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OBESITY & DIABETES

EPIDEMIC DISEASES FOR THE 21ST CENTURY

Hardly a day passes without some mention in the newspaper, on the radio or on television talk shows of the growing problem of obesity. What is obesity, why has it become such an enormous problem in our society, what are the consequences, especially in our aging population, and what can be done about it?

Obesity is defined as an excess of body fat. Because the determination of body fat can require sophisticated technology, the body mass index or BMI, a ratio between body weight and height, has become a useful surrogate tool. A BMI of less than 25 kg/m² is considered ideal, while a BMI of 25–29.9 kg/m² is considered overweight or pre-obese. Based on differences in treatment and health risks, obesity has been categorized as class 1 (BMI = 30–34.9 kg/m²), class 2 (BMI = 35–39.9 kg/m²), or class 3 (BMI >40 kg/m²). People with class 3 obesity, also termed morbid or extreme obesity, have a two-fold higher risk for all-cause mortality than those with a BMI of 30–31.9 kg/m².

You can calculate your BMI by using the table on page 3.

The BMI concept is easy to use and it applies to both men and women; however, at best, the BMI is a crude determinant of body fatness. For example, many men have a BMI over 25 kg/m² because of extra muscle tissue while many short adults have a high BMI that may not reflect them being overweight or fatness. Despite its limitations, the BMI is widely used by researchers who have been documenting the increased prevalence of obesity and its side effects.

The National Center for Health Statistics in the United States has been conducting a series of cross-sectional National Health and Nutrition Examination Surveys (NHANES) periodically since 1960. These surveys are designed to provide nationally

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DIRECTOR'S MESSAGE

“When Is Obesity Not Just Fat?”

If you have not read the cover article on obesity, I urge you to do so. I am writing to remind you that sometimes there is more to obesity than just over-eating and under-exercising. Although many overweight people unfairly blame a “glandular condition” for their problem, there really are hormone conditions that result in obesity. Just dieting and exercising when you have one of these problems is not the answer. You will need medical attention.

The first one that comes to mind is called polycystic ovary disease (also PCO, Stein-Levinthal, or HAIR-AN syndrome). This problem afflicts women causing profound weight gain, usually beginning in early puberty. It is a genetic disorder and tends to be passed on in families. Women with PCO are highly resistant to insulin and have very high blood insulin levels. As they get into their 30s and 40s, they may develop Type II diabetes. They also tend to have irregular menstrual cycles and reduced fertility. Their ovaries are usually enlarged and full of cysts, which vary in size. The polycystic ovary tends to make more male hormones (androgens) than normal, so women with PCO often have male-type hair patterns: chin, sideburn, chest and abdominal hair, etc. In some cases there may even be deepening of the voice and loss of hair (male pattern baldness). Afflicted women may have dark velvety skin patches (acanthosis nigricans) under their arms, on the backs of their necks, and in other skin-fold areas. PCO is a common problem, thought to occur in as many as 1 in 20 women. It is a treatable disease, taking estrogen plus progestin (birth control pills) and sometimes an “anti-androgen” helps reduce the masculinizing symptoms. New studies are showing that drugs that improve insulin sensitivity, used to treat diabetes, may also help patients with PCO.

The second condition I want to alert you about is hypothyroidism, a deficiency of thyroid hormone. This is a common disease, which occurs increasingly more frequently as we grow older. It is often mistaken for “normal aging.” Besides weight gain, despite no increase (or even a decrease) in appetite, patients with this disease notice dry skin, feeling cold in settings where others are comfortable, profound lack of energy and a tendency to fall asleep early or need an afternoon nap. Other manifestations include muscle cramps and sometimes hearing loss. Thyroid disease, both the over- and under-active types, tends to run in families. The common forms are due to one’s immune system “attacking” the thyroid gland. Hypothyroidism is easy to diagnose and simple to treat, once it is suspected. Most people are 100% improved with just one thyroid hormone tablet a day.

The last condition is called Cushing’s Syndrome. This problem is less common than the other two diseases described above. It is caused by an excess of adrenal steroid hormones. These hormones are steroids, like the male and female sex hormones (androgens and estrogens), but have different effects. Adrenal steroids are essential, but in excess they cause obesity; high blood pressure; glucose intolerance and diabetes; osteoporosis (loss of bone); wasting of muscle and weakness; thinning and bruising; the appearance of purple “stretch marks” on the abdomen; and severe emotional mood swings. The pattern of obesity is

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representative reference data and prevalence estimates for a variety of health measures and conditions. A study published in 1994 examined the NHANES data collected to that point in 6,000-30,000 adults, aged 20-74 years, seen in each of four separate surveys. The prevalence of overweight and obese individuals combined (including all people with a BMI >28 kg/m²) was fairly steady at about 50% of women and 40% of men from 1960 through 1980. In the first phase of NHANES III covering the period from 1988-1991, the prevalence had increased to more than 55%, while in the second phase (1999-2000), the prevalences increased to 65%. The trends for obesity (BMI>30 kg/m²) were even more remarkable. From 1960-1980, obesity prevalence rates were around 14-15% while in the first phase of NHANES III, they had risen to 23%; in the second phase of the survey, the prevalence of obesity was 31%. Extreme obesity (BMI >40 kg/m²) increased from 2.9% in phase I to 4.7% in phase II.

The problem of obesity is not confined to one gender; both men and women are equally affected. Neither is it

confined to one ethnic group; while overweight and obesity were highest in African-American women as well as Mexican-American men and women of all ages, rates in Caucasians were not remarkably lower. Finally, obesity is not an issue just among young or middle-aged people. NHANES 1999-2000 data showed that the distribution of the BMI in men and women between 60-79 years of age had shifted, indicating that more people had higher BMI values. The problem among the young is of special concern, however because being overweight and obese seem to track from childhood, through adolescence and into adulthood. Today's overweight children are likely to become tomorrow's obese adults.

How has this happened? Scientists talk about energy balance as the interplay between energy intake and energy expenditure. If intake and expenditure are equal, body weight remains stable. If we consume more food or expend less energy in physical activity, body weight will increase. Similarly, weight loss occurs when food intake is decreased or energy expenditure is increased. These are simple



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BODY MASS INDEX CHART

BMI (kg/m ²)	19	20	21	22	23	24	25	26	27	28	29	30
Height (in.)	Weight (lb.)											
63	107	113	118	124	130	135	141	146	152	158	163	169
64	110	116	122	128	134	140	145	151	157	163	169	174
65	114	120	126	132	138	144	150	156	162	168	174	180
66	118	124	130	136	142	148	155	161	167	173	179	186
67	121	127	134	140	146	153	159	166	172	178	185	191
68	125	131	138	144	151	158	164	171	177	184	190	197
69	128	135	142	149	155	162	169	176	182	189	196	203
70	132	139	146	153	160	167	174	181	188	195	202	207
71	136	143	150	157	165	172	179	186	193	200	208	215
72	140	147	154	162	169	177	184	191	199	206	213	221
73	144	151	159	166	174	182	189	197	204	212	219	227
74	148	155	163	171	179	186	194	202	210	218	225	233
75	152	160	168	176	184	192	200	208	216	224	232	240
76	156	164	172	180	189	197	205	213	221	230	238	246

concepts that belie a more complex set of physiological, sociological and behavioral determinants that affect both sides of the equation. People eat for different reasons, many of them having little to do with hunger, nutrition or health benefits. Likewise, people are active or inactive for many reasons, including health, enjoyment of sport or social benefits. In our country, many changes have taken place over the past 20 years that have affected both sides of the equation.

In today's fast-paced world, people are often eating on the run. Working men and women are known to pick-up breakfast on the way to work, order lunch to eat at their desks, and take the family out for a fast-food dinner, often repeating this scenario several times a week. Weekends are spent in a similar whirlwind, perhaps ending with a family barbecue on Sunday. Snacking has become a way of life, rather than a special treat. None of these practices is inherently bad



in and of itself, but taken together, they represent a lifestyle that promotes obesity because of two important factors: the foods that are chosen are often very energy dense (high in calories and/or high in fat) and the portion size of these foods has grown with the years.

Many people have gotten the message to decrease the fat content of their diets and have done so. However, in changing to lower-fat products, people have begun to consume larger quantities. Moreover, portion sizes of commonly-eaten foods have grown enormously. Many of us remember when milk came in quart bottles, soda came in 6-oz servings, and a glass of juice held about 4 ounces. Now milk comes in 1-gallon containers, soda in 2-liter bottles and juice in handy 16-oz. cartons. Convenience stores sell 44-oz. and 64-oz. beverages that contain approximately 24 or 36 packets of sugar, respectively. Family-sized bags of chips which once weighed 5-7 oz. now contain 20 oz. People tend to see many containers as holding one serving, despite the fact that such an amount actually serves 2-4 people. Although we might find it perfectly acceptable to eat a 5-7 ounce bagel for breakfast, for example, we would probably not eat the equivalent 5-7 slices of bread in one sitting. And many 1 oz. slices of bread have now grown to 1½-2 oz. each. A Hershey's chocolate bar that weighed 0.6 ounces when it was first introduced in 1908 now comes in 1.6-, 2.6-, 4.0-, 7.0-, and 8.0-oz. It takes a good deal of work and knowledge to read package labels adequately to discover what the portion size of the item is and how many portions the container holds. Finally, restaurant portions have grown substantially with the years as well. A recent survey found, for example, that while McDonald's still offers a 2.4-oz. serving of French fries, just as it did in 1955, it now also offers 5.3-, 6.3-, and 7.1-oz. servings.

These changes in our food supply are somewhat insidious; they have occurred in a subtle fashion without our even recognizing it. And we have become used to it, we expect it, and we like it. We would probably not return to a restaurant that served a standard 3-oz. portion of meat or fish when we could get an 8-10 oz. portion for the same price someplace

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else. We tend to finish what is on our plates, regardless of how much there is. And, when presented with a larger family-sized portion from which to choose our individual portion, we tend to choose and eat more.

In conjunction with portion sizes, our tendency is to overeat and we are far less active than we were 20 years ago. Our lives are full of conveniences and gadgets, including cars, washing machines, vacuum cleaners, food processors, computers, Play Stations and more. While some may pride themselves on not watching much TV, they spend hours surfing the Net in the same sedentary position as the proverbial couch potato. We no longer find it safe for our children to play outdoors unsupervised or to walk to school. Most people cannot find the time in their busy schedules to expend as much leisure-time energy as it took just to live 20 years ago. The result of this imbalance in energy is being overweight and obese. These effects are not confined to the US; reports from around the world document the spread of obesity in most industrialized countries in Europe and Latin America. Most significantly, obesity and its health consequences are emerging problems in countries that are making the transition to a western lifestyle, such as China and Vietnam. And the health consequences of obesity are multiple, including increased rates of Type II diabetes, among other conditions.

Insulin is a hormone made in the pancreas. It allows muscle, fat, and liver cells to remove sugar (glucose) from the blood. Type II diabetes results when the ability of the pancreas to secrete insulin is not sufficient to overcome resistance to insulin experienced in the periphery. In contrast, Type I diabetes, which generally occurs before the age of 30 years, is the result of an attack on the insulin-producing cells of the pancreas, which renders the individual insulin-dependent. The result in either case is an inability to clear glucose, the smallest chemical unit of all carbohydrates, from the blood stream. Because the body attempts to rid itself of

this excess sugar, people experience frequent urination and great thirst. The dangers of Type II diabetes are not always apparent because the damage caused by the disease may take many years to develop. The excess blood sugar results in molecules of glucose getting stuck onto (glycosylation) the hemoglobin, the oxygen-carrying chemicals of the red blood cell. Glycosylated hemoglobin is a large molecule that can damage many of the smallest blood vessels in the eyes, the kidneys and the peripheral blood vessels in the legs. The long-term consequences of this damage to small blood vessels include vision problems leading to blindness (retinopathy), kidney damage necessitating dialysis (nephropathy) and nerve damage (neuropathy) resulting in infection and possibly amputation.

Obesity often causes resistance to the action of insulin. It also is associated with a high risk of hardening of the larger arteries, leading to heart attacks and sometimes poor circulation to the feet and legs. Many years ago, Type II diabetes was considered a disease of older adults who might have developed insulin resistance due to increased weight, or become insulin deficient due to an aging pancreas, or a combination of the two factors. Today, because of the high prevalence of obesity, we've found children as young as 10 years of age who have

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Type II diabetes. Moreover, the prevalence of Type II diabetes in all segments of the population, both in the U.S. and abroad, is growing and threatens to reach epidemic proportions as the population ages.

What can you do to avoid becoming obese and developing diabetes? The best way may be by increasing your level of activity, both in actively pushing the plate away and in increasing your level of physical activity. There's very little magic and a great deal of common sense involved in having a healthy diet. To do so, choose reasonable portion sizes including two to three 3-oz servings of low-fat cuts of meat, chicken and fish that are grilled or broiled; five servings/day of fruits and vegetables; six to eight servings/day of whole grain breads, cereals, rice, pasta, or starchy vegetables; and two servings/day of low-fat dairy products. Eliminate the empty calories in your diet by avoiding sugary beverages and large amounts of fruit juice; decrease the fat content of your diet by eliminating fried foods, and high-fat condiments such as butter, salad dressings, and mayonnaise; and drink plenty of water.

Some people have had success in losing weight by following a low carbohydrate/ high protein diet such as the Atkins plan. Reports indicate that this plan, especially when low-fat sources of protein are included, is not unhealthy, as first believed. However, a recent report reviewing the effectiveness of four different diet plans, including an Atkins diet, suggests that most plans work as long as you follow it. People who strictly adhered to their diets on all the plans lost about 30 lbs. over the course of a year compared to the 10 lb. weight loss in those who were not as rigorous about following their plan.

Find an activity that you like to do and plan to do it five days/week if possible. Our aging bodies do not always allow us to pursue the most vigorous of exercise but generally we

can find some activity that works for us. A brisk 15-minute walk twice a day; walking in the water of your local pool; parking a few steps further away from the entrance to the grocery store; or chair dancing to a video are some ideas. Even playing cards or working on a jigsaw puzzle will expend more energy than simply watching TV.

If you have been told recently that you have diabetes, you know that this is a call to action. The first approach to treating diabetes is generally with diet and exercise. Just a 10-lb. weight loss can often bring blood sugar levels back to normal. Exercise increases insulin sensitivity, which can also help normalize blood sugar levels. Eating regular meals that contain a reasonable amount of carbohydrates, at regular times every day also can act to regulate blood sugar. If your doctor has prescribed medication to treat your diabetes, the regularity of your medication regimen as well as your meals will help to normalize blood sugar levels. A diagnosis of diabetes is an opportunity for the whole family to eat better and exercise more. Studies of individuals with Type II diabetes have found that tight regulation of blood sugar levels significantly delayed the onset of diabetes complications such as retinopathy, nephropathy, and neuropathy. We believe the same will hold true for Type II diabetes.

As we age, our need for calories decreases as we lose muscle mass and gain fat tissue. Some of us have more time on our hands to spend snacking and less energy to do vigorous exercise. But small steps in the right direction, such as decreasing food intake and increasing energy expenditure, will help us to maintain energy balance and avoid the health complications attributable to overweight and obesity.



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DIRECTOR'S MESSAGE ... CONTINUED

peculiar. There are fat deposits in the abdomen, trunk, and back of the neck, but the thighs and arms remain thin. The face takes on a round (moon) appearance and may appear flushed. Treatment of this condition depends on the cause. It may be due to a tumor in the pituitary gland or growths in one or both adrenal glands, and occasionally to cancers elsewhere. Cushing's occurs in people taking high doses of steroids (usually prednisone and others) for conditions such as, asthma or arthritis. Cushing's syndrome is a serious problem that needs expert attention right away. Treatment success may depend on timely diagnosis.

To reiterate, most obesity is the common "garden-variety" type and is best managed with healthy nutritional habits and regular exercise. However, if you think you may have one of the conditions described above, you should definitely consult your physician. If you really do suffer from one of these issues, you will almost certainly benefit from treatment by a specialist in hormonal diseases (endocrinologist). Pay attention to your health. If you don't, who will?

S. Mitchell Harman, MD, PhD
Director and President



DIRECTOR'S FORUM

The Director's Forum gives you direct access to the scientific faculty at KLRI. Also, an event will be held to communicate the latest scientific discoveries in longevity research, study status and potential studies being considered. The industry's update also will include information on government issues that may affect the progress of longevity research. The Forum is comprised of our valued friends and supporters.

To join our Director's Forum, please call (602) 778-7499.

How Can HEAL Help You?

HEAL stands for **H**ealth **E**ducation in **A**ging and **L**ongevity. It is KLRI's commitment to community education. Our goal is to help individuals make informed decisions about health, nutrition, exercise, preventive medicine, dietary supplements, hormonal balance, and sensible personal habits.

Ways We Educate Our Community

- **Longevity Kronicle:** Focuses on the areas mentioned above. Each article is scientifically-designed to inform in a manner that is easily understood.
- **Community Health Education:** Conducts representation/seminars in senior facilities, sports clubs, corporations and other areas at no cost.
- **Director's Forum:** A bi-annual forum in which we invite the community to our facility for an educational seminar with the doctors and specialists. This forum focuses on a specific age-related topic with a Q&A period.
- **Health Fairs:** KLRI participates in health fairs in local senior communities, and distributes information and performs some medical activity, such as cholesterol screening.

BODY COMPOSITION AND DIABETES

Diabetes mellitus (me lətəs) is a metabolic disorder defined by high blood sugar. It is not a single disease, but may occur as a result of a failure of insulin secretion, resistance to insulin action, or both. Adult onset, Type II diabetes, is the most prevalent form of the disease and is expected to afflict more than 9% of the U.S. population by 2025. A key issue with diabetes is that early on, it may produce no symptoms and can remain undiagnosed for years. The chronic elevated blood sugar (hyperglycemia) of diabetes has been linked to damage and failure of the eyes, kidneys, nerves, heart, and blood vessels. Individuals with undiagnosed Type II diabetes are also at high risk for stroke, heart attacks, and diseases of leg arteries, sometimes leading to amputations. Often persons with diabetes will also have elevated blood cholesterol and fat, high blood pressure, and obesity, a combination referred to as the “metabolic syndrome.”

With advancing age, most adults experience an increase in body fat that dramatically increases the risks of heart disease, diabetes, stroke, cancer, and gallbladder, liver, and muscle disease. The current trend in obesity in the U.S. is alarming. The prevalence (rate) of overweight individuals has increased dramatically in the last 30 years so that 61% of Americans are overweight and 27% are considered obese. This represents a 60% increase in obesity in the last 10 years. On average, adults can expect to lose about one-half pound of muscle/year after the age of 30, while gaining one pound of fat/year. At that rate, a 65 year old man would have lost approximately 17 pounds of muscle and gained 35 pounds of body fat, although he would only weigh 20 pounds more than he did in college. Therefore, body weight on a scale may mask underlying changes in body composition. As body composition increases, the risk for developing diabetes and cardiovascular disease also increases; this change in body composition is associated with a deterioration of an individual's fitness level. To make



matters worse, almost 40% of adults do not regularly engage in any physical activity in their leisure time. Only 10% of those people who do exercise regularly exercise at an intensity appropriate to improve ones' health. Therefore, regular physical exercise is necessary to improve fitness, decrease body

weight, and reduce the risk of death from diabetes and cardiovascular disease.

The American College of Sports Medicine (ACSM) recommends physical activity, including both endurance (aerobic) and resistance (weight) training as a means to combat the onset of obesity and diabetes. A single exercise bout will cause favorable changes in glucose tolerance (the removal of sugar from your blood) and improve insulin sensitivity for up to 72 hours. Therefore, for continued benefits of exercise, regular physical activity is important to maintain these exercise-related improvements in insulin sensitivity and glucose tolerance. Regular exercise along with a well-balanced nutritional program can improve body composition reduce abdominal and total body fat, and increase lean muscle mass. This helps burn calories, improves control of blood sugar, and lowers cholesterol and triglycerides, which lead to better health outcomes. Everyone, but especially persons with Type II diabetes, should strive to burn a minimum of 1,000 kcal/week by exercising at least 30 minutes/day on most days. If you are new to exercise, take it slow. Exercise at a comfortable pace initially but gradually increase your exercise intensity.

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BODY COMPOSITION AND DIABETES ... CONTINUED

Walking is most often the convenient low-impact form of exercise; however some persons with diabetes may have complications such as nerve damage and/or foot problems that limit their ability to perform exercise. In these individuals', non-weight-bearing activities such as swimming or bicycling may be more appropriate. Coupled with regular aerobic physical activity such as, walking, jogging, swimming, bicycling, etc., weight lifting is also a key component to reducing the risk of diabetes. The ACSM reports that weight or resistance training has the potential to improve muscle strength and endurance, enhance flexibility and body composition, decrease risk factors for cardiovascular disease, which result in improved glucose tolerance and insulin sensitivity. A recent study has observed that diabetic subjects only possessed 50% of the muscle strength as compared with non-diabetic persons of the same age due to the diabetes-related damage to nerves and muscle. The lower-extremity muscle groups of the hip and knee are associated with mobility and independence, therefore age-related decreases in strength of older adults with diabetes will potentially result in greater risk of frailty and falls. Increasing muscle mass through weight training can benefit every individual, including diabetics, by increasing the amount of active tissue that consumes sugar (improving glucose tolerance) and fat; therefore regular physical exercise can lead to a decrease in body fat over time, which will further reduce the risk for diabetes. Recent studies have confirmed that moderate-intensity weight training significantly improves strength and mobility in older adults with diabetes.

Low cardiorespiratory fitness is a powerful and independent predictor of mortality (risk of premature death) in people with diabetes. Research studies on the effects of regular aerobic exercise performed three days/week, for 45 min/session for as little as 20 weeks improved fitness by 12%. Although this seems like a small

change for the effort, this improvement in fitness levels was statistically and clinically related to improved HemoglobinA1c levels, an important marker of glucose control and predictor of complications in diabetes. Improved fitness also can reduce the risk for diabetes by improving the body's ability to utilize sugars (glycemic control). In persons with diabetes, exercise training appears to improve heart function, vessel stiffness, and blood pressure often associated with decreasing abdominal fat. Overweight individuals can decrease their risk of developing Type II diabetes by becoming more physically fit. Figure 1 illustrates the relationships among fitness, fatness, and the incidence of Type II diabetes.

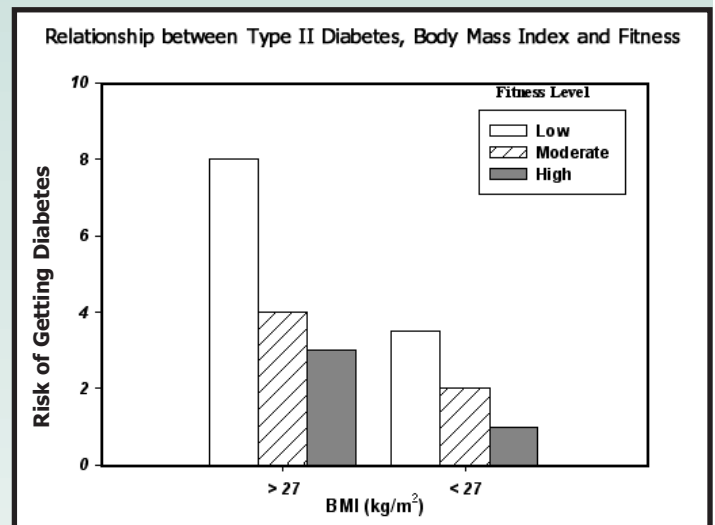


Figure 1. The relationship between the risk of getting Type II diabetes mellitus decreases dramatically as fitness increases from low to high, even in overweight (BMI > 27) individuals.

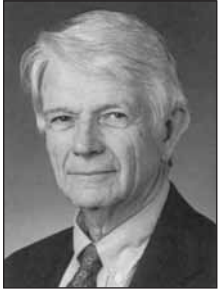
Therefore, regular physical activity combining both moderate intensity aerobic and resistive exercise for more than 30 min/day on most days of the week can help maintain a proper body composition, improve glucose control and reduce one's risk for developing diabetes. So what are you waiting for?

Taylor Marcell, PhD
Exercise Sciences Director
KLRI

BOARD MEMBER PROFILE

Robert N. Butler, MD

President & CEO, International Longevity Centers



Dr. Butler is a physician, gerontologist, psychiatrist, public servant and Pulitzer-Prize winning author. Dr. Robert N. Butler has been involved in a broad array of social and health issues. In 1982, he founded the Department of Geriatrics and Adult Development

at The Mount Sinai Medical Center, the first department of geriatrics in a U.S. medical school, and served as Chairman and Brookdale Professor until 1995. In 1995 he became President and CEO of the International Longevity Center (ILC-U.S.).

In 1975 he became the Founding Director of the National Institute on Aging (NIA) of the National Institutes of Health, where he remained until 1982. At the National Institute on Aging, he identified Alzheimer's Disease as a national research priority. In addition, Dr. Butler helped found the Alzheimer's Disease Association, the American Association of Geriatric Psychiatry, the American Federation for Aging Research and the Alliance for Aging Research.

In 1990, he established the U.S. branch of the International Longevity Center (ILC) at Mount Sinai Medical Center in New York, NY. There are ILC centers in Tokyo, London, Santo Domingo and Paris.

In 1976, Dr. Butler won the Pulitzer Prize in the nonfiction category for *Why Survive? Being Old in America*. He is coauthor (with Myrna I. Lewis and Trey Sunderland) of *Aging and Mental Health* (5th edition, Allyn & Bacon, 1998) and with Myrna I. Lewis and Love & Sex After 60 (3rd edition, 1993). He is medical editor-in-chief of *Geriatrics*, a journal for primary care physicians. He is the author of about 300 scientific and medical articles.

Dr. Butler was a principal investigator for one of the first interdisciplinary, comprehensive, longitudinal studies of healthy community-residing older persons, conducted at the National Institute of Mental Health (1955-1966), which resulted in the landmark book *Human Aging*.

He is presently working on a book entitled, "The Longevity Revolution."

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IMPROVING HEALTH OUTCOMES FOR OLDER ADULTS

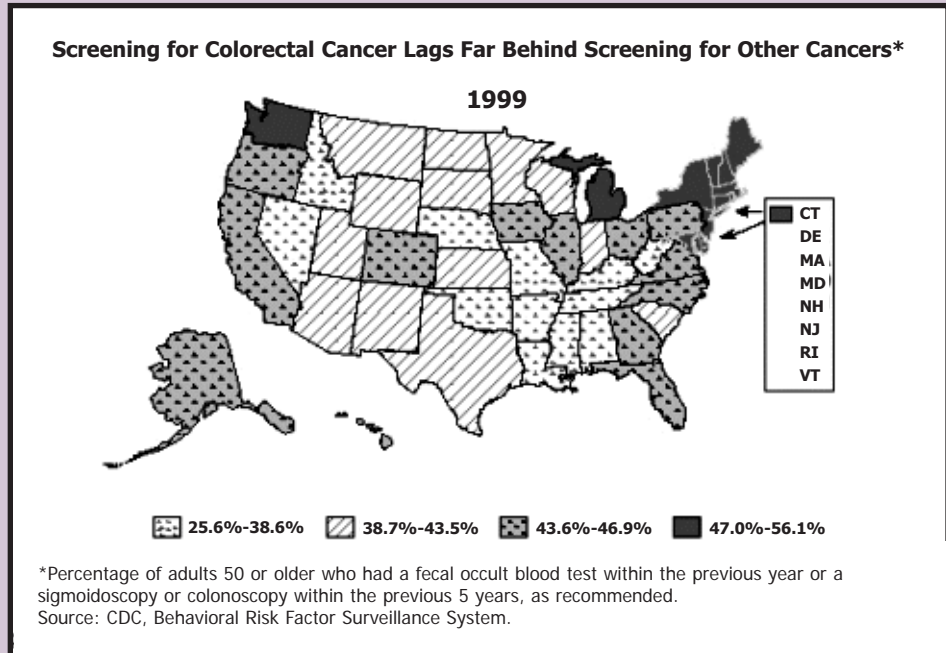
FOCUS ON EARLY DISEASE DETECTION

The following article is the second in a five-part series that will focus on strategies older adults can employ to improve their health and quality of life. For copies of previous articles in this series, please contact KLRI at (602) 778-7499.

Baby boomers seem to know that early disease detection puts them on the path to better health. According to the latest annual National Ambulatory Medical Care Survey from the Centers for Disease Control and Prevention, more than half (53 percent) of patients visiting the doctor in 2001 were over age 45. That percentage represents a 26 percent increase over 1992, yet the population of those over age 45 rose only 11 percent in the same time period.

KLRI, through its research, is working to maximize the safety and effectiveness of health screening procedures and practices. Although the above trend is encouraging, too many Americans ignore the positive social and economic impacts early disease detection can bring. This is particularly critical since five chronic diseases – heart disease, cancers, stroke, chronic obstructive pulmonary diseases and diabetes – account for two-thirds of the deaths in this country, according to CDC literature. Heart disease and stroke are the first and third leading causes of death in the United States, accounting for more than 40 percent of all deaths.

Knowledge is the first step in stemming the physical and economic impacts of chronic disease. Doctor visits that resulted in performing or ordering diagnostic and screening



services were up 28 percent in 2001 over 1992, again according to the National Ambulatory Medical Care Survey. The leading primary diagnoses for doctor visits by all patients in 2001 included high blood pressure, arthritis and related joint disorders, the common cold and diabetes. Still, the CDC reports that less than one in 10 adults age 65 or older have received all recommended screenings and immunizations. Fifty percent of Americans over age 65 have not had the recommended test for colorectal cancer.

Work with your doctor to develop a successful health strategy. Be proactive in finding out if you have or are at risk of developing a chronic disease. Screening for colorectal, breast and cervical cancers is on the rise; good news since these cancers accounted for almost 20 percent of cancer fatalities in the United States in 2002. To keep in step with this momentum, make sure you are receiving the tests that can make a difference to you and your family. Testing for diabetes also is critical. The CDC reports that

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IMPROVING HEALTH OUTCOMES FOR OLDER ADULTS FOCUS ON EARLY DISEASE DETECTION

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more than 17 million Americans have diabetes and that one-third do not know it. Those who suffer from this disease – responsible for everything from kidney failure to heart disease – will reach an estimated 29 million people by 2050. The CDC reports that 90 percent of middle-age Americans will develop high blood pressure in their lifetime, and nearly 70 percent who currently have it are not controlling it. Yet, controlling high blood pressure and cholesterol can reduce the risk for cardiovascular disease.

Learning all you can about how your body works is a gift you can give to yourself, one that will help ensure a long, productive life. The next article in this series will focus on immunizations.

Who we are!

Kronos Longevity Research Institute (KLRI) is a not-for-profit, 501(c)(3) organization conducting state-of-the-art clinical translational research on the prevention of age-related diseases and the extension of healthier human life. KLRI tests new strategies to detect and prevent chronic diseases associated with aging and investigates the effects of innovative interventions to slow the aging process and improve health outcomes for older persons. In addition, KLRI helps the medical and lay communities understand important aging issues. KLRI research findings support a healthier quality of life and a robust lifestyle in our senior years.

KLRI also performs research to increase our healthy years by improving muscle strength, understanding the role of various nutritional components in our diets, and achieving a better grasp of human aging physiology.

There are many “anti-aging” remedies and recommendations on the market today. However, most lack scientific evidence, and have potential side effects. We need reputable scientific organizations to spearhead research to further our understanding of treatments developed to increase our healthy years. Our world-renowned scientific team is comprised of experts in their fields, who are conscience driven to perform at their highest potential to ensure that all research projects are safe, carefully performed and accurately communicated. The KLRI studies performed differ from those of many narrowly focused institutions because we have a wide range of scientific expertise and our focus is on aging itself rather than a single disease.

OUR MISSION

To perform and foster clinical translational research aimed at healthier human longevity and communicate results to the professional and lay communities.

OUR GOVERNANCE

A distinguished board of directors, with a unique mix of scientists, longevity specialists, and community leaders governs KLRI. There is also a scientific advisory board of recognized international experts in medical and scientific fields, including nutrition, exercise, hormones, bone and joint diseases, cancer and heart disease.

WHAT IS AGING?

We see the effects of aging on a grand scale (i.e., graying hair, wrinkling skin, and the development of chronic diseases). We see these effects on a macro level because they are visible to the eye, when actually, they occur on the molecular level. Regardless of the species, a vicious cycle of damage occurs, which results in declining system function and ultimately leads to the deterioration of the organism. The body does implement natural repair mechanisms in an attempt to repair damage at the nuclear and mitochondrial levels. However, the rate of repair cannot keep up with the rate of damage.

So exactly what is aging? We don't know yet!!! Hence, the Kronos Longevity Research Institute.



Why KEEPS?

In 2002, the Women's Health Initiative (WHI) hormone study, funded by the National Institutes of Health, was discontinued after six years because the risks of menopausal hormone therapy (breast cancer, clotting-related disease and heart attacks) appeared to exceed the benefits. Many people concluded that older observational studies, such as the famous Nurses Health Study and the Framingham Study, which indicated that menopausal hormone therapy was beneficial, were wrong. These benefits included reduced rates of heart attacks, decreases in rates of bone fractures due to osteoporosis, reduction in the risk of Alzheimer's disease and a general overall reduction in deaths from all causes. As a result, many women are forgoing menopausal hormone therapy.

Are these fears of the risks of menopausal hormone therapy well substantiated? When one compares the WHI and older studies, one fact is evident: Women in the older observational studies in which estrogen was protective, began taking estrogen during or very soon after the menopause for hot flashes and other estrogen deficiency symptoms. Women in the WHI study were an average of 63 years old, about 12 years past menopause, and, with rare exceptions, without menopausal symptoms. Other studies have shown that hardening of the arteries, or atherosclerosis, the process that eventually leads to heart attacks and strokes, accelerates after menopause. In fact, rates of heart attack in women catch up with those in men by 10 to 15 years after menopause. Estrogen is thought to have a protective effect against atherosclerosis by decreasing the level of "bad" LDL cholesterol and increasing "good" HDL cholesterol. It also could accelerate the onset of heart attacks in women who already have patches of advanced atherosclerosis in their arteries. Therefore, the effects of estrogen are positive when used early and negative when used late. Thus, the WHI study many not have been a primary prevention study after all since too many of the women already had pre-existing but silent atherosclerosis.

The Kronos Early Estrogen Prevention Study (KEEPS) is designed to test this theory by recruiting 900 healthy peri-menopausal women for a randomized, placebo-controlled, double-blinded examination for five years.

For more information about KEEPS, call (602) 778-7499.

In the next issue...

The next issue will discuss menopausal hormone replacement therapy and the Women's Health Initiative (WHI). Why was the WHI Study stopped? Should we consider the results of the WHI study the definitive last word on menopausal hormone therapy? During the Phoenix Conference on Longevity Health Sciences in Scottsdale, a panel discussion with Dr. Marcia Stefanick, a Professor of Medicine & Professor of Obstetrics/Gynecology at Stanford University and Dr. Fred Naftolin a Director at Yale University Center for Research in Reproductive Biology at Yale University reviewed what can and cannot be concluded from the WHI study. In the "Longevity Kronicle," Dr. Stefanick will review the WHI results focusing on the open question of heart-protective effect of menopausal hormones, particularly as they apply to time of initiation of hormones relative to the menopause and continuation of hormone therapy by long-term users. Dr. Stefanick will also pose further questions that should be addressed regarding hormone therapy.

GLOSSARY

ABC

Basal Metabolic Rate - (BMR or resting metabolic rate/resting energy expenditure RMR/REE) The rate at which an individual uses oxygen at rest. Associated with the amount of active body composition, usually directly related to fat-free mass, and determines the minimal amount of calories required (amount of food) to sustain your current body mass.

Diabetes Mellitus - A medical condition in which the body cannot regulate blood sugars effectively (glucose intolerance) due to either the lack of insulin production (Type I Diabetes) or a failure of cells to respond to insulin signaling (Insulin Resistance or Type II Diabetes).

Glucose Intolerance - A medical condition in which the body is unable to efficiently remove sugars from the blood following a meal; see Diabetes Mellitus.

Glycemic Control - The ability of the body to regulate blood sugars; see Diabetes Mellitus.

Resting Metabolic Rate or Resting Energy Expenditure - See Basal Metabolic Rate.

You make a difference!
PARTICIPATE IN A KLRI STUDY

Testosterone's Effects on the Progression of Atherosclerosis in Aging Men (TEAAM): KLRI plans to collaborate on a study designed to determine the effects of testosterone replacement in older men on cardiovascular disease risk. Testosterone is the major male hormone. The loss of testosterone as men age may lead to decreases in bone and muscle strength and contribute to frailty and poor quality of life. This study will help demonstrate how giving testosterone to aged men will affect the risk of heart disease.

We thank you!

We thank the many people who have registered to participate in studies at KLRI. A special thanks to those who have completed a research study.



Community Education

KLRI faculty members speak at numerous seminars and events and they are willing to speak to your group or organization. Topics focus on strategies for living longer, healthier lives. Sample topics include "Aging and the onset of chronic disease," "Pros and cons of hormone replacement therapies on aging men and women," "How exercise and nutrition can impact your life" and "The importance of mental exercise: Ways to stay sharp."

Professional Education

KLRI sponsors local monthly seminars and an annual symposium featuring world-renowned gerontologists and other experts in aging and other medical fields, which provide continuing education for medical and science professionals. The seminars are designed to inform practicing physicians and other healthcare providers about important age-related topics. Continuing Medical Education credits are available for all of these seminars.

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American Heart
Association®



Go Red
for women

The 'Go Red For Women' campaign is to mobilize women and raise their awareness of the risks of cardiovascular (heart) disease, the No.1 killer of women. The American Heart Association's campaign will invite women to take charge of their heart health, make it a top priority and live a stronger, longer life.

Friday, February 6, has been designated "National Wear Red Day for Women." "We need a bold color like red to draw attention to heart disease, which is women's greatest health threat," said Augustus O. Grant, MD, PhD, president of the American Heart Association. "Red symbolizes women's power to take control of their health and passion for the women whose lives have been affected."

Join the American Heart Association Pacific/Mountain Affiliate and KLRI
"Go Red For Women" on February 6

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