which is what I recommend. Helping your people understand the impact of their lifestyle choices on their health, and offering support to take control of their lifestyles can be a good first step.

If a patient has a medical complication related to metabolic syndrome, then we treat that medical complication accordingly. There are behavioral therapies and medications that can specifically help people lose weight, and losing weight remains the best treatment for metabolic syndrome.

At Mayo Clinic, we are working to understand in greater detail how obesity causes health problems – with a focus on developing more effective treatments of diseases such as diabetes and hypertension in people who are unable to reverse their obesity. As we continue our research into fat and obesity, researchers are focused on these three areas: 1) the fuel effects of fat, 2) the mechanical effects of fat, and 3) the hormone effects of fat. With the fuel effects, we understand much of how fat stores and releases energy. We also understand much of the mechanical effects of fat, such as its relation to arthritis and sleep apnea. We are trying to understand more about the impact of the hormone produced by fat on the health problems we see from obesity, but have a long way to go in this area.

As someone who's had a research interest in this area for more than two decades, it's reassuring to see a greater focus on obesity. Mayo is expanding the group and research opportunities in areas related to obesity study. Other researchers elsewhere are looking at ways to modify environmental factors at work, at home and in the community so we can be more active in our daily lives.

Identifying your population's risk for obesity-related ill-

nesses such as metabolic syndrome and coming up with a plan to reduce or reverse risk factors will improve not only the health of your population, it will improve the economic health of your company. **HPM**

Michael D. Jensen, M.D., is a Professor of Medicine in the Mayo Clinic College of Medicine, Rochester, MN. He is a consultant in the Division of Endocrinology, Diabetes & Metabolism. His clinical interests are primarily focused on obesity and diabetes mellitus. His NIH funded research involves the study of obesity, body fat distribution, and fatty acid/energy metabolism. More specifically, his research interests are in the effects of obesity and how body fat and body-fat distribution influence health. He has recently received a MERIT award from NIH to continue his studies in this area. Dr. Jensen's studies are also contributing to the understanding of how new fat cells develop in humans. His laboratory stimulated the renewed interest in non-exercise activity as an important physiologic regulator of weight, beginning with a publication in the prestigious journal Science.



Dr. Jensen has published more than 100 original research articles, together with over 30 invited papers and book chapters. He also has served as a member of the NIH Nutrition Study Section and the Integrative Physiology of Obesity and Diabetes Study Section. He is the Chair/Director of the Obesity Treatment Clinic at Mayo Clinic in Rochester, MN.

Bibliography

1. JAMA. 2004;291:1238-1245.
2. Institute on the Costs and Health Effects of Obesity, Fact Sheet, Jan. 2004.
3. Prevalence of the metabolic syndrome among US adults: findings from the third National Health and Nutrition Examination Survey. JAMA. 2002 Jan 16;287(3):356-9.
4. MayoClinic.com "Metabolic Syndrome Overview."
5. Institute on the Costs and Health Effects of Obesity, Fact Sheet, "Current Estimates of the Economic Health Cost of Obesity in the United States," Obesity Research, 1998.

Genetics, Genomes and Global Trends: What's Sizing up America?

By Donald Hensrud, MD, MPH

Over the past two to three decades, there has been a marked increase in overweight and obesity in the United States and around the world. The factors that have contributed to this unprecedented rise in body weight are complex and incompletely understood.

However, it is clear that individual, social and environmental components are all involved. For organizations that want to combat this epidemic and help employees effectively manage weight, the first step is understanding what we know about these factors.

Influences on body weight start with genetics. Studies looking at twins and adopted children have demonstrated there is a genetic component influencing body weight. It's difficult to quantify the exact contribution of genetics, but estimates indicate 25 percent or more of the variability in body weight is a result of genetic factors.

However, body weight was generally stable for thousands of years throughout human history until very recently. Our genes don't change quickly – and certainly not as quick as the recent increase in the prevalence of obesity. Therefore, environmental factors have been the major influence driving the relatively recent increase in obesity. Or at least the interaction of environmental changes on top of permissive genetic factors.

Each of us is genetically hard-wired from our cave-dwelling days, when hunting and gathering was a way of life. Our brain tells us we need to eat and decrease our activity because thousands of years ago our very survival depended on it.

Throughout most of human history, diet was quite different from today and included whole, “real” food instead of processed, refined, fast foods. Vegetables, fruits, nuts, and



lean meat when available, comprised a large part of the diet. High-calorie foods were tough to come by, which may explain why we have developed cravings for them – they had a survival advantage when people could get them.

Similarly, physical activity was a way of life, not an optional activity at a fitness center. People had to burn calories to find food. There were no supermarkets, just wide-open country to pick plants and hunt down fish and animals. Getting enough physical activity was not hard. In fact, in that environment performing less physical activity and conserving energy increased the odds of survival.

So, while activity was a necessary part of life, doing less of it was beneficial.

Today, we're still wired with the same internal messages to eat more and do less, but in this “obesigenic” environment, it's our undoing. Calories are everywhere. We don't have to hunt down and kill a wildebeest for dinner. Unfortunately, our brain hasn't gotten the message yet and doesn't know when to stop. Our primitive drives to eat and conserve energy are our downfall today, when calories are plentiful and being a couch potato is easier than ever.

Diet and Activity Trends Impacting Body Weight

The shape of America is getting larger, so much so that in response the world is changing around us. Yankee Stadium, for example, tore out its seats and replaced them with larger, wider seating to reflect the size of fans. Restaurants are expanding their menus and chairs to accommodate growing diners with serving-portion sizes up to eight times as large as standard serving sizes just a few short decades ago.

Even the shape of the American dinner plate is more than two inches larger than it was years ago. Oversized caskets

now hold up to 1,000 pounds, and the IRS says doctor-ordered weight loss may become tax-deductible because being overweight is a disease.

Obesity is considered a disease, but it is also a reflection of our lifestyle. We eat (and drink) everywhere these days. Busy working people are eating on the run (often making unhealthy choices in the company vending machines) as they eat on their laps, in front of laptops, at their desks and on their dashboards. Cup holders in new cars are deeper to accommodate the biggie-size soft drink cups. More often

than ever, dinner comes in red or green boxes from the freezer – processed, frozen and filled with calories.

Calories now sneak into our diet in a number of ways. We're eating away from home more than ever and challenging our stomachs with larger portions. Food is everywhere, snacks are ubiquitous, and convenience is our undoing. Surprisingly, fat intake has slightly decreased in the United States over the past 40 years. But the same can't be said for processed and refined food, especially sugar – each of us is eating over 30 pounds more per year compared with just a couple of decades ago. Soft drinks have become the fluid of choice for many people, and energy-dense fast foods the "oversustenance" of life.

A good place to get clues to fight the battle of the bulge may be these factors that have been demonstrated in the medical literature to be associated with increased calorie intake or body weight: eating away from home, larger portion size, and increased intake of high energy-dense fast foods, soft drinks, sugar and other refined products.

We're spending more time at work than years ago and for most of us this means less activity. At work, Americans are sitting more and moving less. Our jobs have become more sedentary, aided by computers and other technologic innovations. We've ergonomically modified the American workplace, so we sit all day and only move our fingers and mouths.

This is a double whammy – the increased hours spent in a sedentary job leave fewer hours to be active after work. And at the same time, we've engineered activity out of our daily lives with remote controls to switch TV channels, power-assisted doors, self-propelled lawn mowers, hands-free vacuum cleaners, toilets that flush themselves, and we don't even have to walk away from the pump to pay for gas anymore.

Americans are spending less leisure time being physically active, and are instead choosing more passive hobbies such as surfing the net, watching movies and TV. The migration to the suburbs has created a "get in the car" mentality. Some suburban neighborhoods don't even have sidewalks because nobody uses them, not even the mail carrier.

Unlike our cave-dwelling ancestors, today we have to work hard to be active. But the current environment is working against us. Malls are designed to lead shoppers to escalators while stairs are hidden in back hallways, dark and uninviting. Airports make gate changing practically leisurely as moving sidewalks smoothly whisk travelers from point A to point B, no effort needed.

Instead of foraging in the refrigerator and grazing on fast food, working Americans need to hit the pavement or the treadmill and engineer activity back into their lives. Instead of giving in to the urge to take the shortcut, we should look

Let the Buyer Beware

Bombarded with weight-loss advertising, the bewildered consumer, desperately seeking a quick fix to weight loss, spends billions of dollars needlessly on fad diets and worthless pills that don't provide a long-term solution and that erode their confidence to make healthy changes. A study commissioned by the Federal Trade Commission found that at least 40 percent of all weight-loss advertising in the U.S. was deceptive. As organizations look to provide credible weight loss solutions and education for their people, the FCC suggests consumers watch out for these often false claims:

- **Rapid weight loss:** Losing more than 1-2 pounds per week is not only unrealistic for the long term, it can be harmful to your health.
- **No diet or exercise required:** There is no documented evidence that long-term weight loss can be achieved without either restricting caloric intake, adding more activity, or both.
- **Long-term weight-loss claims** such as "take it off and keep it off." Proof should be required in the form of published studies.
- **Doctor-approved:** This catchphrase is often meaningless or untrue.
- **Natural and safe:** Question what is meant by "natural." Some products could contain harmful ingredients, such as ephedra.
- **Before-and-after photos:** These dramatic photos are the exception, not the rule.

Avoid the “f” word

We all had the “chubby” kid in our grade-school class – the hapless victim of teasing and malicious remarks. He was fat. She was plump or chunky. In the workplace, there is no room for mean-spirited teasing, but the labels we use can be just as brutal.

Practitioners planning weight-management programs could take a lesson from a study at the University of Pennsylvania School of Medicine, which examined the use of terms to describe obesity. And obesity isn’t among the most preferred terms either.

Researchers asked patients with weight problems which terms they preferred. More desirable are the terms *excess weight*, *unhealthy body weight*, *weight problem*, and *unhealthy BMI* over the less desirable and possibly stigmatizing terms *fatness*, *excess fat*, *obesity* and *large size*.

for ways each day to be more active. That may mean walking the long way, choosing the stairs over the elevator, delivering a report by hand instead of e-mail, carrying in the groceries one bag at a time, and taking advantage of opportunities for physical activity at work. The American workplace should become less convenient and more activity-oriented with walking meetings, walking to talk with coworkers instead of e-mailing them, no fighting over close-in parking spaces, and onsite exercise facilities everyone loves to use.

Energy Balance – Back to the Basics

Ultimately, the factors that affect body weight have to do so by affecting either calorie intake or energy expenditure. The energy balance equation is simple: To lose weight, calories consumed have to be less than energy burned through physical activity. Despite sensational claims, people don’t violate the laws of thermodynamics and this equation holds true. The challenge is applying this seemingly simple equation into practice in our everyday lives. All calories burned from physical activity count, whether they’re burned through formal exercise or just moving more throughout the day’s schedule.

With diet, it’s also all about calories, whether they’re from carbohydrates, protein or fat. While total calories are the

most important dietary factor related to weight control, the healthfulness of food shouldn’t be ignored. When eating fewer calories, it’s even more important to make sure the ones we are consuming come from healthy sources. Unfortunately, low-carb, low-fat and processed food products don’t always have the same health benefits as vegetables, fruits, and whole grains.

Fixing a ‘Fast-Food Nation’

Dueling diet book authors are battling for the hearts (and dollars) of knife-, fork- and spoon-fed Americans. With fads and restrictive diets, the only thing shrinking is your wallet. Diet plans, diet pills and quick fixes are not the solution to long-term, sustained weight management. The solution to the obesity problem will take time and needs to be multifactorial, just like the cause.

Multiple types of organizations have to get involved, including the government, academia and the food industry. Businesses play an important role and can use education, work site programs and environmental changes to help individuals take personal responsibility to improve their diet and increase activity. The information discussed earlier on the changes in physical activity and diet in recent years can be used as clues to help start engineering activity and healthy, lower-calorie nutrition back into our lives. **HPM**

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No Magic Pill

'Diet' mentality doesn't work, lifestyle changes do

By Donald Hensrud, MD, MPH

We've all seen it over and over through the years: a seemingly magical solution that's going to solve our weight problem. An individual undertakes it with vigor, determined to endure an unusual and overly restrictive program for a short period of time with the hope that weight will be lost quickly. They can then go back to previous diet and activity habits. If only it were this easy.



Published studies demonstrate this approach doesn't work and there is no magic solution. My own experience confirms this. Research at Mayo is discovering how the body partitions fat and burns calories, and we're evaluating features of clinical programs that show promise. While there isn't an easy solution, managing weight and improving health are not impossible – there are options.

Some employees with excess weight need more help than others. The United States Preventive Services Task Force recommends that physicians screen their patients for obesity using body mass index (BMI) – a measure of body weight and height – to indicate if they need clinical intervention to promote weight loss.

A BMI of 25 to 30 is considered overweight and most individuals would benefit from lifestyle changes to decrease body weight. A BMI greater than 30 is categorized as obese, and unless someone has an unusually high proportion of lean muscle tissue for their weight, individuals in this category would benefit from weight loss.

Along with BMI, it is necessary to take into consideration the health complications of obesity to determine who can benefit most from weight-loss interventions. It is more imperative for people with diabetes, high blood pressure, sleep apnea, arthritis and other obesity-related complications to lose weight.

From a business perspective, there is a clear bottom-line value to providing help to employees with these complications, as studies show they are likely to miss more work and have higher medication utilization and healthcare costs.

When Extra Help is Needed

While return-on-investment data aren't conclusive at this point, providing coverage for obesity treatments, if they are successful, can help both the individual and the organization. The specific type of treatment program should vary in intensity, depending on the degree of obesity and health complications. For organizations, a two-step process of health-risk assessment and management should be used in addressing obesity in a population.

For some patients, changes in diet and physical activity may be all that's indicated. For others, it may be necessary to address their weight through more involved interventions – drugs and possibly surgery – when their health is compromised.

Regardless of whether drug therapy or bariatric surgery is used, we still emphasize lifestyle changes through professional help to maximize long-term success. This is

critical, according to numerous studies demonstrating that medication or surgery alone will not produce sustained weight loss.

Weight Loss Begins in the Brain

For everyone, lasting weight management requires a change in attitude – for the employee or health plan member, and the organization – about the components of a healthy lifestyle. By putting the focus on healthful food choices instead of restrictive diets and including options for physical activity every day, people with excess weight can be helped to move into healthier weight ranges and stay there.

Behavioral education and counseling are critical components of success, as lasting approaches to weight loss start with an attitude. When someone says, "I'm going on a diet," they are implying something negative, overly restrictive, and, therefore, probably temporary because they can't keep it up. When they give up their heroic but unrealistic efforts, the weight comes back – and often more. True success is more an attitude of, "I'm in this for the rest of my life." It's not a short-term quick fix, but rather a commitment to healthful living forever.

Attitude is, in part, shaped by the culture of the company. If buy-in from the top is apparent by individual example and on-site availability of assistance, it is more likely that employees will adapt and change.

Exploding Diet Myths

In the past, dietary fat was the bad guy, but now carbohydrates have taken center stage. Low-carb diets are an example of yet another misguided fad potentially harmful to health.

A Northwestern University study looked at 4,000 participants in four countries – China, Japan, the United Kingdom and the United States – for the correlation between diet and weight control. Without exception, a high-complex carbohydrate, high-fiber and high-vegetable diet was associated with a low BMI. Conversely, high-protein diets, particularly ones high in animal proteins, were associated with a greater BMI. This study raises questions about diets that severely cut carbs and are less restrictive of animal proteins.

A Mayo Clinic team decided to find out if the popularity of diets that spurn carbs and promote fats is affecting eating habits. The researchers discovered that fat and cholesterol intake had gone up over the past five years among 1,200 Rochester-area residents. These findings suggest that there are some tough times ahead with respect to heart disease.

In fact, neither fat nor carbs are necessarily bad. Both can

Some employees with excess weight need more help than others.

be good when balanced properly in a smart eating plan that takes into consideration the differences in their health effects.

Despite what many books, ads and fad diets promise, when it comes to weight management, *calories* are by far the most important factor, regardless of whether it's from fat or carbohydrates.

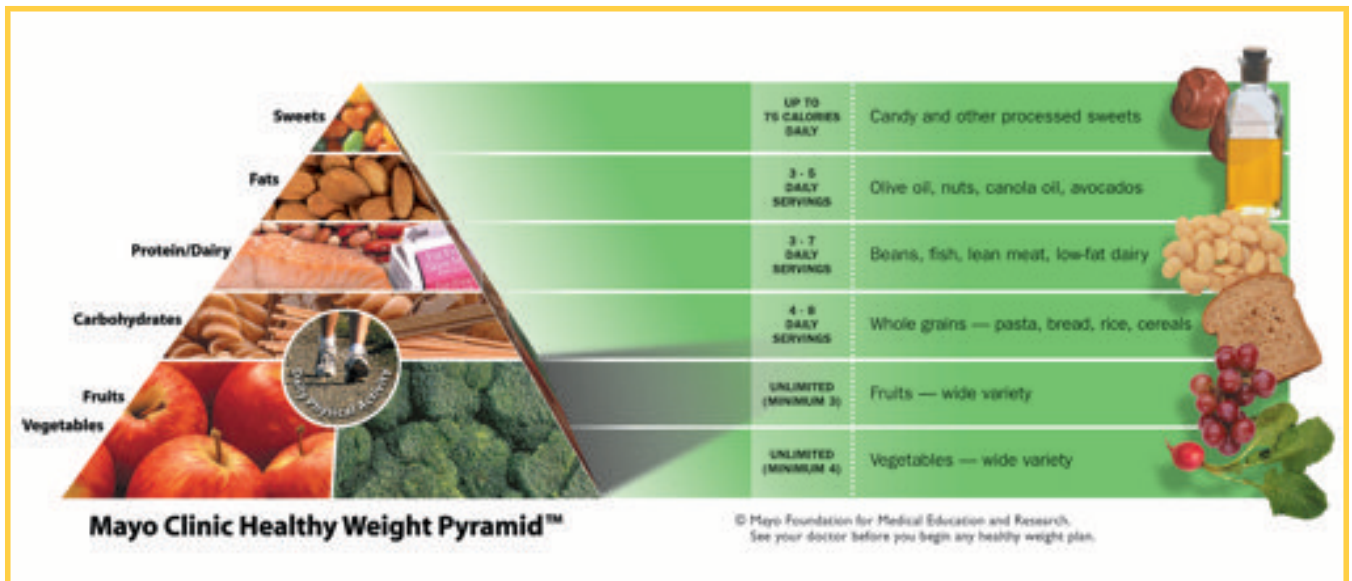
At Mayo Clinic, we believe so strongly in this simple concept of balanced eating to promote healthy weight that we designed a tool to help people understand the components of a healthy diet and manage their weight. We used the two factors that scientific data support most regarding weight and health – the calorie content and healthfulness of foods – to create the Mayo Clinic Healthy Weight Pyramid.

A premise behind the pyramid is that large amounts of

Clinical studies and our experience at Mayo have demonstrated the efficacy of this approach for weight management. The Healthy Weight Pyramid concept is used not only in our clinical practice, but incorporated within weight management tools we provide to organizations in print format, through telephonic health coaching and in online interactive programs.

Any Activity is Good Activity

Activity and diet go hand-in-hand to promote weight loss. According to a study by the National Center for Health Statistics, more than 65 percent of US adults are inactive – they engage in no regular leisure-time activity. This means that most people will need to adopt new activity habits as well as



foods such as vegetables and fruits promote satiety through their volume and bulk, yet are relatively low in calories. This concept resulted from research on energy density done at Mayo and other medical institutions.

All foods are included in the Mayo Clinic Healthy Weight Pyramid, but healthy choices are encouraged within each food group. The pyramid builds on a foundation of generous amounts of fresh or frozen vegetables and fruits; carbohydrates in the form of whole-grain breads, pastas and cereals; lean sources of protein and dairy foods such as beans, fish and low-fat dairy; moderate amounts of heart-healthy monounsaturated fats including nuts, olive oil and canola oil; and at the top of the pyramid a minimal amount of sweets. The centerpiece of the pyramid is not a food item at all, but physical activity, which is encouraged daily for its effects on both weight and health.

The Mayo Clinic Healthy Weight Pyramid also promotes awareness of serving size, record keeping and variety.

new nutrition habits in order to successfully manage their weight.

While most people recognize exercise is an important part of a weight-loss program, practical implementation is the major challenge and, once again, attitude plays a large part.

Exercise is the most efficient way to burn calories. When employees begin an exercise program, they should pick something they enjoy and make it a regular priority in their schedule, starting slowly and gradually increasing the frequency, duration and intensity – in that order.

Studies conducted at Mayo have shown that physical activity performed throughout the day can burn substantial amounts of energy, more than exercise burns in many cases. These two aspects of energy expenditure – exercise and daily activities – are complementary, and making both a priority and incorporating them into one's lifestyle are keys in effectively managing weight.

Employers should do whatever they can to facilitate this,

such as providing work site fitness facilities and encouraging physical activity, such as walking.

Physical activity is particularly key to preventing primary weight gain – those extra pounds that creep on with advancing age, sedentary work duties and a more liberal diet. And exercise is essential to prevent regaining weight after weight loss. An effective diet will promote weight loss, but it is exercise that primarily is responsible for preventing weight regain.

The basics of diet and exercise are critical to the lifelong weight-management process. The challenge is to encourage your people to incorporate these basics into their everyday lives. With corporate support, it can be done in an enjoyable manner.

Prescription Drug Aids

For patients who are unable to manage their weight through lifestyle changes in diet and physical activity, medications offer an additional option. At Mayo Clinic, we usually reserve treatment with medications for people with a BMI greater than 30 who also have medical complications from their weight. For these people, even a relatively small weight loss (5 percent to 10 percent) can improve control of their complications, such as hypertension and diabetes.

Many short-term (less than six months) studies have shown that when weight-loss medications are discontinued, weight regain usually occurs. Therefore, medications to promote weight loss should be continued indefinitely as long as the weight loss is maintained. This is no different than drug treatment for a condition such as hypertension or hypercholesterolemia, where medications are usually continued indefinitely.

There are currently two main prescription drugs approved for weight loss: Meridia (sibutramine), a drug that affects brain chemicals and makes the user “feel full,” and Xenical (orlistat), a drug that blocks natural enzymes needed to digest fat in foods. Both drugs can help a patient lose up to 10 percent of total body weight within a year, provided the patient is also making changes in diet and physical activity.

A healthy eating and activity plan must be in place and is



It is exercise that primarily is responsible for preventing weight regain.

essential for long-term success; medications usually are not effective by themselves, but rather should be viewed as tools to help people make lifestyle changes.

Not everyone responds to medications; if someone hasn't lost more than four pounds in the first month of treatment, they are unlikely to respond and discontinuing the medication should be considered.

Although proven effective in helping people lose weight, prescription drugs for weight loss should be used with care. Mayo Clinic first raised alarm over a popular appetite suppressant combination known as fen-phen (comprised of fenfluramine and phentermine) when patients began to develop heart valve problems that eventually resulted in fenfluramine and a related drug, dexfenfluramine, being taken off the market. Phentermine remains on the market, but with few long-term studies documenting its safety or effectiveness.

Studies up to two years using Meridia and Xenical have shown they are generally safe. Meridia can raise blood pres-

sure, so monitoring blood pressure is important in patients for whom it's prescribed. Xenical can cause gastrointestinal side effects, including diarrhea, abdominal discomfort and occasionally stool leakage. This occurs in a minority of patients, however, and usually lasts less than a week.

Research continues to develop new drugs to promote weight loss, such as the antiepileptic medications zonisamide and topiramate – agonists and protein kinase stimulators that increase metabolic rate and mobilize fat; and agents that work through hormonal mechanisms such as melanocyte-stimulating hormone, cholecystokinin, peptide YY3-36, and amylin.

However, at this time there are few medications that appear to be strongly effective and will be on the market in the near future.

While the two most widely used prescription medications are generally effective and safe, the same can't be said for over-the-counter medications or dietary supplements. You've seen the infomercials. Quick-fix products with names like "FastLoss" can help "increase metabolism and lose weight fast."

A recent review article reported that there were no supplements that led to any significant amount of weight loss. There are no legal requirements to prove that supplements are efficacious or safe before placing them on the market. Ephedra, which led to stroke, arrhythmias and sudden death in otherwise healthy people, was recently removed from the market; even over-the-counter products may have substantial side effects.

From a health, safety and economic standpoint, it is in the best interests of organizations to educate their employees on the lack of evidence supporting these products.

Surgical Options for Weight Loss

After diet, exercise and medications, the "last" option available for weight loss is bariatric (weight-loss) surgery. Even with this extreme procedure, diet and physical activity still play a central role, and insurers usually require a six-month effort to lose weight before covering the procedure.

Based on guidelines, candidates for surgery at Mayo Clinic have a BMI greater than 40, or occasionally greater than 35 with weight-related complications such as high blood pressure, heart disease, diabetes, severe joint disease, and sleep apnea.

Surgical procedures have evolved from what was known as stomach stapling or gastric banding to gastric bypass – partitioning off most of the stomach so the "new" stomach is only the size of a small egg and holds 1 to 2 oz. By filling up on



Although proven effective in helping people lose weight, prescription drugs for weight loss should be used with care.

much smaller amounts of food, substantial weight loss results.

The number of surgeries has skyrocketed from 16,200 in 1992 to a projected 140,000 or more this year, according to the American Society for Bariatric Surgery. The procedure increasingly is being done laparoscopically, which is technically more difficult but results in faster recovery for the patient. Because laparoscopic surgery has not been around as long as the open procedure, long-term outcomes have not been demonstrated as well.

There are risks associated with every surgery and bariatric procedures are no exception, with obesity increasing that risk. Less than one percent of patients undergoing surgery will die of complications from the surgery (in part influenced by risk factors related to obesity), and about 5-10 percent develop other complications. But for most people who are candidates for this surgery, the potential benefits outweigh the risks.

It is critical, however, that each patient understands that surgery is not a quick fix, realizes the risks and is willing to make lifestyle changes. At Mayo we make every attempt to

educate and inform patients about the risks, and make sure they understand that 90-95 percent of people do well and would do the surgery again if they had the choice to do things over.

The average amount of weight loss is about 35 percent of total initial weight one year after surgery. Approximately 5-20 percent (depending on criteria) will eventually be termed “failures,” meaning recipients regain weight by not making permanent changes in diet and activity habits – or “outeating” the surgery.

Psychologically, people still eat for many of the same reasons they had before surgery. Pre-surgery screening and counseling plus follow-up counseling and support groups, therefore, are essential for long-term success. Recipients must have the behavioral change components in place and engage in the necessary physical activity for long-term results to be successful.

Costs are high for surgery. A Mercer survey found that 23 percent of employers cover gastric bypass surgery at an average cost of \$15,000-\$25,000 or more, not counting follow-up treatment and complications that can raise costs well over \$100,000 in some cases.

For insurers of these people, the trade-off to expensive surgery is decreased medical costs down the road. Currently, there are not a lot of hard data on the cost-effectiveness of the procedure, but there is suggestive evidence that health-care costs decline as an obese person gains more control of weight and weight-related health problems through surgery.

Among patients who have undergone bariatric surgery, diabetes is improved or resolved in 95 percent of cases, obstructive sleep apnea in 50 percent, hypertension in 60 percent, serum lipids (cholesterol and triglycerides) in almost all cases and quality of life also improves through increased mobility and improved mood and well-being. Virtually all people who have bariatric surgery are able to decrease their dependence on insulin, high blood pressure medications, lipid-lowering drugs, and the accompanying necessary office visits – all contributing to medical cost savings.

A study in the Veterans Administration system showed that the cost of undertaking surgery was offset by a reduction in healthcare costs within the first year after surgery. The state of Louisiana projected a 36 percent increase in inpatient and outpatient costs and a 77 percent increase in medication costs for state employees who are overweight or obese as compared with those at recommended weight levels.

In an effort to address this issue, a pilot program will evaluate the clinical effectiveness of gastric bypass procedures. The pilot program, currently underway, will assess the impact of surgery on the quality of life for plan members and

whether the surgery is cost-effective compared with current healthcare costs in severely obese individuals.

Measuring Success

To measure success, we should look not only at immediate weight loss, but also at long-term maintenance of weight loss, inches lost, and beneficial changes in diet and activity levels that result in reduced health risk. Studies show that health will improve even if a person has not lost a pound but is exercising regularly and eating healthier.

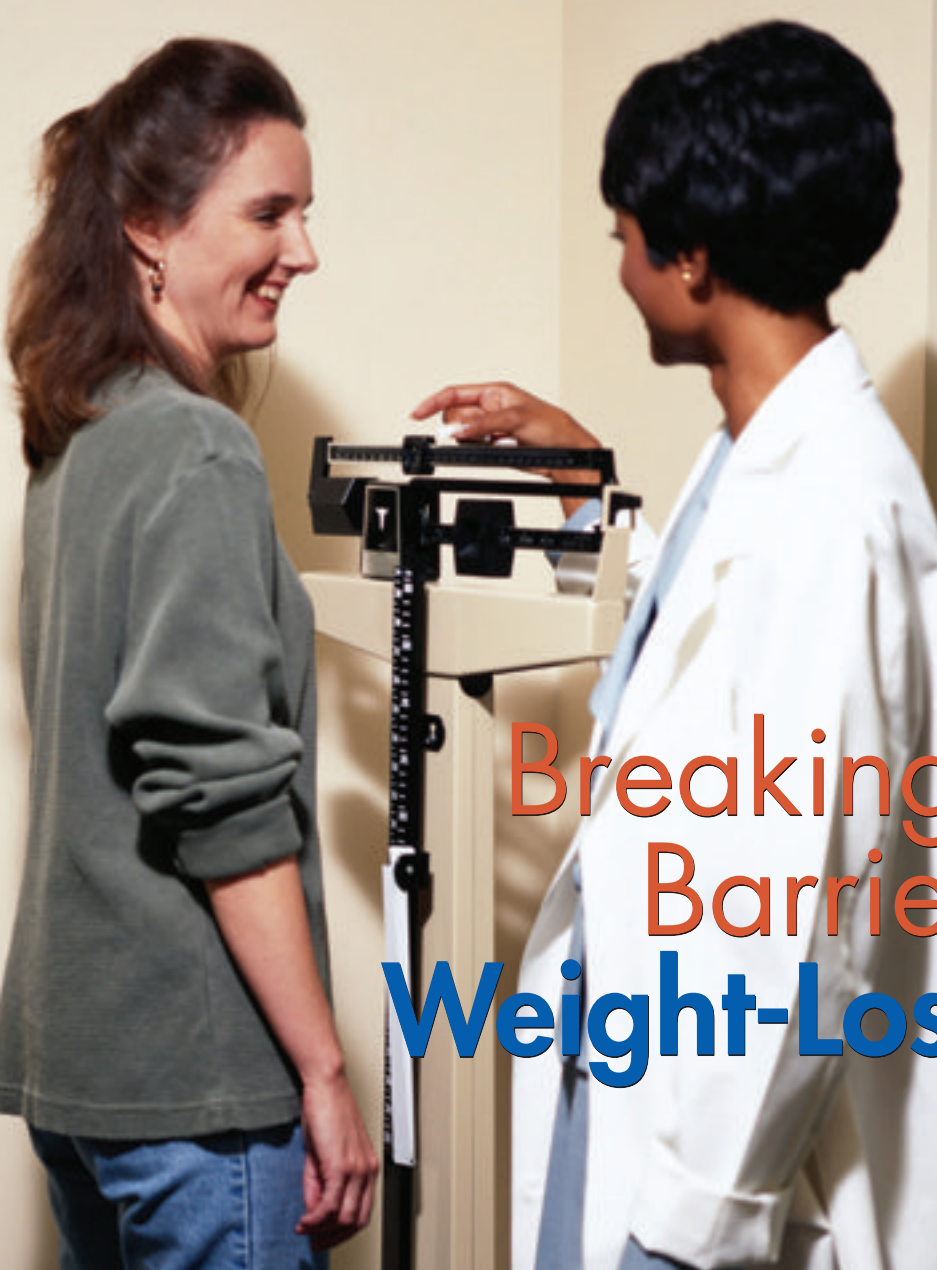
Within a population, small changes in risk for everyone can add up to large changes in outcomes. A one percent decrease in serum cholesterol, for example, can result in a two percent decrease in the risk of heart disease, while lowering diastolic blood pressure an average of only two points (millimeters of mercury) will decrease the risk of stroke by 15 percent.

For an individual 5-10 percent weight loss can result in improvement in many of the complications of obesity. Improved diet and activity habits should slow weight gain and prevent future complications from developing.

Finally, success for an individual can also be measured in quality of life or the ability to climb a flight of stairs without stopping, or to get down on the floor and play with children or grandchildren. This has been a goal of many of my patients and many have achieved it. **HPM**

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weight-loss programs. Identifying a depressive disorder and providing appropriate treatment or referral may be extremely beneficial in enhancing weight-loss success for depressed, overweight individuals.

With binge-eating disorder, Mayo Clinic clinical practice is usually to first offer specialized psychiatric treatment, with the focus on:

- mood management strategies;
- establishment of healthy eating habits (not weight loss);
- improving body image; and,
- increasing physical activity level.

This approach is not aimed at weight loss, but has been shown to reduce the frequency

Breaking Down Barriers to Weight-Loss Success

By Matthew Clark, PhD

Understanding people and their readiness to start a weight-loss program is important. If you start a program at a time when life is especially busy or stressful, or while struggling with an undiagnosed or untreated psychiatric disorder (such as depression or binge-eating disorder), the possibility of failure is heightened.

Trying and failing may reduce an individual's self-esteem and confidence in achieving successful change. Because of these long-term consequences, any weight-loss initiatives backed by your organization should include a screening mechanism to help people evaluate factors that can derail success prior to beginning a weight-loss program.

What are some of those barriers to success?

Mayo Clinic's research with thousands of patients struggling to improve their health through weight loss has shown that levels of depression are related to increased dropout rates in

of binge-eating episodes, increase confidence in managing one's eating and improves body image.

Other psychiatric diagnoses, like bipolar disorder or anxiety disorders, warrant coordination of care with the individual's licensed mental health provider, but may not

impede successful weight loss.

Beyond psychiatric illnesses, there are other psychosocial issues that can prevent people from succeeding at weight loss. I've seen many instances in which not dealing with a weight issue actually helps a person avoid a stressful life situation. For example, an individual may describe himself as being in an unfulfilling marriage but does not want to separate for moral or family reasons. When he is obese he does not have the confidence to address his marital dissatisfaction, but in the past, when he lost weight and his confidence improved, he seriously considered separation, and this was very frightening to him. So, he purposefully regained his lost weight.

A person with positive or protective aspects of being overweight will have a more difficult time succeeding with weight loss until underlying issues are identified and addressed. This is why bariatric surgery programs should include professional counseling prior to undertaking surgery. In support of these

premises, Mayo Clinic's research on two-year outcomes from bariatric surgery has shown a greater likelihood of favorable outcomes when a patient receives mental health treatment.

Organizational weight-loss programs will be more successful when a screening system is used up front. Such a screening system would not only identify issues that should be treated first (such as depression), but would point people to professional counseling for other issues (such as couples counseling), and help the individual determine whether there are other barriers to success in terms of other responsibilities and commitments.

Proven behavioral strategies for weight loss and maintenance

An organization's support of its employees by providing a program and tools to help them evaluate their readiness for beginning a weight-loss program is important at the outset. There are multiple behavioral strategies that an individual can utilize for weight loss. Here are some guidelines to consider as you review programs for your organization.

Lose weight with a friend. Research has demonstrated that social support can increase weight-loss success. One study showed that people who enrolled in a weight-loss program with friends or family members lost an average of 7.7 kg, compared to an average weight loss of 4.3 kg for those who enrolled alone. Strategies to improve one's support system might include ongoing counseling from a nurse educator and finding a walking partner.

Set behavioral goals. Many people will report frustration at how long it takes them to lose weight, which can lead to abandonment of the program. To overcome this, a program's goals should be task-oriented. Examples of goals that are task-oriented are eating a healthy breakfast, or increasing walking by 10 minutes three days this week, or only having problem foods – chocolate, cookies, chips, etc. – when away from home.

They are specific, measurable and reasonable (small behavioral changes). Goals that are not measurable, such as, "I will have a healthier diet," or are unrealistic, "Even though I have not exercised in five years and I have back pain and type 2 diabetes, I plan to work out 60 minutes, five days a week at a health club," usually are not helpful.

In my clinical experience working with patients, I've found that frequent feedback from a healthcare provider or health coach is needed to help people set realistic and achievable goals, which builds success and enhances further goal-setting success.

Provide monitoring tools. Several studies show that record keeping enhances weekly weight loss and that record

keeping can be especially beneficial in keeping people on track during challenging times, such as the holidays. In a study of the effects of preventing weight regain (subjects had already lost 33.2 lbs), researchers found that an eight-week intervention that focused on instruction and telephone support for self-monitoring of food intake resulted in an average

weight loss of 2 lbs in the intervention group, compared with a 2 lb weight gain over the eight weeks in the control group.

Identify triggers. Helping people change a behavior starts with helping them fully understand what factors contribute to that behavior. Weight-loss programs should help people identify these triggers. There are numerous factors that may contribute to overeating. In general, high-risk eating or not-exercising triggers can fit into one of

five major categories.

1. **Mood:** Generally negative moods, such as stressed, irritated, sad, angry, depressed, or upset.
2. **Physical:** Such as hunger, pain, or fatigue.
3. **Social:** Pressure from others to eat, such as "have some more" or "a little extra won't hurt," or wanting to belong to the group, such as at parties and other social events in which food plays a prominent role.
4. **Thoughts:** Thinking about food or exercise in a manner that creates difficulties, such as, "I'm too busy to exercise," or, "I've had a difficult week so I should be able to eat as much as I want," or, "I'm on an expense account so I should eat as much as possible."
5. **Environmental factors:** These could be such things as a treat table at work, being at a restaurant, being at a potluck dinner, not having access to a safe exercise facility (it is winter and I do not feel safe walking on icy sidewalks, or it's summer and 90° and humid, too hot to safely exercise).

Once individuals have identified their specific triggers or high-risk situations, they can then anticipate when they will be most likely to experience urges to overeat and can plan strategies for success in advance.

Problem solving. Does a program provide guidance to problem solving? In looking at the connection between stress and failure to maintain a weight loss, researchers have found that, in general, stress is not the issue. Most people have stress in the form of work responsibilities and taking care of others, but individuals who know how to problem-solve are better able to avoid regaining weight secondary to stress.

Physical activity. Physical activity is a key piece in a weight-loss program. Within the Mayo Clinic Healthy Weight Pyramid – used in our healthy weight programs – it's the central component because research makes clear that

Helping people change
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At some time all dieters will overeat and all exercisers will skip a few days of exercising. The key is to have a recovery plan.

physical activity level is predictive of long-term weight loss success. Those who are physically active maintain their weight loss. Because of this, organizations will want to check to ensure any weight-loss program they offer includes a strategy to counsel enrollees on how important increasing their level of physical activity will be in their success. This counseling should include identifying the participant's exercise history, exercise likes and dislikes, and then creating an individualized exercise plan.

Relapse prevention. At some time all dieters will overeat and all exercisers will skip a few days of exercising. The key is to have a recovery plan. When people miss a day, they often feel guilty and discouraged, they question their chances of success and they may subsequently quit their health-behavior changes. To prevent this downward cycle, weight-loss programs should help set appropriate expectations about relapse with the individual as the weight-loss program is initiated. This might include inquiring if a relapse has occurred during past weight-loss efforts and creating a plan to recover from their mistakes (such as calling a friend for support or helping an individual identify what triggered the relapse).

Organizational considerations

Successful employee weight-management programs will need long-term organizational commitment. It's important to consider what level of ongoing service your organization can provide at the onset. Will your organization help employees find educational resources, help them find appropriate outside referrals, or offer programs within the organization?

The first work site weight-loss group that I provided (not at Mayo) was a single effort, a one-time offering of a 16-session group. Employees asked, "What is next" and "How can my co-workers enroll?" The answers were, "Nothing" and "They can't." This sent the message to employees that neither the organization nor I fully appreciated the complexity and chronicity of obesity.

Confidentiality and work relationships also need to be considered. How will participating together in an exercise or diet program impact a supervisor/supervisee relationship? Certainly, all participants need to keep health-behavior-change information about others out of the workplace, and always confidential. Should different times for classes/groups for different levels of employees be offered? It's something that needs to be considered from an organizational perspective.

By planning and spending time thinking about how to

manage a weight-loss program in your organization before implementation, you will have a greater chance at helping individuals experience success that they can maintain. **HPM**

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Bibliography

1. Boutelle, KN, Kirschenbaum, DS, Baker, RC, & Mitchell, ME (1999). How can obese weight controllers minimize weight gain during the high risk holiday season? By self-monitoring very consistently. *Health Psychology*, 18, 364-368.
2. Boutelle, KN & Kirschenbaum, DS (1998). Further support for consistent self-monitoring as a vital component of successful weight control. *Obesity Research*, 6; 219-224.
3. Clark, MM, Balsiger, BM, Sletten, CD, Dahlman, KL, Ames, G, Williams, DE, Abu-Lebdeh, HS & Sarr, MG (2003). Psychosocial factors and 2-year outcome following bariatric surgery for weight loss. *Obesity Surgery*, 13, 739-745.
4. DePue, JD, Clark, MM, Ruggiero, L, Medeiros, ML, & Pera, V (1995). Maintenance of weight loss: A needs assessment. *Obesity Research*, 3, 241-248.
5. Kayman, S, Bruvold, W & Stern, JS (1990). Maintenance and relapse after weight loss in women: Behavioral aspects. *American Journal of Clinical Nutrition*, 52; 800-807.
6. Wolff, GE & Clark, MM (2001). Changes in eating self-efficacy and body image following cognitive-behavioral group therapy for binge eating disorder: A clinical study. *Eating Behaviors*, 2, 97-104.

The big picture: **US** employers combat **weight-related** health costs

Employers are not choosing to become involved in waging the war on obesity – they are already involved. Employers today are paying a high price in healthcare costs, lost productivity and absenteeism due to disability and even death connected to obesity.

Current and expected future healthcare costs are escalating at an alarming rate in the United States, fueled in part by the problem of overweight and obesity. The costs of health benefits are already high – averaging \$9,950 annually per employee nationally, for family coverage.¹ We are getting to the point where neither employers nor employees can afford coverage. Thus, the impact of these new costs due to excess weight may well be the proverbial “last straw.”

But, medical issues caused by employees being overweight and obese are preventable, so that at least some of the associated costs are *avoidable*. Employers can take action to reduce obesity-related costs, including lost productivity and increased absence from disability.

Finally, the opportunity – indeed, the imperative – now exists for employers to:

- share health information with employees and dependents to promote better awareness of health risks and encourage consumerism in healthcare decision-making;
- provide a range of financial and



The impact of these new costs due to excess weight may well be the proverbial ‘last straw.’

By LuAnn Heinen, MPP, Director, Institute on the Costs and Health Effects of Obesity, National Business Group on Health

At least 8 percent of **private employer** medical claims are attributable to health claims caused by **excess weight**.

nonfinancial incentives for wellness and healthy lifestyle behaviors without violating HIPAA's privacy and nondiscrimination regulations; and,

- improve the work environment to foster healthier habits (through healthier food and vending choices at work, renovated stairwells, pedometer programs, and many more programs now rolling out in the workplace).

Medical and Other Obesity-Related Costs

Two out of three American adults are overweight or obese. Some 15 million of us qualify for bariatric (weight loss)

surgery, according to NIH² guidelines. And one in three children born in 2000 is expected to develop diabetes as a consequence of being overweight, if current trends persist.³

Bleak as the picture is today, it will be even more dismal tomorrow – our children and grandchildren may be the first generations of Americans to have worse health status and a shorter life span than those of their parents.⁴

Direct Medical Costs. As a result of the employment-based insurance system, employers pay on average 80 percent of the \$600 billion bill for private healthcare coverage in this country,

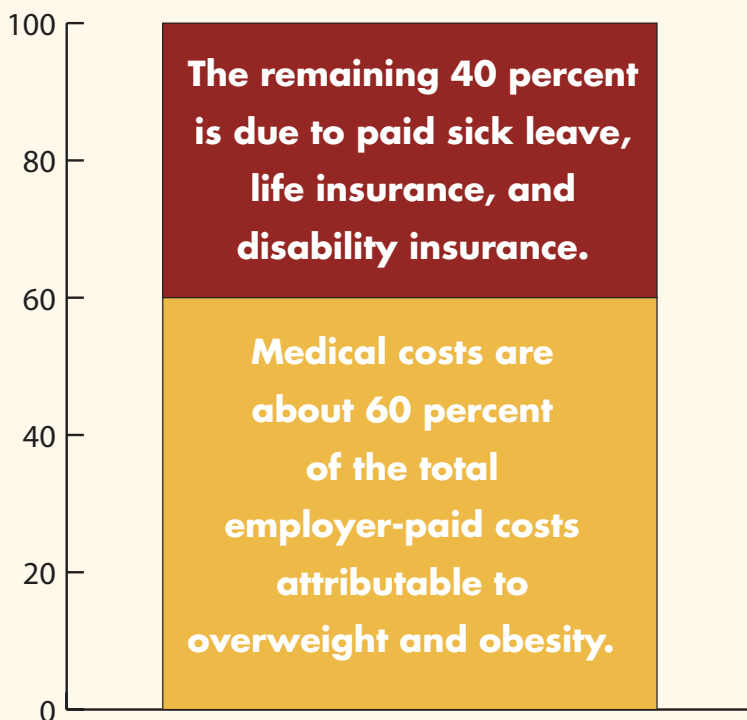
with employees picking up the remaining 20 percent.⁵ On top of this, both employers and employees contribute significantly to publicly financed insurance programs – through the Medicare payroll tax, and through income taxes that fund Medicaid and other programs for the poor and uninsured.

At least eight percent of private employer medical claims are attributable to health claims caused by excess weight.⁶

Disability and Other Costs. Medical costs are about 60 percent of the total employer-paid costs attributable to overweight and obesity; the remaining 40 percent is due to paid sick leave, life insurance, and disability insurance.⁷

Human Costs. All of the costs just described in dollar terms have a human component. They have a very direct impact on the lives of those affected by these disabling and death-inducing problems. To take the example of obesity in childhood, it was reported in *JAMA*⁸ that obese children suffer higher levels of depression than do pediatric chemotherapy patients and report “low quality of life” at five times the rate of non-obese children. Thus we are talking about not only preventable costs, but also preventable human tragedies.

DISABILITY AND OTHER COSTS



Source: US Department of Health and Human Services. Prevention Makes Common Cents: Estimated Economic Costs of Obesity to US Business. 2003.

Major Employers Calculate the Costs of Excess Weight

The National Business Group on Health offers a calculator to help employers estimate the cost of obesity in their own companies. By entering company-specific information such as the number of employees by gender and age category, average wage, industry type, and a benefits multiplier, these costs can be easily quantified using the calculator.

The tool is particularly useful for employers who want to make the case for investing in “healthy weight, healthy lifestyle” programs because it provides a starting point for return-on-investment analysis. The calculator reports costs by category, such as direct medical, days lost from work, including bariatric surgery (if a covered benefit).

The tool is a regression model drawing on large national data sets, and was developed by RTI International with funding from both the National Business Group on Health and the Centers for Disease Control and Prevention.

Collaboration Focuses Action

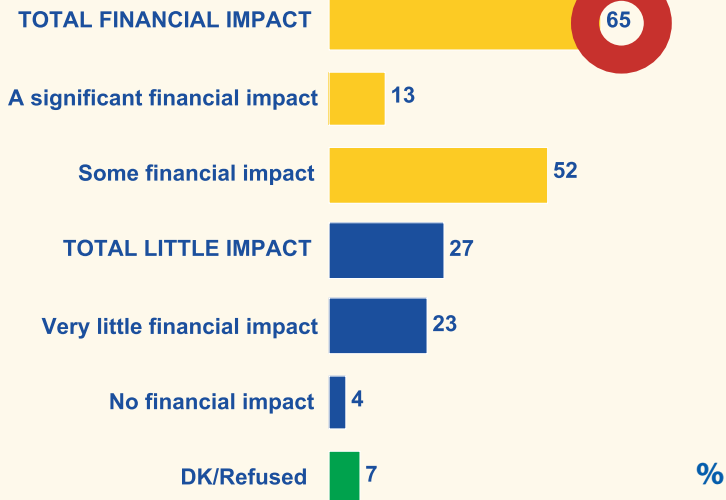
A convergence of public and private-sector attention has made obesity a focus for action: National health leaders are clearly sounding the alarm, calling obesity the most serious public health problem we face.

Community-based organizations and local elected officials are increasingly active in school and community initiatives, some of which are funded by significant philanthropic organizations, such as the Robert Wood Johnson Foundation.

Employers are demonstrating strong commitment to workplace programs, even as concern about the rising cost of

FINANCIAL IMPACT

Based on your experience, how much of a financial impact would you say treatment of obesity-related health issues has had on your organization?



Wirthlin Worldwide conducted interviews with 150 senior management executives from Fortune 1000 companies in May 2004. Results show that two-thirds of these business executives say obesity-related health issues have either a “significant” or “some” financial impact on their company.

employee benefits increases.

At the same time, the body of evidence-based information to support a return on investment is growing. For example, research published in *Preventive Medicine*⁹ showed that men over 50 years old who increased their physical activity levels had significant declines in their annual medical claims. Going from zero to one day per week of activity to three-plus days per week of activity showed cost savings within two years of approximately \$2,000 per (active) person annually.

The tide of obesity **can** be turned by capitalizing on the potential for synergy across all sectors:

Employers create opportunities and incentives for employees and dependents to increase their physical activity levels – through environmental changes, for example, in the

Research showed that the quantity and quality of work improved with increasing levels of physical fitness.

workplace and health benefits incorporating financial incentives to visit the gym or log 10,000 steps daily.

It makes sense to rally around physical activity as a key strategy for reducing the cost burden of employees with excess weight. Recent research published in the *Journal of Occupational and Environmental Medicine*¹⁰ confirms the significant negative effect of obesity on productivity: high healthcare costs, lower health status, more absenteeism, and problem relationships at work. The same research showed that the quantity and quality of work improved with increasing levels of physical fitness.

Community leaders and local officials work to reinstate physical education classes in school to foster the exercise habit in children and adolescents, and to provide bicycle or walking paths and other inducements to physical activity for adults and families where they live.

Federal policymakers continue to preach exercise from the bully pulpit, to fund research on return-on-investment from worksite programs and to advocate specific policies that promote exercise, such as the employee's ability to claim the cost of exercise equipment and gym memberships on flexible spending accounts (when prescribed by a physician as necessary to treat a medical condition, such as obesity-related type 2 diabetes).

The results to be realized from these combined efforts are likely to be greater than the sum of results from each effort individually. In the meantime, each step taken to promote healthy weight and healthy lifestyle is a step in the right direction. **HPM**

LuAnn Heinen is Director of the Institute on the Costs and Health Effects of Obesity, part of the National Business Group on Health (formerly Washington Business Group on Health). The Institute was launched in June 2003 and is a two-year project. Comprised of large employer members, the Institute aims to reverse the alarming trend of increasing overweight and obesity that is damaging the health and productivity of our workforce and burdening corporate America with excessive – and avoidable – medical and disability costs. Ms. Heinen's previous experience included heading Heinen HealthCare Associates LLC for five years. She provided strategy, analysis, marketing/communications and project management services to a broad range of healthcare clients, including managed care, pharmaceutical and nonprofit organizations. Ms. Heinen also worked for Chronimed in business development,



UnitedHealth Group in healthcare evaluation and data analysis, and The Lewin Group as a management consultant. Ms. Heinen earned a Master of Public Policy from the Kennedy School of Government at Harvard University and an AB in Human Biology with distinction from Stanford University. She is the author of several articles on cost and quality evaluation in managed care. Ms. Heinen currently serves on the Board of Directors of Community Health Charities of Minnesota (a federation of 20 health agencies) and the Advisory Board to the Children's Defense Fund – Minnesota.

Bibliography

1. Kaiser Family Foundation. Employer Health Benefits 2004 Annual Survey. Available at www.kff.org/insurance/7148 <<http://www.kff.org/insurance/7148>>
2. National Institutes of Health. The Practical Guide to Identification, Evaluation and Treatment of Overweight and Obesity in Adults. Bethesda, MD: National Institutes of Health, National Heart, Lung and Blood Institute, North American Association for the Study of Obesity, 2000. NIH Publication Number 00-4084.
3. Surgeon General. *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*. 2001.
4. Fontaine, KR et al, Years of Life Lost Due to Obesity. *JAMA* January 2003; 289: 187-193.
5. Mercer Human Resources Consulting. National Survey of Employer Sponsored Health Plans 2003. March 2004.
6. Finkelstein EA, Fiebelkorn IC, Wang G. National medical spending attributable to overweight and obesity: How much, and who's paying? *Health Affairs*. Web Exclusive. May 14, 2003. <http://content.healthaffairs.org/cgi/content/full/hlthaff.w3.219v1/DC1>
7. U.S. Department of Health and Human Services. Prevention Makes Common Cents: Estimated Economic Costs of Obesity to U.S. Business. 2003.
8. Schwimmer JB, Burwinkle TM, Varni JW. Health-related quality of life of severely obese children and adolescents. *JAMA*. 2003 April 9; 289(14):1813-9.
9. Martinson BC, Crain AL, Pronk NP, O'Connor PJ, Maciosek MV. Changes in physical activity and short-term changes in health care charges: A prospective cohort study of older adults. *Prev Med*. 2003 Oct;37(4):319-26.
10. Pronk NP, Martinson B, Kessler RC, Beck AL, Simon GE, Wang P. The association between work performance and physical activity, cardiorespiratory fitness, and obesity. *Journal of Occupational and Environmental Medicine*. 2004 Jan;46(1):19-25.

Organizational **Solutions** to Obesity

By Philip Hagen, MD

By now, it is clear that obesity is a problem of epidemic proportions. But unlike the infectious epidemics like the plague that decimated whole cities in a few months, this epidemic has crept up on us.

The preceding articles have clearly shown the magnitude, complexity and challenge of the obesity puzzle. The emerging solution shows clearly the need for a multi-modal approach. And, just as we have largely conquered infectious epidemics through public health efforts, like sanitation and mass immunization, the solution to obesity will involve a big picture – population health – approach.

While public health is largely the purview of the Surgeon General, Centers for Disease Control, and state and local health departments, population health has a new ally – businesses/employers. Corporate Medical Directors and Occupational Physicians, Benefits Directors and Health Promotion Departments all know the power of the multiplier effect. Like compound interest, small but sustained health changes in large groups of people can have large impacts on health status, health costs and productivity. And results from successful programs are leading forward-looking employers to act.

To put the problem in an institutional perspective, obesity is expensive. Most large organizations have a population profile similar to the general public – two-thirds of their members are overweight, and nearly one-third are obese – and these numbers continue to rise.

Multiple studies have been done to look at the cost impact of excess weight. The National Business Group on Health estimates that obesity is linked with 39 million lost work days and 239 million days with restricted activity. The individual medical cost differential between people with normal weight and the very obese is \$2,500 - \$3,500 or more, as Dr. Wayne Burton at Bank One showed in a 1998 study. Pharmacy cost differences between these same groups in a Mayo study were approximately \$60 more per month; others have shown even greater cost.

Making this problem more frustrating is that data are mixed on whether weight-loss programs have any lasting impact. Many fad diets and even careful weight-loss programs show little net benefit after two years. The combination of the staggering impact and the continued rapid growth



of the problem and recent data, however, suggest that a concerted effort guided by best practice principles will be successful – and is imperative.

Elements of Successful Programs

Successful programs appear to require certain elements. They require breadth, reach and longevity, and they must occur in a supportive setting. Further, to reach more of those most severely affected, novel and typically more intensive, and costly, approaches are required. And, as Dee Edington, PhD, at the University of Michigan has shown, it is critical not only to intervene with people at high risk for disease, but also

to keep those at low risk – in the low risk category.

This is especially true for obesity because there appears to be no let-up in the growing numbers of people moving from normal weight and risk status to overweight and higher risk.

Program breadth means multiple options and opportunities for employees and members. Behavioral theory predicts that a small but significant number of people will act in a self-directed way. An Albert Einstein College of Medicine study has shown that for as little as \$12.33 – the cost of a book and a little guidance – modest weight loss will occur over a year. By increasing the intensity – using a computer-based program – the cost increased to \$41.99, but the weight loss at one year, while still modest, doubled.

Finally, by combining personal counseling and a computer-based program, costs increased even more to \$133.74 – but weight loss nearly doubled yet again. People have different learning styles, different motivators and different support needs – both learning and emotional. An organization may implement one program through the health benefits plan and another through the health promotion program.

Finding what works is a process of repetition and modification. In one company, Occupational Health Nurses had a particularly strong presence. When the company implemented Mayo's online weight-loss program, many people used it, but a subset came repeatedly to the nurses with questions. The company responded by making nurse access an option in the program.

Data repeatedly show that employees and members who are overweight are anxious to participate. As many as 30-50% of people who are overweight will respond to a program offer. At Verizon, an innovative e-mail promotion was used inviting employees to visit a health Web site; it resulted in 7,000 visits in a single day – 2,000 of them interested in weight loss.

Breadth also means having focused programs. If high-risk groups can be identified and are willing to participate, more intensive and more expensive programs can be targeted to them. Coors Brewing Company, for instance, offered a Health Risk Assessment (HRA) to its employees. Through a modest incentive and hands-on assistance, they got high employee participation rates. The HRA identified risks and readiness to participate in a weight-loss program. Employees with multiple risk factors who consented to be contacted were offered an intensive physician-supervised and EAP-supported program.

The battle to change personal habits is heavily influenced by daily culture.

“**Reach**” is very much specific to the organization, and critical. Again, behavioral theory suggests people need a “cue to action.” That may be a life event like a heart attack, but it may also be an HRA, a visit to the company nurse, a visit from a health promotion

team, or an e-mail message. And people are receptive to these cues at different times. Companies with a dispersed working population, like a national sales force or truck drivers, may find phone or computer connections work best.

Importantly, a message from the top often has great reach. General Mills kicked off a weight-loss program with a celebration during work hours – at which the CEO talked. Shift workers can be easily missed and may have above-average risk levels. A personal late-night visit by a nurse in a break room has tremendous impact.

Longevity is perhaps the most forgotten – and difficult to implement component. A “campaign” can get attention and cue people to action, but all of the environmental forces that are propelling the obesity epidemic don't stop – time demands, labor-saving devices, ads for calorie-dense foods and high-fat food choices in the cafeteria are daily constants.

Programs with longevity use multiple cues to participate, permanently change the environment, and reduce barriers to participation in an ongoing way. The battle to change personal habits is heavily influenced by daily culture. Working every day to change the culture in an organization requires ongoing commitment.

Incentives, Persistence, and Results

Incentives are another mechanism for boosting ongoing participation. Some companies incentivize participation at any level – and get it, for instance through increased visits to a health Web site. This may be a winning strategy, especially if coupled with a personalized feedback mechanism. Tate showed in using an online weight-loss program, that if e-mail-based counseling was added, visits to the site doubled and so did weight loss. Other companies are working to link completion of a weight-loss program with reduced health insurance premiums. This also may be a winning strategy. Some data suggest that even modest sustained weight loss may return three or more dollars for every dollar spent on programming and incentives.

Boeing is testing a program in which people with multiple risk factors, including obesity, identified on an online Health Risk Assessment, can receive phone-based counsel-

ing for up to a year. This kind of long-term, repeated, personalized interaction costs more – but research shows repeated personal interactions to be the more effective at changing behavior. The Diabetes Primary Prevention program showed that sustaining a program of interactions over time, combined with education and regular moderate exercise, produced modest sustained weight loss over more than two years (only enough to reduce someone's BMI by about one point) and reduced new cases of diabetes by 58%.

This study by Knowler, published in the *New England Journal of Medicine* in 2002, was done in a population of working-age adults, and is in many ways both a template for how to carry out a weight-loss and exercise program and a preview of what to expect when you do modest weight loss of, on average, 12 pounds, and cutting the onset of diabetes in a large population in half.

Integrated Strategies

Beginning or expanding a weight-loss program in a large or complex organization can be daunting. The shared experiences of many groups, combined with mounting data, point to taking the following important steps.

The most important concept from an organizational perspective is integration of efforts by all groups with an interest or stake in the process. Moving a large organization to action takes buy-in at the highest levels.

Step 1. Pitch the problem to, and get buy-in from, the highest levels of management.

Step 2. Identify groups with a stake or interest in the obesity problem, e.g., Medical Department, Benefits, Health Promotion, Workers Comp, HR, Communications, Employee Representatives, Vendors, Contractors, Food Services, etc.

Step 3. Plan a coordinated effort with reach and duration – use all available methods to reach your population – paper, the Internet, group programs, and personal interactions via phone or face-to-face.

Step 4. Create ongoing and varied “cues” to get people involved.

Step 5. Stratify programs – inexpensive, broad programs to assist self-starters and more in-depth, personalized and expensive programs reserved for those at highest risk. Health Risk Appraisal is a powerful tool to profile and stratify a population.

Step 6. View the process as one of long-term culture change. The epidemic can only be stemmed in a supportive environment that makes healthy choices easier.

Step 7. Define simple metrics to track progress and guide mid-course corrections.

This coordinated organizational effort needs to be informed by some guiding principles:

- Address the big picture of the population and the smaller picture of the individual;
- Mitigate as many influences that contribute to obesity as possible – e.g., the environment or culture need change;
- Sustain the effort over the long term;
- Realize that small changes on a large scale equal success;
- Fit the programs to your population and modify them as you go along;
- Make a high-level management support visible to get more buy-in and effect quicker culture change;
- Make exercise – moderate but sustained – an important component of weight-loss programs.

In the end, grappling with the issue of obesity – looking at real costs, both medical and productivity-related, designing substantial programs and measuring success – will confirm the dictum that the fitness of an organization is tied to the fitness of its employees. **HPM**

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Looking Ahead: Technology Solutions for Healthier Lifestyles

By Brooks Edwards, MD

A few years ago, I was seeing a patient who came to us at Mayo Clinic after seeing his home physician. He had many questions and concerns, and relayed to me what his physician said at the time of his checkup: “Even if you were the only patient I needed to see today, which you are certainly not ... I wouldn’t have the time to answer all of your questions.”



It was stunning, and highlights how squeezed physicians are for time. But more importantly, it shows that patients have a need for and an interest in learning more about their health. Over the past decade, we’ve seen health information Web sites answer the health questions of millions of people searching for answers to a new diagnosis, a health symptom they are experiencing, or information on how to keep healthy. It’s given us a way to actively engage people in raising health awareness.

That was first-generation online health. Now we’re seeing the emergence of health management tools that will help people work on serious health issues like obesity. Online behavior change programs are proving to be an effective way to engage people in healthy changes, such as becoming more active, eating healthier and becoming better at managing health conditions. We are seeing a growing number of organizations use online technology, in a multi-modal approach to deliver health information and interventions that empower their people to change to a healthier lifestyle.

Food industry giant General Mills is a case in point. The goal was to motivate employees to take the first steps in sensible weight loss (one pound per week) through multiple motivational and support methods, including educational seminars, health fairs and Mayo Clinic’s online Healthy Weight behavior change program.

The multi-modal approach included a significant incentive to participate – a chance to win a spa vacation. Their results speak to the ability of new online tools to engage, track and motivate people to make healthy changes. They

enrolled 1,321 program participants, and 443 lost weight (a total of 2,990 pounds during the incentive contest period). This resulted in an average of 6.7 pounds of weight loss per participant during the six-week contest period, and an average drop in BMI from 27.9 to 27 for participants.

In my work at Mayo Clinic Health Information developing online interactive tools, I’ve seen the potential for online tools to reach and help many more people. These Mayo programs combine medical and behavior change science with interactive tools to aid in the adoption of long-term behavior change. Online behavior change programs provide unique benefits in the fight to help people make healthy changes:

- a high degree of tailoring to individual needs and to stage of readiness to change; and,
- tracking tools that help people chart progress over time – shown to be a key factor to weight-loss success.

A Personalized Approach to Behavior Change

The ability to craft a behavior change program that is personally relevant to the individual is a big benefit of the online format. At Mayo Clinic we approach online behavior change programs with the understanding that no two people are alike when it comes to change. Multiple levels of personalization ensure the widest reach possible for issues like obesity. You need to start by assessing an individual’s interest in behavior change. If they are not ready to change, chances are high that they won’t succeed.

Increasingly, smart technology is allowing us to tailor our programs, recognizing that someone not ready to dive into a behavior change program can still be moved along the change continuum with the right messages. We also look at barriers to change and tailor messages that help people overcome those obstacles they identify as roadblocks to success. Online technology also now gives us more ways to let users put together healthy menus that reflect not only their

weight-loss goals, but their food preferences. They can create an exercise program that reflects their personal activity goals and activities that work best with their life.

In the future, technology is going to allow us to further customize these programs to the individual. For instance, as we continue to learn more about how people make decisions and how they are motivated to participate in lifestyle change programs, we will continue to develop more tailored responses to individuals that they can access through a variety of technology tools that fit into their busy lives.

Online programs now allow automatic tracking of data in a way never before possible. New online behavior change programs provide an opportunity for the user to enter their own data, such as weight, food choices and exercise level. This ability by individuals to track and visualize their own progress is a powerful motivational tool that keeps the user engaged. Interactive tools, such as calorie counters and body mass index (BMI) calculators, further customize the experience of behavior change.

For the organization, online programs provide aggregate results data that can identify successes or challenges to address through additional health interventions. These data can also be linked to other cost metrics, such as claims and absenteeism, to get a true impact picture.

What's Ahead

We already have some glimpses into what's ahead with tracking tools of a more medical nature, such as online monitoring of biometric data. An increasingly important Web application, Remote Patient Monitoring (RPM), is still largely in the experimental stages, but in theory these devices will provide the ability to measure a person's physiologic responses and to communicate them – and change behavior or diet on a real-time basis – and then monitor physical reactions to the change.

Heart patients can now send information from computers to their provider that includes their weight and blood pressure, and their level of coumadin, a blood-thinning medication. Going forward, this kind of technology can be applied to interactive devices that help us with weight loss, such as hand-held tools that track body weight, our food choices and activity levels.

The next phase of RPM will mesh the Internet with mobility through the use of wireless networks. This will allow data to be fed into an online database, which will send back personalized messages based on biometrics. The messages we receive via e-mail will be tailored to our personal behavior change status and will encourage us to stay focused on our weight-loss goals.

Advances in technology and our greater understanding of

how people approach change will also lead us toward the use of virtual health coaches. Many people use personal trainers and some have a personal health coach, but a virtual health coach allows organizations to reach out to many more employees in a cost-effective way. Similar to a fitness coach, a virtual health coach can help bolster us when we need extra motivation or help us develop a change in our plans, if something doesn't seem to be working.

Think about how people use Instant Messaging (IM) now. Imagine how that technology can be integrated into approaches for population health initiatives. It's instant and it's individualized. You reach people when it works best for them and when they are the most responsive and interested in making the health changes they need.

With attention to privacy and with employee permission, information can be shared with the employee's healthcare provider, so the provider can also support a message consistent with the programs he or she is already working on. Technology will allow a physician to have information that will help us play a greater role in helping people care for themselves.

People want to make the right choices and when they get the reinforcement from a variety of sources in their lives, it helps them maintain that focus and in turn gives us healthier people. For people like my patient whose home physician didn't have time to answer all his questions, these programs provide an opportunity not only to answer questions, but to change behavior in a very positive, healthful way. **HPM**

Brooks Edwards, MD, a practicing cardiologist at Mayo Clinic in Rochester, Minnesota, is Medical Director of the Cardiac Transplant Team, Mayo Clinic. Dr. Edwards is also the medical director of the online publishing group at Mayo Clinic Health Information where he oversees content development for all electronic products created by the Mayo Clinic Health Information Division. He has a long-standing interest in computer technologies for education and medicine. He was the first chair of Mayo Medical School's computer-aided instruction committee. He received his medical degree from Mayo Medical School in 1982. From 1982 to 1989, he completed his residency in internal medicine at Mayo School of Graduate Medical Education, a two-year research fellowship in cardiovascular diseases, and a fellowship in cardiovascular diseases through the Mayo Graduate School. He was a postdoctoral scholar at Stanford University Medical Center in 1989. Dr. Edwards is board-certified by the American Board of Internal Medicine in cardiovascular diseases.



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