ENDO 101
EVERYTHING YOU (SHOULD) WANT TO KNOW ABOUT ENDOCRINOLOGY

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EmPower, published by the American College of Endocrinology (ACE), the educational and scientific arm of the American Association of Clinical Endocrinologists (AACE), is dedicated to promoting the art and science of clinical endocrinology for the improvement of patient care and public health. Designed as an aid to patients, EmPower includes current information and opinions on subjects related to endocrine health. The information in this publication does not dictate an exclusive course of treatment or procedure to be followed and should not be construed as excluding other acceptable methods of practice. Variations taking into account the needs of the individual patient, resources, and limitations unique to the institution or type of practice may be appropriate.

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AACE is a professional medical organization with more than 6,000 members in the United States and more than 90 other countries. Founded in 1991, AACE is dedicated to the optimal care of patients with endocrine problems. AACE initiatives inform the public about endocrine disorders. AACE also conducts continuing education programs for clinical endocrinologists, physicians whose advanced, specialized training enables them to be experts in the care of endocrine diseases such as diabetes, thyroid disorders, growth hormone deficiency, osteoporosis, cholesterol disorders, hypertension and obesity.

ACE is a scientific and charitable medical organization dedicated to promoting the art and science of clinical endocrinology for the improvement of patient care and public health.
Dear Reader,

Glorious summer! Blue skies, sun, no school…well maybe no school, but educational opportunities should still be taken advantage of, and this *EmPower* issue has much to teach!

From the importance of iodine in our diets and its critical impact on thyroid function, to the newest medical treatments for obesity, what they do, how they work, to giving you an understanding of the options of surgery for an adrenal problem - you will not be disappointed as you read the contents of *EmPower Magazine*.

AACE is committed to sharing what is new in the world of nutrition, endocrinology (the specialty dealing with hormone production and function), and metabolism. But you will also find some controversy - how much daily salt (sodium) intake really is okay- and why the recommendation has changed, And the available health care technology tools that seem to increase in number every day...which ones can be of personal help and which ones are your doctors using? So, grab some cool water, apply the sunscreen, settle into your favorite lawn chair, and enjoy this issue of *EmPower*!

**Sincerely,**

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Chances are that if you’re reading this article, you’re in a medical office reception area or a doctor’s exam room. And odds are better than even that you are there to be seen by an endocrinologist, a physician who specializes in the diagnosis and treatment of a wide range of conditions affecting the endocrine system including diabetes, thyroid disorders, growth hormone deficiency, infertility, cholesterol problems, hypertension, obesity and more.

Even for some under the care of an endocrinologist, the medical specialty can be something of a mystery. So, here’s a primer to help promote understanding of this vital area of clinical practice.

The word endocrinology is from the Greek words endon, meaning “within” and krīnō, meaning “to separate” and is a branch of medicine that deals with the endocrine system’s glands, the actions of their hormones (a chemical substance, formed in endocrine glands, that controls and regulates the function of specifically receptive organs or tissues when transported to them by body fluids) and the metabolic consequences. The endocrine system’s glands and organs secrete hormones that regulate a number of vital functions of our body. Although every organ system in the body secretes or responds to hormones, endocrinology focuses primarily on the endocrine glands whose primary function is hormone secretion. These include the hypothalamus, pineal, pituitary, thyroid, parathyroid, adrenals, pancreas, testes and ovaries (see related story on page 7).
Hormones have many different functions and modes of action and often affect different parts of the body in different ways. For example, the male sex hormone testosterone is responsible for sex drive, but also impacts muscle size and encourages the growth of pubic, facial or body hair. There are up to 40 different hormones circulating in your blood at any time. Once released into the bloodstream, a hormone circulates throughout the body until it reaches its specific target -- or targets -- to perform its function. These targets can be either other endocrine glands or other organs and tissues in the body.

While all these glands normally coordinate with each other exceptionally well in order to regulate various metabolic processes, hormonal function is a balancing act of sorts. Too much or too little of one hormone can have an impact on the release of other hormones. If this hormonal imbalance occurs, some of your body’s systems do not work properly. In order to bring the hormones back to their normal levels, your body has built-in mechanisms to keep track and respond to any changes by means of a complex, but highly efficient, feedback system that links some endocrine glands with others. Normal balance is maintained by the body by “feeding” some of its hormones (and sometimes other hormones) from the target back to the original endocrine gland. This “tells” the endocrine gland to release more or less of the hormone.

When this system goes awry and there appears to be a problem, a patient is usually referred by his/her primary care physician to an endocrinologist, who is an expert in treating frequently complex (and often chronic) conditions which can involve several different systems within the body.

Endocrinologists perform diagnostic tests to evaluate the problem, determine a course of treatment and counsel patients on lifestyle changes that can improve the medical condition(s). This type of specialist needs extensive knowledge of clinical chemistry and biochemistry to understand the physiology and chemical processes underlying endocrine disorders. Many endocrinologists also are involved in clinical research to gain a better understanding of endocrine disease and to assist in the development of better treatment options. Some endocrinologists treat a range of endocrine disorders, while others choose to specialize in a single category such as diabetes, infertility or thyroid.

While certain disorders are clearly within the domain of endocrinologists, others can involve the endocrinology system even though they don’t originate there. In these cases, the endocrinologist may work with an internist, primary care physician or a specialist in another discipline to coordinate the patient’s follow-up care.

In order to become an endocrinologist, one must first complete medical school, advanced training during three to four years of a residency program, and a minimum of two years’, but often three years’, further sub-specialization in a fellowship before seeking required certification from the American Board of Internal Medicine.

Because endocrinology encompasses so many conditions and diseases, there is great demand from patients for information. For that reason, the American Association of Clinical Endocrinology (www.aace.com) and its educational, scientific and charitable arm, the American College of Endocrinology, have created an in-depth patient information website which features educational materials covering a broad range of endocrine conditions: a “Find an Endocrinologist” feature where the public can locate endocrinologists by geographic region and/or specialty; valuable tips on how to charge of your health; and online issues of this magazine. Visit www.empoweryourhealth.org to learn more about endocrine conditions or www.aace.com to learn more about endocrinologists and AACE, the largest association of clinical endocrinologists in the world, with 6,500 members in the U.S. and abroad. ©
Anatomy of the Endocrine System

BY MARY GREEN

The endocrine system consists of a collection of glands that regulate a number of vital functions of our body. All of these glands coordinate with each other in order to regulate various life processes. Here is a rundown of the endocrine glands that form this system and their functions.

ADRENAL GLANDS (SUPRARENAL GLANDS)
Located atop the kidneys, adrenal glands are just two or three inches long and weigh less than an ounce, but are responsible for the secretion of more than 35 different hormones which maintain the body’s salt and water balance, affect kidney function and help the body cope with and respond to stress. During stressful situations, adrenaline is released by the adrenals and proteins are converted into energy by the cortisol released from the cortex (outer layer) of these glands, leading to the release of the body’s stored sugar. This sugar substance is known as glycogen, and it generates energy that accelerates our heart, respiratory rate and blood pressure. In this way, our body gets the fuel required for the quick response in a crisis. The adrenal glands also produce androgens, male sex hormones that promote the development of male characteristics, and estrogen, which is an essential hormone for female body metabolism.

HYPOTHALAMUS
The hypothalamus, located just above the brain stem, serves as the link between the endocrine system and the nervous system via the pituitary gland by controlling the pituitary through the stimulation or suppression of hormone secretions.

PITUITARY GLAND
No larger than the size of a pea, the pituitary is often referred to as the “master” gland because it secretes hormones that regulate the function of other endocrine glands (the thyroid, adrenals and reproductive glands). It also produces hormones that stimulate the growth of bones and tissues, affect sexual development, encourage reabsorption of water by the kidneys and even trigger uterine contractions during and after labor.

PINEAL BODY (PINEAL GLAND)
Located deep in the center of the brain, the pineal gland is involved in several body functions, including secretion of the hormone melatonin, which helps maintain a person’s wake/sleep cycles and regulate reproductive hormones and the conversion of nervous system signals to endocrine signals.

PANCREAS
Located in the abdomen, the pancreas is both a digestive organ and an endocrine gland. The “islets of Langerhans” are the regions of the pancreas that contain its hormone-producing cells. The two primary endocrine functions of these cells are to keep the body supplied with fuel for energy by maintaining a steady level of the glucose (sugar) in the bloodstream with the hormones insulin and glucagon and to help in food digestion by secreting digestive enzymes.
**PARATHYROID GLANDS**

Each the size of a grain of rice, the body’s four parathyroid glands have a very rich blood supply, which comes in handy since they monitor the calcium level in the blood. As blood filters through the parathyroids, they detect the amount of calcium and make more parathyroid hormone (PTH) when calcium levels are too low. Once PTH is released, it circulates to the cells of the bones and causes them to release calcium into the bloodstream. When calcium levels are too high, the parathyroids make less PTH or cease producing it until normal levels are restored. Calcium is the element that allows the normal conduction of electrical currents along nerves—it’s how our nervous system works, how one nerve “talks” to the next, and is the primary element which causes muscles to contract. The parathyroids also help the lining of the intestines become more efficient at absorbing calcium in the diet.

**THYMIC GLAND**

While not technically considered a part of the endocrine system, the thymus is included here because it has an endocrine-like function: it produces humoral factors, which are hormones that stimulate the development of antibodies. The thymus is situated in the upper part of the chest, behind the breastbone and in front of the trachea. The thymus controls the body’s immunity by releasing humoral factors that stimulate the production of T-lymphocytes, which are white blood cells that fight invading bacteria, viruses, foreign tissue and abnormal cell growths such as cancer. These T-cells circulate through the bloodstream and collect in the lymph organs – the spleen and lymph nodes – for future use.

**THYROID GLAND**

The butterfly-shaped thyroid takes iodine and converts it into two hormones (T3 and T4), which are transported throughout the body and enter cells to regulate blood pressure, body temperature, heart rate, metabolism and how the body reacts to other hormones. The thyroid gland also produces calcitonin, which stimulates bone cells to add calcium to bone, as well as regulating calcium metabolism.

**OVARIAS**

The ovaries, the female gonads, have two main reproductive functions in the body: they produce oocytes (eggs) for fertilization and the reproductive hormones estrogen and progesterone. Estrogen is involved in the development of female sexual features such as breast growth, the accumulation of body fat around the hips and thighs, and the growth spurt that occurs during puberty. Both estrogen and progesterone are also involved in the regulation of the menstrual cycle and prepare the lining of the uterus for pregnancy in the event of the released egg being fertilized.

**TESTES**

The testes, also known as testicles or male gonads, have two functions: to produce sperm and to produce hormones, particularly testosterone, which regulate body changes associated with sexual development, including enlargement of the penis, the growth spurt that occurs during puberty, and the appearance of other male secondary sex characteristics such as deepening of the voice, growth of facial and pubic hair, and the increase in muscle growth and strength.

To order free reprints of this article for friends, family or patients, visit the Resources tab at our patient education website at: http://www.empoweryourhealth.org/product-inquiry.
The adrenal glands, of which you typically have two, are located behind the liver on the right, the spleen and pancreas on the left, and just above the kidneys close to your back muscles. The adrenal glands are responsible for making hormones — substances that make other cells in the body respond in various ways. These hormones enable the body to respond to stress, regulate blood pressure and the amount of fluid in the body, and are involved in the regulation of body chemical components such as sodium and potassium. The adrenal glands can develop nodules/masses or produce excess amounts of hormones. In some cases, one or both of the adrenal glands may need to be removed.

The surgical approach chosen for adrenal gland removal is dependent on the size of the tumor, prior surgical history and concern about adrenal cancer, also called adrenocortical [uh-dree-no-kawr-ti-uh-l] carcinoma (ACC). ACC is an extremely rare cancer that occurs in 1-2 people per million people in the worldwide population. Approximately 600 new cases per year are diagnosed in the United States.

Surgical options to remove an adrenal gland include the more traditional open approaches and the newer laparoscopic [lap-er-uh-skop-ik] and robot-assisted approaches. What is called an open adrenalectomy [a-drə-na-lēk′tə-mē], or surgery performed by first making an incision large enough to allow the surgeon the ability to see and touch internal tissues and organs, may be performed through the front (anterior), the side (thoracoabdominal) [thôr-ə-kō-ab-dəm′i-nāl] or the back (posterior) of the body. Most open adrenalectomies are done through the front, and a fairly long incision is placed along the length of the rib cage on the side of the tumor, or the cut through the skin is down the center of your abdomen. Surgery may be performed through the side if the tumor is quite large or if you have had prior abdominal surgery. Surgery through the back is most commonly done if you have had previous abdominal surgery or both adrenal glands need to be removed.

Popularized in the past 20 years, laparoscopic surgery uses specialized tools and cameras inserted through several small incisions rather than one large incision. Laparoscopic adrenal surgery can be performed through the front, the side, or the back. Advantages of a laparoscopic approach include less pain from smaller incisions, a shorter hospital stay, and shorter overall recovery time. While laparoscopy has
become the preferred approach for benign (non-cancerous) adrenal tumors, disadvantages of a laparoscopic approach in patients with adrenal cancer have been reported to include shorter survival, less complete removal of the tumor, and shorter time to – and greater chance of – tumor returning.

It is important that the covering of the tumor not be penetrated during surgery. A wide margin of normal tissue around the tumor should be included to ensure complete removal of any tumor cells that may have extended outside the adrenal gland and to minimize the chance for recurrence of the tumor. It is thought that laparoscopic instruments might rub against the tumor more so than during open surgery and spread tumor cells to other parts of the abdomen, leading to early tumor recurrence. Certain aspects of appropriate cancer surgery cannot be carried out using a laparoscopic approach, and because adrenal cancer is one of the most aggressive cancers with no particularly successful chemotherapy, it is extremely important that surgery be done correctly the first time. A poorly performed open adrenalectomy will also have poor outcomes.

If patients with adrenal cancer are able to undergo surgery, it is imperative that surgery is performed by a surgeon experienced in the treatment of adrenal cancer – not just a surgeon who can remove a benign adrenal tumor. Only a few centers in the United States treat adrenal cancer on a regular basis.

If surgery is recommended by your doctor specializing in hormonal diseases (your endocrinologist), you will be referred to the surgeon that your endocrinologist works with closely. Ask your surgeon what the best approach would be for your adrenal surgery—and make sure your questions are fully answered!

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From diabetes to thyroid disorders and obesity to osteoporosis, the American College of Endocrinology’s patient education website is your expert resource to empower your endocrine health.
Good News Regarding the Treatment of Obesity

By Alexandra Garvey and W. Timothy Garvey, MD

The American Medical Association’s (AMA) House of Delegates recently approved a resolution sponsored by the American Association of Clinical Endocrinologists (AACE) officially recognizing obesity as a disease. What does that mean to you and your doctors? What it means to members of AACE – which has been advocating the position for several years – is that obesity is a chronic disease just like diabetes, hypertension or asthma, with its own genetic, behavioral and environmental causes and medical treatment needs that require a range of prevention and treatment interventions.

Scientific research has given us a much better understanding of what regulates how much food we eat, how much energy we burn and the things that go wrong that result in accumulation of too much body fat. Genes make a big difference and explain, in part, why obesity can run in families and why obesity is more prevalent in some ethnic populations. However, just because we inherit these genes does not mean we will be overweight! These genes interact with behavior and environment. We can modify our behavior (e.g., lifestyle factors like daily activity, diet, exercise) to minimize the effects of these genes. However, on average, the people who carry genes for obesity will be the people that gain the most weight. For this reason, designating obesity as a disease does not absolve patients from the responsibility of adopting healthy lifestyles in combating the disease. Nor does it mean that obesity is a lifestyle choice – because it is not. It is a disease that should be treated by endocrinologists and other healthcare professionals using all the tools we have available in ways that are best suited for the treatment of individual patients.

Let’s consider those tools. In many ways, the treatment options are like a three-legged stool. The legs of the stool are the three major ways that obesity can be treated: behavior changes such as diet and exercise, bariatric surgery (surgery for weight loss) and medicines. Effective behavior or lifestyle modification programs have been developed, and the surgery procedures have been improved as well. Still, doctors have lacked effective medications for weight loss. However, recently approved medicines are now giving this stool a better leg to stand on.

In the summer of 2012, the Food and Drug Administration (FDA) approved two new weight loss medicines that have more recently become available for prescription. These medicines are called Belviq® [BEL-VEEK] (lorcaserin) and Qsymia® [kyoo-sim-EE-uh] (phentermine/topiramate extended). These medications have changed the weight loss landscape by giving doctors and their patients a wider range of treatment possibilities.

This, of course, sounds great, but you’re probably wondering how these medicines actually work. Qsymia is a combination of two generic drugs that are known to suppress appetite: phentermine...
and topiramate — which is already available for migraine headaches and seizures — cause you to feel full or satiated. Qsymia combines these two medicines in lower doses to reduce side effects and takes advantage of the fact that they work together to produce greater weight loss. Belviq, on the other hand, acts on certain receptors (places on or inside cells where hormones and other chemicals attach) in the brain (serotonin receptors) and causes you to feel full. Both Belviq and Qsymia work within the body to improve the results of your weight loss efforts due to diet and exercise. They are meant to be taken in conjunction with making lifestyle changes because patients who combine one of these medicines with a lower calorie diet and regular exercise can expect to see more weight loss than patients who treat their obesity with diet and exercise alone. In this way, these new medicines are game changers, but should not be considered a magic weight loss pill.

And what about the side effects, you may ask? Some of the side effects of Belviq include headache, nausea, constipation, dry mouth and serotonin syndrome (high temperatures, rapid heart rate, muscle twitches, confusion). Qsymia can cause dry mouth, constipation, insomnia, tingling in the fingertips, and a tinny taste to carbonated beverages and should not be taken by people with glaucoma or an overactive thyroid. Pregnant or nursing women should not take either of these medicines. The topiramate in Qsymia can increase risk of cleft lip and palate (abnormalities in the development of the lips and mouth) if taken by women during pregnancy. Therefore, women of child-bearing potential must be on birth control while taking Qsymia and check a home pregnancy test every month so they can stop the drug immediately if the pregnancy test turns positive.

How much weight can you expect to lose on these new medications? When used together with lifestyle modifications in clinical trials, the average weight loss in patients taking Belviq was about 8 percent of their body weight (16 lbs. for someone weighing 200 lbs.), and for Qsymia was around 12 percent of their weight (24 lbs. for someone weighing 200 lbs.). These are the average responses. Some lose more. Some lose less. You may be disappointed that these drugs don’t cause more weight loss on

(Continued on page 12)
average; for example most patients will not achieve ideal body weight or a size 4 dress size in women, or a 34-inch belt size in men. This gets down to the reason why physicians treat obesity as a medical disease and why it is important for patients and doctors to agree on the goals of therapy at the beginning of treatment.

Although these new medicines may not get you down to a size 4, the weight loss that can be achieved will make a huge difference in the quality of your health. In clinical trials, treatment with either Qsymia or Belviq plus lifestyle change was shown to have impressive benefits by improving many of the complications of obesity. If you are one of the millions of Americans living with the disease, you more than likely know all know too well what some of these complications might be. The first category of obesity complications is metabolic, which includes diabetes, pre-diabetes, metabolic syndrome (a combination of medical disorders that, when occurring together, increase the risk of developing cardiovascular disease and diabetes), high blood lipids, hypertension, fatty liver disease and higher risk for heart disease. The second type of obesity complication encompasses mechanical problems due to excess body weight and includes obstructive sleep apnea, osteoarthritis, mobility problems and stress incontinence. Weight loss can be used to improve all of these conditions.

So, are you a patient with diabetes? Hypertension? Dyslipidemia? Sleep apnea? Osteoarthritis? Non-alcoholic fatty liver disease? Stress (urine) incontinence? Well, guess what? These are all things that can be treated effectively by losing 10 percent of your body weight. This will go a long way to prevent the development of future diabetes in high-risk patients with a family history or with prediabetes. And, if diabetes is already present, this amount of weight loss will lower blood sugar and the need for diabetes medicines. It will decrease your risk for heart disease, lower your blood pressure, improve your lipids by increasing good cholesterol while decreasing harmful triglycerides, remove fat from the liver, help with mobility and improve sleep apnea. Patients may not be able to expect to reach their ideal body weight, but they can expect to lose weight to a degree that will improve complications that are the source of suffering and poor health.

This is a medical approach to fighting obesity as a disease. In a society that often treats obesity as a lifestyle failure, these new developments in medicine are altering the way in which patients can approach their health. Attitudes in our society are moving away from the incorrect notion that obesity is merely a lifestyle choice and towards the scientifically correct idea that it is a disease requiring medical therapy, particularly when patients have complications that can be treated with weight loss.

With the help of these recent obesity medicines and a solid lifestyle effort, people with obesity now have new tools and new options to achieve real weight loss results and improve their long-term health. If you are seeking treatment, it is important to determine the goals of therapy up front with your doctor; in other words, how much weight you can realistically be expected to lose, what your role is as a patient in optimizing the success of treatment, and what the goals of treatment are that will improve your health. Armed with these new medicines and new options for challenging obesity and its complications, doctors and patients working together can result in a longer, healthier life for the patient.
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Living with diabetes is a full-time job. The amount of information people with diabetes need to keep track of their diabetes can become overwhelming. Patients who want more advice from their healthcare providers are often frustrated with the lack of contact between office visits. However, recent advances in “mobile health” or “mHealth” – the use of mobile technology such as smartphones in healthcare – have opened up exciting new ways to keep track and stay connected.

Mobile computing technology has become mainstream and is advancing at a swift pace. Today over one billion people worldwide own a smartphone, and there are over 30,000 health care apps for mobile devices. The American Association of Retired Persons (AARP) reports 53 percent of those over the age of 50 are using or want to use some kind of health information technology in their mobile device. And about 20 percent of smartphone users have at least one health app on their mobile device.

Some of these types of apps were reviewed in the Spring 2013 issue of EmPower Magazine.* Many go beyond simply presenting information you can find on the internet. They are designed to engage the user more personally. We will focus on how these powerful apps, when working together with various wireless devices, can change diabetes self-management and care.

Recent advances in three areas make mobile health possible:

1. Today’s hardware gadgets are powerful. Inside these devices are tiny computers that process, analyze and store large amount of data. Smart phones are really computers with a cellphone feature.

2. New sensors measure body function for brief periods of time without active recording efforts by the user. These include continuous glucose monitors (CGM) and physical activity monitors.
The use of mobile health technology in medicine is not new. Intensive care physicians have long been able to track patient’s vital signs far away from a patient’s bed. For example, radiologists have been able to look at a patient’s x-ray transmitted via the internet. This type of technology is finally coming to patients with diabetes.

Here are a few areas where there are some exciting new developments.

PHYSICAL ACTIVITY MONITORS

Physical activity monitors is a fast-growing area. Wearable devices like Fitbit® track the number of steps you walk, distance, calories burned and even sleep cycle with little effort. The device wirelessly connects to a smartphone, tablet or personal computer via Bluetooth. Other users as well as family and friends can track the user’s progress from any mobile device. Some are using this feature to set up friendly competitions to motivate changes. Others simply use it for social support.

Most people shy away from wearing bulky, medicine-looking devices. If you think most of the activity monitors look too much like a medical device or too sporty to wear at work, you may find Misfit Shine more suitable for you. It is a small and powerful activity monitor that is made of lightweight aluminum and can be worn discreetly as a necklace, wristband or a clip. It was designed to help people wear the monitor anytime anywhere so activity level can be accurately recorded. So far, it is the only activity monitor that tracks activities under water, like swimming. Placing Shine on the screen of your smartphone to synchronize its data with the phone app is all that is needed to make it work.

Like previous examples, Motorola MotoActv™ serves as an accelerometer -- an instrument for measuring acceleration or for detecting and measuring vibrations -- and much more. It also has a GPS receiver for tracking outdoor activity, a Wi-Fi radio, MP3 player and Bluetooth hardware. Bundling these features cuts down on the need for carrying multiple devices during everyday activities and especially during exercise.

NUTRITION

There are many great nutrition apps available that are beyond the scope of this review. Some have been covered in EmPower Magazine. However, in the area of nutrition, there has not yet been a lot of progress merging powerful apps with hardware devices. One new app that is being developed uses a camera phone to photograph food. The picture is then sent wirelessly for analysis of nutrient content. Such a tool will be especially helpful when patients are eating meals prepared by others.

GLUCOSE MONITORING

Glucose monitoring is another field that has attracted a lot of attention. Gone are the days when patients needed to check their blood sugar, write down the result on a piece of paper and fax it to their health care providers. iBGStar® blood glucose meter is about the size of a USB memory stick. It is compatible with the iPhone 3G/3GS/4/4S and iPod touch versions 2/3/4. iBGStar also is compatible with the iPhone 5 or iPod touch 5 using an Apple Lightning™ to 30-pin adapter (sold separately). The small size enables it to be more discreet and seamless with daily life. The data is displayed on the iPhone it is attached to, but it also has a small screen so that it can be used as a stand-alone device. The iBGStar automatically synchronizes data with the iBGStar Diabetes Manager on the iPhone to track carbs, glucose and insulin. There is an option to tag meals and exercise, graph data and share data via email with friends, family and health care providers.

If you are like many patients who use more than one meter, companies like SweetSpot are working to combine all your glucose information in one place. SweetSpot is an advanced, cloud-based platform (a network of remote servers hosted on the Internet to store, manage and process data, rather than a local server) that uploads and processes your blood glucose data from multiple devices. The software synchronizes with all your meters and provides a time stamp on the glucose values which are sent to your health care provider(s). SweetSpot can store data online

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and even integrate the data into your electronic medical records. The software organizes glucose values in a way that is easy for your healthcare providers to evaluate. This service is now ready for glucose meters. In the future, more information will be included in these reports, with data from other devices like continuous glucose monitors.

The Macaw™ Mobile Manager for Diabetes is a smartphone app for diabetes self-care. It includes fitness apps and nutrition trackers. It can also wirelessly connect with various glucose monitors, GPS-enabled activity trackers, blood pressure monitors and weight scales, connecting data from many different devices and apps into one central hub to offer the healthcare team a complete picture of a patient’s current health status.

The WellDoc® DiabetesManager® system is one of the more complete mobile device programs that incorporates online education, diabetes self-care and connection to healthcare providers. The goal is to extend care beyond a doctor’s office, linking patients and doctors through mobile devices. The software analyzes glucose data and provides feedback along with virtual diabetes coaching and education. The system is designed to help patients make smarter lifestyle choices. A recent study showed that people who used this program lowered their average blood glucose more than those getting the usual care.

**SUMMARY**

Mobile devices like smartphones have been hailed by some as one of the most impactful inventions of our time. Combined with the ability to share data wirelessly, mobile health technology holds the promise for a new way of managing diabetes and other chronic illnesses.

Ultimately, the goal of using mobile health technology is to help change health behavior, improve health outcomes and lower healthcare costs. Despite its value, technology will never replace the doctor-patient relationship because there is so much more to the medical visit than just making a diagnosis or recommending a certain treatment. In the future, we envision mobile health technology as a tool to effortlessly gather patient data so that healthcare providers can better use their time and energy focusing on what humans do best, resulting in better care by being a good “friend” and knowledgeable health coach.

*Editor’s Note: Previous EmPower Magazine issues and articles can be viewed online at: http://www.empoweryourhealth.org/magazine ©
Tips to Help You Stay Healthy During Summer Gatherings

Summer gatherings offer a chance to bond with family and friends, share recipes and celebrate. Use this time to take steps to stay healthy to prevent or delay type 2 diabetes.

Diabetes is a serious disease. If you don’t take steps to manage it, diabetes can lead to serious health problems such as heart disease, stroke, blindness and amputation. Nearly 26 million Americans have diabetes, and many people have it and don’t know it. Another 79 million adults in the United States have prediabetes, a condition that could lead to type 2 diabetes.

Research shows that losing a small amount of weight – 5 to 7 percent of your current weight, or 10 to 14 pounds for a 200-pound person – can reduce a person’s risk for type 2 diabetes. The key is to lose a small amount of weight by making healthy food choices and being active at least 30 minutes a day, 5 days a week. Small steps can lead to big rewards.

To get started with healthy eating at your next summer gathering, try adding more fruits and veggies to your picnic menu. Here are some other tips:

• Reduce portion size. Eat smaller amounts of food to help with weight loss. Fill half of your plate with fruits and vegetables. Fill one quarter with a lean protein, such as beans, or chicken or turkey without the skin. Fill one quarter with a whole grain, such as brown rice or whole wheat pasta.
• Use low-fat or skim milk, yogurt and cheese in recipes.
• Choose fish and lean meat, chicken and turkey without the skin.
• Serve foods that are baked, broiled or grilled instead of fried.
• Drink water instead of juice and regular soda.
• Serve fresh fruit as a dessert.

Think about activities that can get people up and moving:

• Plan for some game time, such as a scavenger hunt, potato sack race, hula hoop or jump rope contest.
• If there is a playground, basketball court or grassy field at your summer gathering, take advantage of the surroundings to plan for a friendly game of basketball, flag football, soccer, volleyball or tag.
• As day goes into evening, turn up the music and dance it away! Dancing is a great way to get active.

For more diabetes prevention tips from the National Diabetes Education Program, visit yourDiabetesInfo.org to download or order copies of Choose More than 50 Ways to Prevent Type 2 Diabetes, It’s Not Too Late to Prevent Diabetes or Small Steps. Big Rewards: Your GAME PLAN to Prevent Type 2 Diabetes: Information for Patients.

The U.S. Department of Health and Human Services’ National Diabetes Education Program is jointly sponsored by the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC) with the support of more than 200 partner organizations.
Nutrition is important from the young to the elderly, has a range that extends from overnutrition to undernutrition, and includes specialized issues related to health and illness. Healthy nutrition is important to promote bodily health, and to prevent and treat some common medical conditions. For instance, healthy nutrition can help decrease the chance of developing diabetes. Healthy nutrition is also an important part of the treatment program for patients with diabetes.

Overnutrition refers to conditions such as obesity and overweight. Choosing the appropriate diet is important for those trying to lose and maintain weight, or for those before and after weight loss surgery. Undernutrition refers to malnourished patients. Malnutrition may occur due to an inability to take in adequate calories as food or if the food eaten cannot be fully absorbed (i.e., malabsorption). Some malnourished patients require specialized oral supplement drinks or foods. For patients that cannot eat adequately by mouth, feeding through intestinal tubes (tube feeding) or intravenous catheters (parenteral nutrition) may be needed. Young children, pregnant women and older persons have special nutrition needs.

Nutrition is also important for patients with osteoporosis, elevated blood fats, high blood pressure, kidney disease, disordered eating (i.e., anorexia and bulimia), solid organ or bone marrow transplants, and cancer. Cancer patients may become malnourished because of their underlying disease or because of the effects of undergoing chemotherapy or radiation treatment.

Currently, many medical programs do not provide enough education in clinical nutrition for doctors in training. This lack of nutrition training applies to all levels of medical training, from medical school to medical specialties such as endocrinology. As a result, there are not enough doctors well trained in nutrition medicine. Yet nutrition topics are of great interest to patients, and a nutrition expert can help clarify information in the news that can be confusing.

The American Association of Clinical Endocrinologists (AACE) created and published a paper that outlines how important nutrition is to patient care and addresses how to improve the training of endocrinologists in
nutrition medicine (https://www.aace.com/files/position-statements/nutrition.pdf). Endocrinologists already have an education in metabolism, and this background, combined with education in nutritional medicine, will prepare endocrinologists to provide expert nutrition care to both ambulatory and hospitalized patients.

For example, many people take dietary herbal supplements, in addition to vitamins and minerals, in hope of promoting their health and preventing disease. All of these conditions are commonly treated by endocrinologists, and nutrition education will allow physicians to better serve their patients’ nutritional needs. Patient education is important for healthy eating, and more knowledge is needed of different diets for people with different ethnic backgrounds. Safe instruction in physical activity is also important, both to initiate and maintain activity and in dealing with limitations for exercise. We work closely with other healthcare team and activity specialists to find ways to help you make nutrition changes a part of a daily approach to a healthy lifestyle.

AACE is advocating approaches to address the nutrition physician shortage and to ensure endocrinologists are well trained in nutrition by supporting medical education via web-based nutrition programs and courses. AACE also intends to work with other national medical groups on nutrition projects and education programs, an important process to assist all specialties in dealing with nutrition education, research and advocacy issues. Endocrinologists who are well trained in nutrition medicine will lead these efforts, which ultimately will result in excellent nutrition care for you, the patient.

In the meantime, be sure to ask your endocrinologist about best nutritional choices for your family—don’t be shy! To help get you going, here are some questions that AACE physician members commonly encounter and have tackled:

- What is a reasonable weight goal for me to improve my diabetes?
- Can you tell me about the Mediterranean diet benefits?
- I have high blood fats – what is a good diet pattern for me?
- How much vitamin D should I take after bariatric surgery?
- Are calcium supplements safe, and which ones are best for me?
- What supplement can help me gain weight after my hospitalization?
- How much protein do I need now that I am on hemodialysis?
- Is it safe to take melatonin?
- I am confused about the types of fats. Can you help me understand?

• My mother was advised to have a stomach feeding tube. Can you tell me more?
• Should I take high amounts of vitamin E to prevent heart disease?

AACE has created a must-read guidebook to lifelong nutrition for anyone seeking the healthiest way to eat. For more information or to order a copy, visit https://www.aace.com/publications/bookstore.

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Dr. M. Molly McMahon is a consultant in the Division of Endocrinology, Diabetes, Metabolism and Nutrition at Mayo Clinic in Rochester, MN. She is Professor of Medicine at Mayo Medical School. Dr. McMahon serves as the Medical Director for Nutrition in Endocrinology, the Medical Director of the clinical dietitians and the Nutrition Support Service allied health members. She also has a focus on wellness and healthy nutrition on campus and serves on the Wellness Executive Committee at Mayo Clinic. She co-chairs the Nutrition Committee for AACE.
To many, iodine (EYE-eh-dine) is simply element #53 on the periodic table you learned about in high school chemistry class or an antiseptic used to disinfect a nasty case of road rash after a bicycling mishap. In fact, iodine is the most essential ingredient needed to make T3 (triiodothyronine) and T4 (thyroxine), two thyroid hormones that affect virtually every cell in the body and are essential in regulating metabolism. Your thyroid concentrates the iodine and uses it to make thyroid hormone much like the Ford Motor Company uses steel to make cars. Without iodine, the production of thyroid hormone simply does not happen, thus throwing the body’s function into a tailspin.

Iodine was identified in the year 1811, when French chemist Bernard Courtois discovered it accidentally while mixing burnt seaweed (kelp) with sulfuric acid to create potassium nitrate, a vital component used in gunpowder. Soon thereafter, Swiss physician and researcher Jean Francois Coindet found that iodine could reduce goiters (enlargement of the thyroid gland) and began treatment of the condition with iodine. And the rest is history? Well, not quite.
IODINE DEFICIENCY ...HOW COMMON IS IT?

Iodine is present naturally in seawater and in soil. But a stable source of the element does not exist in many parts of the world. And since the body cannot make the substance, iodine must come from an outside source. Consequently, control of iodine deficiency disorders is an integral part of most national nutrition strategies. In the United States, salt producers cooperated with public health authorities in the 1920s and added iodine to cooking salt to correct the then-present epidemic of goiter (salt was used as the carrier because it was an easy, spoil-free method of getting iodine into the food chain). So, if you live in the United States, the chance of having simple goiter from iodine deficiency is rare. Most thyroid enlargement in the United States these days is a result of thyroid nodules (multinodular goiter) or other autoimmune thyroid disease such as Graves’ disease or Hashimoto’s thyroiditis.

Still, the population in many parts of the world where there is little iodine in the diet (remote mountainous areas, semi-arid equatorial climates and certain parts of Europe) continue to be at risk for iodine deficiency, which affects about two billion people worldwide.

Pregnant women are particularly at risk for the condition. This is a result of increased thyroid hormone production during pregnancy, which a fetus needs in vitro (inside the womb) to reach optimal development. Thus, the body requires more iodine than what would typically be considered a baseline amount of iodine. And because expectant mothers typically experience increased excretion of iodine through the kidneys – a normal part of any pregnancy – the need for iodine intake is enhanced further. Iodine deficiency during pregnancy may result in cretinism (mental retardation in children), deafness, autism, and delayed brain development and is the leading cause of preventable mental retardation.

As the body’s iodine levels fall, hypothyroidism may develop, since iodine is essential for making thyroid hormone. While this is uncommon in the United States, iodine deficiency is the most common cause of hypothyroidism worldwide.

DAILY DOSE GUIDELINES

Although most table salt available today is fortified with iodine as part of the manufacturing and refining process, because we are an on-the-go society that often partakes in processed and so-called “fast” foods – almost none of which contain iodized salt – concern about continued iodine deficiency has been raised by groups such as The Salt Institute and the International Council for the Control of Iodine Deficiency Disorders (ICCIDD).

The current Institute of Medicine Guideline for iodine for men and women is 150 micrograms (mcg) per day. Most multi-vitamins contain this amount of iodine. For pregnant women, 220 micrograms/day is recommended. For women who are breast feeding, 290 micrograms of iodine is recommended. Surprisingly, many prenatal vitamins contain no iodine. So, if you are considering pregnancy or are pregnant, check your prenatal multivitamin’s contents to make sure you are getting the iodine you and your developing fetus will need for a healthy pregnancy and baby.

YOUR HEALTH AND IODINE EXCESS

Although iodine is essential to life, taking too much iodine can cause problems. This is especially true in those individuals who already have thyroid conditions.

Exceeding the recommended daily dose of iodine can cause symptoms such as pain in your mouth or throat or a metallic taste in your mouth, nausea and vomiting, diarrhea and difficulty urinating. More severe symptoms of iodine poisoning can include life-threatening conditions such as seizures, delirium, breathing difficulties, fever, shock and severe confusion. But the amount of iodine for

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this to occur is quite high -- a consistent intake of over 2,000 micrograms of iodine daily.

When iodine-rich seafood or seaweed is a large part of the diet, the thyroid might become overactive because excess iodine can promote extra thyroid hormone production. The thyroid counteracts this action through a very specific mechanism present in the body known as the Wolff-Chaikoff effect. Once a threshold of iodine is reached in the body, a decrease in the output of thyroid hormone occurs. This effect lasts just over one week, after which the body will then resume the production of thyroid hormone.

Dietary iodine is rarely a source of iodine excess. Most iodine excess is either from the abnormal heart rhythm prescription medication amiodarone or from the use of iodinated contrast dye, a form of intravenous, iodine-containing radiographic dye used for x-ray studies. When exposure to these substances is ongoing, the body continues the production of thyroid hormone. This is called “escape from the Wolff-Chaikoff effect.”

There are special circumstances in which avoiding excessive iodine intake is essential.

When therapy with radioactive iodine is planned either for hyperthyroidism or thyroid cancer, avoidance of regular iodine is of critical importance as the body does not discriminate in the forms of iodine that it takes in. By not following a low iodine diet prior to radioactive iodine therapy or testing for thyroid cancer, the radioactive iodine may not reach the cells to be destroyed.

Also, if someone has become hypothyroid either by disease, surgery, or other forms of therapy and is on thyroid hormone replacement, additional iodine will not help and may interfere with the way any remaining thyroid tissue works.

RADIOACTIVE IODINE

Since the 1940s, the radioactive isotope Iodine-131 has revolutionized the evaluation and treatment of thyroid disorders. The once-fatal illness of Graves’ disease (hyperthyroidism) can almost always be treated with a single capsule of radioactive iodine. The thyroid takes up the radioactive iodine, just as it would normal iodine, and the radioactivity in the iodine destroys most or all of the tissue in your thyroid gland, but does no harm any other parts of your body. Radioactive iodine is also useful in destroying both normal and malignant tissue in thyroid cancer following thyroid surgery. Although these therapies are approaching 70 years since their widespread use in clinical medicine, they remain the standard of therapy for both hyperthyroidism and thyroid cancer.

If you are allergic to iodine and are scheduled for thyroid testing that uses radioactive iodine, make certain you clarify with your physician the nature of your allergy. For example, a reaction to shellfish does not equate to an allergy to iodine, nor does a prior reaction to a large dose of intravenous contrast exclude the use of radioactive iodine for diagnostic or therapeutic purposes. A usual dose of radioactive iodine contains roughly the same amount of iodine as a piece of bread. With this, an allergic reaction to radioactive iodine is very rare.

CONCLUSION

Due to its important role in thyroid function, as well as fetal and infant development, iodine is critical for proper health at all life stages. Thus, adequate iodine intake remains of paramount importance in prevention of thyroid disease. The history of understanding the importance of iodine is the history of understanding many thyroid diseases. To better appreciate how this simple element has been entwined in the management and treatment of thyroid disease throughout time, you can view the complete American Thyroid Association (ATA) Thyroid Timeline at: http://thyroid.org/events/thyroid-cancer-tumor-history/. For additional information on thyroid diseases, their diagnosis and treatment, visit the American Association of Clinical Endocrinologists’ (AACE) thyroid website at: http://thyroidawareness.com.
Whether traveling for business or pleasure, being prepared can make your trip as stress-free as possible. Don’t let travel delays, lost luggage or “bugs” picked up along the way spoil your trip. Plan to carry enough diabetes medications and supplies with you to get you through a couple of extra days, just in case. Check expiration dates on all of your medications and supplies well in advance of your trip. Refills can then be ordered or items purchased without having to rush at the last minute. Keep in mind that many prescriptions take a minimum 48 hours to be filled. Depending on where you are going, locating and obtaining your diabetes medicines and supplies can take some time.

TRAVEL CHECK LIST
To help you pack for your trip, here is a checklist of supplies to take:

- Diabetes pills, insulin in vials or pens, or other injectable diabetes medicines
- Syringes or insulin pens
- Glucose monitoring equipment – glucose meter, lancet device and lancets
- Snacks
- Diabetes identification – wallet card, necklace and/or bracelet
- Emergency supplies – such as quick-acting sugar, like glucose tablets, and ketone test strips. If you use insulin, also bring a glucagon emergency kit.
- Sample Travel Letter (see sample letter on page 24)
- Other helpful supplies in the event of illness – anti-nausea, anti-diarrhea medicines such as Compazine®.

Nothing can ruin a vacation or business trip like an unplanned illness. Pack these supplies in a bag that you keep with you at all times. Checked bags may be exposed to extremes in temperature, misplaced or lost.

Take written copies of your prescriptions for all medicines and supplies, in case you are asked about them. It is also a good idea to have a travel letter from your health care provider that states you have diabetes and need to carry medicine and supplies with you. A sample travel letter has been included here.

If you use a diabetes medicine that causes low blood sugar, keep quick-acting sugar and snacks where you can reach them easily. For example, keep glucose tablets in your pocket, purse or carry-on bag under your airplane seat. If food or beverage for treating low blood sugar is in your car trunk or overhead bin on the airplane, you may not be able to reach it when you need it.
plane or car may require packing different types of quick-acting sugar, as most airlines will not let you carry more than three ounces of fluid on the plane.

If you are traveling by plane, keep in mind that most airlines no longer serve meals. Bring non-perishable snacks with you in your carry-on bag. Examples of snacks that travel well include nuts, granola bars, dried fruit and meal-replacement bars. Many airlines now offer boxed meals and snacks that can be purchased on domestic flights, while overseas flights often provide meals. Check on availability of special meals by contacting your airline carrier several days before your trip. These meals cannot be ordered the day of the flight.

When your travels take you outside of the United States, you can get pre-travel advice and – if needed – immunizations from travel medicine clinics in your area. Ask your healthcare provider for a referral. Local health departments also may provide immunizations and other travel-related services. Call or check your local health department’s website to determine services provided. The travel medicine clinic or health department may also provide care after your trip, if you need it.

How far you are traveling from home can also be an important consideration. If you will be crossing time zones, ask your health care provider or diabetes educator for help figuring out your medicine and meal schedule. The details will depend on:

- The length of your flight, train, car, or boat travel
- Whether you are traveling east or west
- If you take insulin, your insulin delivery plan (shots or insulin pump)

There are many different ways to keep your injectable diabetes medications cool during your travel, especially if you plan to visit warm locations. A handy reusable container called a FRIO® pack is available in variety of sizes and can keep insulin cool for several days if you do not have access to a refrigerator. To keep an insulin pump cool in hot climates, specially designed FRIO® packs are available for these devices too. Diabetes supplies for several days can be carried in specially designed diabetes kits available online, or look for advertisements in diabetes magazines.

If you need to bring large quantities of insulin, consider using a small cooler with dry ice or gel cool packs.

**SAMPLE TRAVEL LETTER – on health care provider or institution letterhead**

Date __________________

To Whom it May Concern:

is a patient of mine with diabetes mellitus. All of the following supplies related to diabetes care are required for travel and need to be accessible at all times.

- Blood glucose meter and test strips
- Lancet device and lancets for finger sticks
- Insulin
- Insulin syringes
- Pen devices and needles for injecting insulin (“insulin pen”)
- Glucagon emergency kit (syringe with powdered medicine) for low blood glucose
- Glucose tablets, gel or candy
- Insulin pump and supplies (insulin reservoir, infusion sets plus tubing, and insertion device)
- Continuous glucose sensor system supplies (sensors, insertion device, transmitter and receiver)
- Byetta (exenatide), Victoza (liraglutide), Bydureon (exenatide ER) – a medicine injected with a pen device
- Symlin (amylin) – a medicine injected with a pen device

Please feel free to contact me at 123-456-7890 should you have any further questions.

Sincerely,

John Smith, MD

(Continued on page 28)
This year’s scholarship recipients are committed to success. And we’re committed to them.

Here’s to this year’s Diabetes Scholars Foundation scholarship recipients! These young adults, who live with type 1 diabetes, have worked hard to achieve their goals while facing unique challenges every day. Their commitment to their communities, their education, and their future is an inspiration. That’s why Lilly Diabetes is proud to support the Diabetes Scholars Foundation as part of our ongoing commitment to help improve the lives of people with diabetes. As this year’s recipients go off to college, we’re honored to play a part in their journey.

For more information on the Diabetes Scholars Foundation or how to apply for a scholarship, visit www.diabetesscholars.org.

For more information about Lilly Diabetes, visit www.lillydiabetes.com.
Are you watching your calorie intake, trying to lose weight? But running late and while driving see the neighborhood burger drive-through, and your stomach rumbles and tells you did not have lunch? Oh, well, just this once...twice...three times...sound familiar?

Well, you may be hurting yourself more than you know! A recent study from Boston (Block et al, British Medical Journal 2013 May 23;346:f2907) reports on results from a survey of about 1,800 adults and 300 school age children visiting 89 fast-food restaurants in New England. The restaurants included McDonald’s, Burger King, Subway, Wendy’s, KFC, and Dunkin’ Donuts. People were asked to estimate the calorie content of the meals they purchased, and then this was compared to actual calorie content.

For adults, dinnertime was targeted; for adolescents, lunchtime and early afternoon (after school) was targeted. And what were the results? Almost 25 percent of both adults and children underestimated the calorie content by 500 or more calories!! Overall, two-thirds of the surveyed individuals underestimated their meal calorie content. And the higher the actual calorie content, the greater the underestimation.

Adults ate an average of 836 calories, but estimated that their intake was 661 calories, while adolescents ate 749 average calories, but estimated their meal content at 490. Even if nutritional information was posted (and this study was done before routine posting of meal content was mandated), this information did not improve a person’s ability to estimate the calorie content of the meal (okay, let’s...
admit it…how many of us really look at that information?). Even more interesting, if a label of health was associated with a particular meal choice, it was more likely that additional side dishes would be ordered and calorie content of the actual meal even more underestimated (ouch!).

How to EmPower yourself? Look at the posted calorie content of what you are thinking of ordering. If you do not see this, ask for it or look up this information. This information can be readily found on web sites and on apps for tablets and smartphones. Learn what would be better choices at a restaurant for you and your family, and stick to them when ordering. At the very least, chose the smallest portion size, if still unsure of a meal’s calories. And do not assume that a label of heart healthy or best choice is necessarily that — look at the facts, do your research, be EmPowered!

Have you heard about the Mediterranean diet? You probably know already that this diet, rich in vegetables and fruits, low in meats and dairy products and, yes, moderate in fish and alcohol content, has been linked to lower heart disease risk, lower stroke risk, even longer life span. But what about its effect, if any, on the prevention of loss of cognitive (thinking) function, on the prevention of Alzheimer’s or dementia?

Another study from Boston (Journal of Nutrition 2013; 143:493-499) looked at associations between long-term Mediterranean diet eaters and cognitive function and/or decline. The researchers specifically looked at 16,058 female nurses in the Nurses Health Study who had been asked to complete questionnaires about lifestyle, initially every two years and then every four years, who were additionally evaluated by phone interview, through validated tests of memory, recall of given words and numbers, and attention. Dietary intake was assessed through the serial questionnaires on file, with a point system used for quantity of vegetables, fruits, nuts, grains, etc., including an assessment of intake of monounsaturated fat (such as olive oil) to saturated fat (such as butter) ratio. Physical activity was assessed as an additional variable, as well as a number of other possible variables, to remove them from the evaluation of diet alone.

The results showed that women following a Mediterranean diet tended to have lower weight and also be more physically active. They had fewer heart attacks and were less likely to develop diabetes — something you are probably not at all surprised to hear. Memory and thinking skills did decrease as everyone aged, but the good news was that the more the women stuck with the Mediterranean diet, the more likely that memory and thinking loss were slowed! In particular, the more vegetables the women ate and the more monounsaturated fatty acids (such as olive oil) taken, the more impact on slowing loss of function. In general, more vegetables, more fish and more nut intake was associated with an overall higher level of cognitive function in later life.

How to EmPower yourself? Please pass the carrots…and broccoli…and corn…and maybe a little baked fish and salad greens with olive oil dressing!

To salt or not to salt, that is my question! And indeed that is a question many experts are asking in view of the confusion about salt (specifically sodium) daily intake recommendations being made almost monthly. Some organizations are strong opponents of salt intake, some are saying that restrictions should be eased up. Who do you believe? EmPower Magazine featured information about salt in the 2013 spring issue, subsequent to which the respected Institute of Medicine came out with its report. The average sodium consumption in the United States, and around the world, is estimated at 3,400 milligrams a day (about 1 ½ teaspoons), an amount that has not changed in decades.

(Continued on page 28)
**Travel Tips for People With Diabetes**
(Continued from page 24)

If traveling by air, do not walk through the full body scanner while wearing an insulin pump or continuous glucose monitoring (CGM) system (receiver, transmitter and sensor). If you choose to go through the full body scanner, you must disconnect your insulin pump and CGM (transmitter and sensor). To avoid having to disconnect these devices, most manufacturers recommend either walking through an airport metal detector or screening with a hand wand. The pump or CGM system can remain connected and powered on in these situations. Do not put diabetes devices through the conveyor belt for X-ray scanning. If questioned about your devices, notify the TSA agent that you have diabetes and are carrying supplies with you. Instruct the agent that this is a life-saving medical device. If requested by a security agent to remove your devices, place the insulin pump or CGM receiver in one of the provided containers and hand it to the agent. Ask the TSA agent to scan devices by wand.

CGM systems are safe for use on commercial airlines. The CGM transmitter is referred to as a Medical-Portable Electronic Device (M-PED). It meets emission level standards and may be used on board aircrafts. However, if the airline flight crew requests that you turn off your personal CGM system, you must comply.

Insulin pump users must be prepared in case of pump failure or malfunction. Even if you are going on just a very short trip, be sure to have a back-up insulin plan. Bring a supply of insulin pump infusion sets and cartridges, tape, alcohol and cleaning wipes, and extra batteries. Carry a several-day supply with you on the plane. It is critical to take insulin syringes and long-acting insulin such as Lantus® (glargine) or NPH insulin with you. Ask your health care provider for the dose of long-acting insulin; it is typically your 24-hour basal insulin dose. Keep a copy of all of your insulin pump and CGM system settings in your wallet or smart phone. In addition, many insulin pump manufacturers will loan you an extra pump for your trip for a nominal price for overseas trips.

To help guarantee you have a healthy and successful trip, plan to check your blood glucose level a little more often than usual. Self-monitoring your blood glucose will help you determine how the change in your routine, food, time zones and activity are affecting you. With a little advance planning and extra monitoring, you can have a wonderful trip, wherever you plan to go.

**News to EmPower You!**
(Continued from page 27)

In 2005, the Institute of Medicine recommended a sodium intake of 1,500 to 2,300 milligrams a day because those levels were not likely to raise blood pressure. But studies subsequently published challenged the association of low sodium intake as protective against disease. As example, a very small study reported on 232 randomly assigned Italian patients with aggressively treated moderate to severe heart failure asked to take in either 2,760 or 1,840 milligrams of sodium a day, but otherwise to not change their diets. Those taking in the lower level of sodium had more than three times the number of hospital readmissions — 30 as compared with 9 in the higher-salt group — and more than twice as many deaths — 15 as compared with 6 in the higher-salt group.

In a report in 2011, 28,800 people with high blood pressure, at least 55 years old (and older), were tracked for 4.7 years and their sodium intake checked through urinalysis. The researchers reported that the risks of heart attacks, strokes, heart failure and death from heart disease increased significantly for those taking in more than 7,000 milligrams of sodium a day as well as for those taking in fewer than 3,000 milligrams of sodium a day! Both low and high intakers did less well than those in the middle range of salt intake. Dr. Brian L. Strom, chairman of the committee and a professor of public health at the University of Pennsylvania, has suggested that as you go below the daily intake of 2,300 milligrams of sodium, there is an absence of data in terms of benefit, but there begin to be suggestions about potential harms.

**How to EmPower yourself?** 2300 mg may sound like a lot, but it is just under a teaspoon of salt, so put away that big bag of chips, refuse the Polish sausage and skip the soy sauce!
OUR NAME IS NEW. OUR COMMITMENT TO HEALTHCARE WILL NEED NO INTRODUCTION.

Few enterprises arrive in the world as ready to serve patients as AbbVie. We are a new biopharmaceutical company, emerging from Abbott with a 125-year history of patient care.

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We’re proud to introduce ourselves as AbbVie, but we never forget that what we do is more important than what we’re named.

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