Optimizing Your Thyroid Treatment With a Valuable New Tool

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Annual Thyroid Awareness Issue

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The National Diabetes Education Program’s “Just One Step” program will help you take many small steps that lead to great rewards.
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,

Thank you for your interest in EmPower Magazine, a patient education publication presented by the American College of Endocrinology (ACE), the educational and scientific arm of the American Association of Clinical Endocrinologists (AACE).

We begin 2013 celebrating our 19th consecutive year of thyroid awareness efforts with this issue emphasizing thyroid health.

First is an informative overview of the thyroid, as well as details regarding ACE’s Same/Same/Same initiative, which offers tips and tools to help those with thyroid disease optimally manage their medication.

For those who have a thyroid or parathyroid condition requiring surgery, we offer articles that detail what you need to know about the procedure and the types of questions you should be prepared to ask your surgeon.

This edition of the magazine also features a series of articles highlighting recommendations from a joint task force of physicians representing AACE and the American Thyroid Association (ATA) on hypothyroidism, a condition affecting millions of Americans that occurs when the thyroid gland does not produce enough hormone to meet the body’s needs.

Additional articles address a variety of other endocrine-related conditions including childhood obesity; details regarding incretins, a new class of injectables for diabetes; and news about the “Just One Step” program from our partner, the National Diabetes Education Program (NDEP).

We trust that the content in this issue will help you improve your own health or the well-being of someone close to you. Your input is welcome at feedback@empoweryourhealth.org. For additional articles of interest, we invite you to visit our patient education websites at www.empoweryourhealth.org/empower-magazine and www.thyroidawareness.com.

Here’s to your health!

Sincerely,

JEFFREY R. GARBER, MD, FACP, FACE
Guest Editor
When Brooke Burke-Charvet recently revealed her thyroid cancer diagnosis, the television personality and Dancing with the Stars co-host quickly became the very public face of a disease that affects 56,000 annually in the U.S. alone.

Add to that the estimated 30 million Americans who suffer from some other type of thyroid condition – including many who are not aware of their illness or who have been misdiagnosed – and it becomes evident that disease and disorders of the thyroid gland are among the most common health problems in this country, although many people don’t even know what the function of the thyroid is.

That’s why the American College of Endocrinology (ACE) is increasing its efforts to educate the public about the thyroid gland, beginning with Thyroid Awareness Month (January) and continuing throughout the year.

In order to appreciate the vital role the thyroid plays in the proper functioning of the body as well as the constellation of conditions that can impact its performance, it’s best to begin with the basics.

The thyroid is a small butterfly-shaped gland located centrally in the neck, in front of the trachea (windpipe) and below the larynx (voicebox). It is comprised of two halves, known as lobes, which are attached by a band of thyroid tissue called the isthmus. The thyroid produces two hormones – triiodothyronine [trahy-ahy-oh-doh-thahy-ruh-neen] (T3) and thyroxine [thahy-rok-seen] (T4) – that travel through the blood to the body’s tissues, influencing the function of virtually every organ system.

Thyroid hormones tell organs how fast or slow they should work and regulate how the body breaks down food to use as energy immediately or store it for the future. These
hormones also manage the body’s consumption of oxygen and production of body heat. During infancy and childhood, adequate thyroid hormone is crucial for brain development.

The level of hormones secreted by the thyroid is actually controlled by the pituitary gland. Located at the base of the brain, the pituitary – often called the “master gland” of the body since it regulates many activities of other endocrine system glands – produces thyroid-stimulating hormone (TSH) that signals the thyroid to produce and release the appropriate type and amount of hormones to meet your body’s needs.

In turn, the pituitary is regulated in part by the thyroid (via a “feedback” effect thyroid hormone has on the pituitary gland) and by another gland called the hypothalamus [hahy-puh-thal-uh-muhs], which releases TRH (thyrotropin-releasing hormone) to stimulate the pituitary to release TSH (see Figure 1 on page 15 for illustration).

There are a number of factors that can contribute to the development of thyroid disorders. If overactivity of the pituitary, which is rare, or the thyroid occurs, an excessive amount of thyroid hormones can be produced, resulting in hyperthyroidism. Classic symptoms of hyperthyroidism include weight loss, rapid heart beat, heat intolerance, anxiety, insomnia, excessive sweating, diarrhea and high blood pressure. Hyperthyroidism can also lead to osteoporosis, a disease of the bones that leads to an increased risk of fracture.

Conversely, if any of these glands are underactive, a deficiency of thyroid hormones can lead to hypothyroidism, which will take your body in the opposite direction, resulting in chronic fatigue, depression, mood swings, impaired memory, dry hair and skin, brittle nails, weight gain, constipation, poor circulation and hypersensitivity to cold.

Hashimoto’s thyroiditis, also known as autoimmune or chronic lymphocytic thyroiditis, is the most common of the thyroid diseases: the condition affects more than 10 million Americans and is about seven times more common in women than men. Hashimoto’s thyroiditis occurs when the thyroid gland is attacked by a variety of immune cells and autoantibodies as if it were a foreign tissue, reducing its ability to produce thyroid hormone. The thyroid may also enlarge, forming what is known as a goiter. Hashimoto’s thyroiditis tends to run in families and is associated with a cluster of other autoimmune conditions such as celiac disease.

Yet another common condition is a thyroid nodule. Nodules can be caused by an overgrowth of normal

(Continued on page 24)
The year is 1994, and Carmen Kenrich is living the dream.

The 20-something newlywed and her husband Walter “Chip” Kenrich had recently relocated from Washington, D.C. to Boston to be closer to her Long Island-based parents, making the move shortly after an “investigative weekend” visit to the city and interview produced a plum job offer.

Carmen and Chip were busy getting reacquainted with college friends also residing in the area, and she was settling happily into her new position as a health care administrator in charge of surgical specialties with Harvard Community Health Plan when – during a routine workday – Carmen made a discovery that would forever alter her life.

“I’m of Spanish heritage and talk a lot with my hands, and I was in a room with colleagues, talking, talking, talking, when I put my hand to my neck and thought, ‘Well, that’s a big lump on my right side.’ And my knee-jerk reaction was that I had something wrong with my thyroid.”

Previously an emergency medical technician who had also studied to be a physician’s assistant, Carmen immediately booked an appointment with her primary care physician, who initially was skeptical about Carmen’s self-diagnosis, but upon examination confirmed that she had a thyroid nodule (a solid or fluid-filled growth that forms a lump in the thyroid gland). Subsequent blood tests, ultrasound, nuclear scans (with radioactive iodine) and a biopsy with a fine (thin) needle then led to a diagnosis of thyroid cancer.
“It was my first time hearing the diagnosis, and it was literally one of those moments of pure shock,” Carmen recalls. “When you hear the ‘c’ word in those circumstances, it’s so associated with death, and back then there was no internet to look up things, no support organizations at the time that I could call, so I felt incredibly isolated.

“To tell friends or even parents that I had cancer, even though I’m a people person, it was hard to explain and was difficult because I was so young,” she adds. “Plus, I’m a person in my 20s, my friends are partying or just getting married, so it felt like isolation at the highest level for a while there.”

One of Carmen’s saving graces was Dr. Gordon Vineyard, who performed her thyroidectomy, the surgical removal of all or part of the thyroid gland. “Not only was he an accomplished surgeon who was technically superior, but he was also very compassionate and had an excellent bedside manner,” Carmen notes.

Following the surgical procedure, a post-surgery overnight hospital stay and a two-month recuperative period, she was admitted to Beth Israel Hospital (now Beth Israel Deaconess Medical Center) to undergo radioactive iodine treatment, a procedure in which the patient takes liquid or tablets that contain radioactive iodine. The iodine goes directly to the remaining thyroid tissue, where it is absorbed by the tissue and destroys any remaining thyroid cells in the body. Any excess radioactive iodine not collected by the thyroid cells is eliminated from the body in a few days through urine.

“That was the most interesting experience because I was in a room alone, totally secluded and I couldn’t have visitors,” Carmen recalls. (Editor’s Note: At present, most patients are not hospitalized for radioactive iodine therapy).

Enter saving grace number two: Dr. Jeffrey Garber.

An endocrinologist who had met with Carmen prior to her radioactive iodine treatment, Dr. Garber took over Carmen’s ongoing post-surgery care, prescribing thyroid replacement hormone drugs, testing her levels and adjusting her medication periodically as needed to ensure optimal results. Beyond monitoring and managing her thyroid condition, his diligence and skills were critical in helping the Kenrichs have a family, Carmen believes.

“We weren’t able to conceive and I had an unexplained diagnosis of why we couldn’t have kids, so I always wondered if it was the thyroid. And I went through a lot of IVF (in vitro fertilization) and a lot of hormone therapy, so we worked very closely together on what I was going through, including him looking very closely at all of the treatments,” Carmen notes. “There were so many medication adjustments with all of the treatments, but he’s a stickler for detail, as they have to be in his specialty, to determine the proper dosage of my medicine.”

The proof, as they say, is in the pudding: today Carmen is proud mom to 11-year-old daughter Taylor and eight-year-old son Trace, both conceived via IVF. “My third (seven-year-old daughter Tatum, who was conceived naturally), as I said to Dr. Garber, was my miracle baby,” Carmen says. “A gift from God who said, ‘Here you go, you’ve gone through a lot, so here’s your gift.’”

Cancer-free for 18 years, Carmen is quick to count her many blessings.

These days she is employed by a healthcare leadership search firm as an executive recruiter, spending most days engaged in conversation with physicians under consideration for chief medical officer placements. She has given back to the community, serving as chair of The Wellness Community of Greater Boston, a support organization that provides free services to cancer patients and their families, and as chairperson of the Winchester Republican Town Committee.

But ultimately, it’s time with family that she most cherishes. “I’m a summer person, so what I enjoy most is being on the beach, hanging out with my husband and with the kids on Long Island or East Hampton,” she says.

“When you face a cancer diagnosis at such a young age, then face the challenge that you can’t have kids, then you’re blessed with three healthy children, all you can say is ‘I’m the luckiest person on this Earth. Because look what I have. Look what I have now.’”

Living the dream, indeed. ☁
THYROID SURGERY: What you need to know and what to ask your surgeon

BY JAMES SULIBURK, MD

INTRODUCTION
The thyroid gland is an important gland in your body located in the lower half of your neck. It has a left side, a right side and a middle called the “isthmus.” It makes thyroid hormone and is responsible for regulating metabolism. Just like any other part of the body, sometimes things can go wrong with the thyroid that require its removal. Thyroid surgery is performed for non-cancerous reasons such as nodules (a solid or fluid-filled abnormal growth of thyroid cells that forms a lump within the thyroid gland) cysts, large thyroids (goiters) and an overactive thyroid (hyperthyroidism) as well as for cancers of the thyroid. How much is removed depends on what is wrong with the thyroid and varies from as little as only the nodule, to one-half (left or right), to as much as the entire thyroid gland along with its lymph nodes (for advanced cancers). You should make sure to ask your surgeon why he/she is recommending you undergo thyroid surgery and how much of the thyroid gland he/she is planning to remove.

HOW DO I KNOW MY SURGEON IS QUALIFIED TO PERFORM THYROID SURGERY?
You should seek a surgeon who is experienced in performing the operation and feel free to ask how many thyroid surgeries the surgeon does each year. Surgeons who perform more thyroid surgeries generally have better results than surgeons who seldom do thyroid surgery. You can also ask if your surgeon has done fellowship training (a one- or two-year focused period of thyroid surgery and sub-specialization) (Editor’s Note: Surgical endocrine fellowships are relatively new. Therefore, very few senior surgeons have completed this training). You want a well-trained and experienced surgeon performing your operation.

SURGICAL RISKS TO ASK ABOUT
In general, there are three basic risks for any type of surgery: anesthesia, infection and bleeding. Fortunately these are unusual in thyroid surgery and occur less than two percent
covering the incision. Make sure to ask your surgeon when the first hours after surgery. You may have a bandage or tape eat and drink - most patients prefer to have some liquids in post-surgery and then should improve. You will be able to incision site. Your greatest period of pain will last 48 hours like when you have a sore throat from a cold) and at the night. You will have a sore throat both on the inside (much more than standard recommended amounts of vitamin D.

As with damage to the nerves, this can be temporary or permanent. The persistent need for daily calcium supplementation more than six months following surgery may mean that permanent damage or inadvertent removal of all of the parathyroid glands has occurred. These risks should be carefully discussed with your surgeon.

HOW DO I PREPARE FOR SURGERY AND HOW IS THE SURGERY DONE?

Once you are scheduled for surgery, you will have a preoperative evaluation (complete medical exam) to ensure there are no medical problems that would prevent you from having a safe operation. You will receive specific instructions from your surgeon on this. Make sure to let your surgeon know if you are taking any medicines that can cause bleeding such as aspirin, blood thinners, or other medicines that affect platelets (cells in your blood that help make blood clots), such as ibuprofen (Advil) or naproxen (Aleve). Many surgeons ask that these types of medicines be stopped one week prior to surgery, if possible. Make sure to ask if you should take all of your other medicines on the day of surgery. The surgery is most commonly done through a one-to-four-inch incision near the base of the front neck while you are asleep under anesthesia. How large an incision is made depends on your surgeon, how big the thyroid is, and how much thyroid has to be removed.

AFTER SURGERY

Following thyroid surgery you may or may not be able to go home. If you stay in the hospital, it will usually be just for one night. You will have a sore throat both on the inside (much like when you have a sore throat from a cold) and at the incision site. Your greatest period of pain will last 48 hours post-surgery and then should improve. You will be able to eat and drink - most patients prefer to have some liquids in the first hours after surgery. You may have a bandage or tape covering the incision. Make sure to ask your surgeon when to remove it and when it will be okay to bathe after surgery. Most patients rest for several days after surgery. Ask your surgeon how much time you will need to recover.

WHAT TO WATCH OUT FOR

Very rarely an incision can become infected. Signs of infection are increasing redness, warmth and pain at the incision site. Also rarely, you can develop a hematoma [hee-ma-toh-muh] (bleeding in the neck) after surgery. Signs of this complication are pronounced swelling of the neck along with difficulty breathing. If this happens, you should contact your surgeon immediately.

You may also temporarily have to take calcium and/or vitamin D after surgery. Signs of low calcium are tingling in all of the fingertips or around the mouth, as well as cramping and uncontrolled twitching in all of your arms and legs. This typically occurs one or two days immediately after surgery. If this happens you should contact your surgeon.

DO I HAVE TO TAKE MEDICINE AFTER SURGERY?

You should discuss with your surgeon when to restart your regular medication after surgery. If your entire thyroid gland was removed, you will have to take thyroid hormone replacement medication. You may be placed on thyroid hormone right away, but sometimes your doctor will wait to start thyroid medicine until the results (pathology) of the surgery are finalized (about one week).

If you are started on thyroid hormone medication, you will want to get your levels of thyroid hormone checked four to six weeks after starting the medicine. The medicine can be adjusted (increased or decreased) to obtain the proper levels. You should take this medicine at the same time each morning. If you had only half of your thyroid removed, there is still a chance you will need thyroid replacement medication, and you should have your levels checked as well.

SUMMARY

Thyroid surgery is common and, when performed by experienced surgeons, is a very safe procedure with relatively quick recovery time. Remember to read about your particular thyroid disease before visiting with your surgeon. Also, write down questions to ask your surgeon and bring them with you to your appointment.

Dr. James Suliburk is an Assistant Professor of Surgery at Baylor College of Medicine in Houston, Texas. He is a board certified general surgeon, Fellow of the American College of Surgeons and completed fellowship training as the T. S. Reeve International Fellow in Endocrine Surgery at the University of Sydney Endocrine Surgical Unit in Sydney, Australia. His clinical interests include utilization of minimally invasive techniques to perform thyroid, parathyroid and adrenal surgery, as well as surgeon-performed ultrasound and use of molecular markers in the diagnosis of thyroid tumors.
Parathyroid glands are small, pea-shaped, hormone-producing glands that reside in your neck in the area of your thyroid gland. They produce a hormone called parathyroid hormone (PTH) that helps control the amount of calcium that circulates in your body.

**WHY MIGHT I NEED PARATHYROID SURGERY?**
The most common reason for needing parathyroid surgery is a diagnosis of primary hyperparathyroidism [hahy-per-par-uh-thahy-roi-diz-uhm]. Primary hyperparathyroidism is usually caused by a benign (non-cancerous) growth of one of four parathyroid glands that everyone has in their neck. This abnormal parathyroid gland overproduces PTH (parathyroid hormone), usually leading to high levels of calcium and PTH in your blood. This can cause symptoms such as those listed below.

Additionally, patients on dialysis because of kidney failure can develop hyperparathyroidism. This is called secondary hyperparathyroidism because the problem does not start in the parathyroid glands, which in this case enlarge due to kidney failure. Secondary hyperparathyroidism due to kidney failure may be referred for parathyroid surgery because of very high levels of PTH in the blood.

**WHAT ARE SOME OF THE BENEFITS TO HAVING PARATHYROID SURGERY?**
After a successful parathyroid surgery, your blood levels of calcium and PTH will return to within the normal range. This will lead to improved bone density, decreased risk of bone fractures, lower risk of kidney stones and a potentially improved quality of life. Many of your initial symptoms will improve. However, since some of your symptoms such as fatigue are common, they may be caused by other medical conditions and non-condition-related factors. Therefore, they may not go away even after successful surgery.

**WHAT TO EXPECT THE DAY OF SURGERY**
You will be asked to arrive at the hospital about two hours before your scheduled surgery time. You should have stopped taking any aspirin, blood thinners or non-steroidal anti-inflammatory agents (such as ibuprofen [Advil] or naproxen [Aleve]) one week before your surgery date. The majority of surgeons will perform parathyroid surgery under general anesthesia, though some specialized centers may also offer the surgery under local anesthesia. Surgery can take anywhere from 30 minutes to three hours once you are asleep. It depends on how quickly the surgeon can find and confirm the removal of the abnormal gland(s).
Most patients that undergo parathyroid surgery will be able to go home the same day. However, your surgeon may have you stay overnight if you have multiple other medical problems, undergo a more extensive surgery, or live a far distance from the hospital. You will be able to eat, drink, and talk that same day right after surgery and can go back to your normal activities as early as the next day, depending on how you feel.

The size of your incision will likely depend somewhat on if the surgeon is able to localize the hyperfunctioning gland(s) before surgery. However, in 2012, the majority of all parathyroid surgeries were “minimal access,” with most incisions ranging from three-quarters to 1 ½ inches across. There are generally no stitches that need to be removed.

**TOOLS TO ASSIST THE SURGEON IN FINDING OR CONFIRMING THE REMOVAL OF THE ABNORMAL PARATHYROID GLAND**

Before your scheduled surgery date, your surgeon will have you undergo “localization” imaging to help locate the abnormal parathyroid gland. This may be an ultrasound done by either a radiologist or an endocrinologist; a Sestamibi scan, which is a nuclear medicine test where a radiologist injects a weakly radioactive diagnostic material that will hopefully concentrate in the abnormal gland; or, in special circumstances, a CT scan. The ability of each exam to accurately locate the abnormal gland can vary among radiologists, but in general two-thirds to three-quarters of patients will go into surgery with a localized gland, making it much easier for the surgeon. Your vitamin D level also should be checked before surgery, since a low vitamin D level can delay your recovery.

During surgery, most surgeons will test your PTH levels which will confirm, while you are still asleep, that the correct hyperfunctioning parathyroid gland has been successfully removed. Some surgeons may also utilize intraoperative ultrasound or a radio-guided probe (another nuclear medicine technique) during surgery to help locate the abnormal gland.

**WHAT TO EXPECT AFTER SURGERY, AND ARE THERE ANY SIDE EFFECTS?**

The most common complaint after surgery is a mild sore throat, which generally doesn’t last more than three to seven days, and mild generalized fatigue. Some people may complain of a non-productive cough or some pain when swallowing, both of

(Continued on page 12)
which will go away in one to two weeks. Sometimes, hypocalcemia [hahy-poh-kal-see-mee-uh] (low blood calcium levels) can happen in the first few days after surgery, and you would experience numbness or tingling around your mouth or in your fingertips. The treatment is taking more than the usual amount of calcium and vitamin D supplements until the symptoms resolve.

The majority of people who undergo the surgery only need to take off a few days from work. Your surgeon will usually check your blood calcium level the day after surgery as a second confirmation that your calcium level is now in the normal range. In addition, six months after surgery and yearly thereafter, depending on your endocrinologist and surgeon, you will have your blood checked for both calcium and PTH levels.

One to three weeks after surgery you will have a post-op visit with the surgeon to go over your pathology (what your parathyroid gland looked like under the microscope) and to check your wound. Most patients heal very well from surgery and have minimal residual scarring at six months. However, it is important to apply suntan lotion to the surgical site for up to one year after surgery to prevent darkening of any scar.

In the hands of an experienced surgeon, over 95 percent of parathyroid surgeries result in a “cure.” A failure is the result of either the surgeon being unable to find the abnormal parathyroid gland(s) at the time of surgery or your PTH level increasing during the first six months after surgery, which would indicate one or more of the remaining parathyroid glands in your neck are also hyperfunctioning.

One of the unusual complications of parathyroid surgery is injury to the recurrent laryngeal [luh-rin-jee-uhl] nerve. Each person has two of these nerves, a right and a left, that run along the side of your windpipe and control your voice. An injury to one of these nerves results in hoarseness. Many patients that experience hoarseness right after surgery have a temporary nerve injury that will get better over time. However, in about one percent of patients the injury will be permanent. This number is lower in the hands of an experienced surgeon. Another unusual complication of surgery, particularly in those who have more than one parathyroid gland removed or are undergoing repeat surgery for hyperparathyroidism, is a permanently low blood calcium level. This is known as hypoparathyroidism [hahy-po-par-uh-thahy-roi-diz-uhhm] (too little parathyroid hormone). Treatment consists of calcium supplements and taking more than the usual amount of recommended vitamin D supplements.

Questions to Ask Your Surgeon
You should be comfortable with your surgeon and feel confident that you are in good hands. Studies have shown that experienced surgeons have higher rates of successful surgeries and lower rates of complications, so you should ask your surgeon how many parathyroid operations he/she performs every year, what other surgeries they do in their practice, and what their complication rate and success rate are. You should also ask your surgeon what, if any, testing is performed in the operating room (such as measuring PTH hormone) to confirm that the operation was successful.
To improve the health of people living with diabetes

Boehringer Ingelheim and Eli Lilly and Company are committed to researching and developing innovative treatments that make a difference for people affected by diabetes.
HYPOTHYROIDISM: What experts suggest for treating low thyroid hormone levels

BY JEFFREY R. GARBER, MD, FACP, FACE

Medicine is always changing. Updates in diagnosing problems come with better ways to diagnose and, in turn, treat medical conditions. Sometimes the updates show a better understanding of a condition, information that comes out of research and clinical studies. This past year, experts from the American Association of Clinical Endocrinologists (AACE) and the American Thyroid Association (ATA) came together to review and update issues specific to low thyroid hormone levels, also known as hypothyroidism [hahy-po-thahy-roi-diz-uhm]. Here are some of the highlights from their review* and the suggestions that were made to those that treat this condition.


First, some background: The thyroid is a small gland weighing less than an ounce and is located at the front of your neck. It controls the pace at which every cell, tissue and organ in your body functions. Hypothyroidism occurs when the thyroid gland does not make enough thyroid hormone to meet your body’s needs. The more severe the hypothyroidism is, the more likely there will be symptoms such as fatigue, depression, weight gain, constipation and dry skin. This is a common condition. Over 10 million Americans have hypothyroidism. And many do not know they have it. Women are more likely to have it than men, and the chances for developing it go up as we get older. For example, over 10 percent of Caucasian women over 60 years of age in the United States and Canada are hypothyroid.

The thyroid makes two kinds of thyroid hormone: thyroxine, called T4, and T3. The thyroid’s output consists primarily of T4 (see Figure 1 below). Most of the T3 the body needs is made outside the thyroid, in organs and tissues that use T3, such as the liver, kidneys and brain.
The thyroid is under the control of the pituitary gland, located at the base of your brain, sometimes known as the “master” gland, because it controls functions of the thyroid and other glands in the endocrine system (see Figure 1 below). The pituitary gland sends a message in the form of thyroid-stimulating hormone (TSH) to your thyroid gland, telling it how much hormone to make. TSH levels in your bloodstream rise or fall depending on whether there is enough thyroid hormone in your system to meet your body’s needs. Higher levels of TSH push the thyroid to produce more hormone. Low TSH levels mean the thyroid is producing more than enough hormone. TSH levels can change a great deal with minor increases and decreases in T4. This is a very tightly regulated feedback process between the pituitary and the thyroid gland.

**WHY DOES THIS FINELY TUNED SYSTEM FAIL?**

Worldwide--but not in the USA and other countries where there is enough iodine in food--too little iodine in the diet is the most common cause of hypothyroidism. In the USA and other countries where there is sufficient iodine in the diet, common causes of hypothyroidism are:

- Chronic inflammation of the thyroid, known as Hashimoto’s thyroiditis, is the most common.
- Surgical removal of the thyroid for:
  - Thyroid lumps or nodules, most of which are benign
  - An enlarged thyroid, also known as goiter, that is causing discomfort
  - An overactive thyroid
  - Radiation therapy, usually to treat an overactive thyroid

(Continued on page 16)

**Figure 1**

In contrast to a normal thyroid (Figure 1), hypothyroidism occurs when too little thyroid hormone (T4 and T3) is generated by the thyroid gland (Figure 2). In response, changes in the hypothalamus and the pituitary gland lead to increased TSH production in an effort to increase the thyroid’s output. But the diseased gland continues to lag in production of thyroid hormone, causing the body’s metabolism to slow down. Some portions of the damaged thyroid gland might become enlarged, leading to a goiter.

Illustrations reprinted from The Harvard Medical School Guide to Overcoming Thyroid Problems by Jeffrey R. Garber with Sandra Sardella White.
Less common causes of hypothyroidism are drugs, such as lithium [lith-ee-uhrn], used to treat specific psychiatric conditions; amiodarone [am-ee-oh-dar-ohn] for heart conditions; diseases of the pituitary gland affecting the production of thyroid stimulating hormone (TSH); and radiation to the thyroid for reasons other than an overactive thyroid.

**WHAT DO WE KNOW ABOUT HASHIMOTO’S THYROIDITIS?**

It is five to 10 times more common in women than in men, occurs more frequently as we get older and is more common in people with other autoimmune diseases—such as Type 1 diabetes, celiac disease (sensitivity to gluten which is present in wheat, barley, and rye and – therefore – many foods containing them), lupus (affects many organs such as skin, joints and kidneys), rheumatoid arthritis, or pernicious anemia—and their families. Goiter (thyroid enlargement) may or may not be present. One of the keys to diagnosis is finding thyroid antibodies in the blood. The normal function of antibodies is to protect us from infection. With Hashimoto’s thyroiditis the immune system mistakenly produces antibodies against the thyroid and attacks it as if it did not belong there. Antibodies against the thyroid are anti-thyroglobulin antibodies (TgAb) and anti-microsomal/thyroid peroxidase antibodies (TPOAb). TPOAb tests predict going from mild to more advanced hypothyroidism, so it is recommended they be checked to help with the decision to treat mild hypothyroidism as well as in those with recurrent miscarriages. This is because miscarriages are more common in women with TPOAb, perhaps because they become hypothyroid during pregnancy.

**SIGNS AND SYMPTOMS OF HYPOTHYROIDISM**

The symptoms of hypothyroidism may be mild and mistaken for other conditions, and, therefore, often are easily overlooked. Dry skin, cold sensitivity, fatigue, muscle cramps, voice changes and constipation are among the most common. Less common and usually just seen with severe hypothyroidism are hand numbness and pain from carpal tunnel syndrome due to nerves being compressed in the wrist, and sleep apnea, a form of interrupted, ineffective sleep seen in some who snore. With successful treatment, heart rates may rise from slow to normal. Cholesterol may go from high to normal and menstrual abnormalities, including irregular periods, can go away. But a diagnosis of hypothyroidism should not be made on the basis of symptoms alone!

**DIAGNOSING HYPOTHYROIDISM**

TSH levels are typically used in making a diagnosis in those with a normally functioning pituitary. Although TSH may not be the same for different ages and ethnic backgrounds, the majority of individuals without evidence of thyroid disease have a TSH below 2.5 mIU/L. So it has been suggested that the upper limit of the TSH reference range be lowered to 2.5 mIU/L. However, many patients with TSH concentrations in this range do not develop hypothyroidism, particularly if they do not have thyroid antibodies. Blood test confirmation of the diagnosis before treatment is absolutely necessary. T3 levels alone should not be used to diagnose hypothyroidism.

**SCREENING FOR HYPOTHYROIDISM – YES OR NO?**

Universal screening is not recommended for patients who are pregnant or planning pregnancy, and there is no general agreement about screening entire populations for hypothyroidism. Testing in the following situations is recommended:

- Autoimmune disease, such as Type 1 diabetes, lupus or rheumatoid arthritis
- A first-degree relative with autoimmune thyroid disease such as Hashimoto’s thyroiditis
- History of neck radiation to the thyroid gland including radioactive iodine therapy for hyperthyroidism and external beam radiotherapy for head and neck cancers
- A prior history of thyroid surgery or dysfunction
- An abnormal thyroid examination
- Psychiatric disorders
- Those over age 60, particularly Caucasian women
- Patients taking amiodarone or lithium
- Patients with features—either complaints or physical features—of hypothyroidism

Dr. Jeffrey Garber is an Associate Professor of Medicine at Harvard Medical School, chief of the endocrine division of Harvard Vanguard Medical Associates, and President of the American College of Endocrinology (ACE). His book, The Harvard Medical School Guide to Overcoming Thyroid Problems, and monograph Thyroid Disease: Understanding hypothyroidism and hyperthyroidism, Copyright ©2012, Harvard University, were written for members of the lay public interested in learning about thyroid disorders.
YOU ARE MORE THAN YOUR TYPE 2 DIABETES.

You are a partner, a friend and a fighter. And you have a chance to control your blood sugar for yourself and those who depend on you most. Reducing your blood sugar can help reduce the risk of diabetes complications such as blindness, kidney disease, nerve damage and other serious health problems. If pills, diet and exercise aren’t enough, insulin is the most effective way to reduce your blood sugar. And today insulin comes in easy-to-use pens.

Important Safety Information About Insulin:
The most common side effect of insulin is low blood sugar. Some people may experience symptoms such as shaking, sweating, fast heartbeat, and blurred vision, while some experience no symptoms at all. That’s why it’s important to check your blood sugar often.

Talk to your doctor about whether insulin is right for you.
Learn more at UnderstandControl.com or call 1.866.766.6415.
HYPOTHYROIDISM: What guides who should get treated, what type of treatment and when to see an expert?

BY JEFFREY R. GARBER, MD, FACP, FACE

Endocrinologists, who are experts in thyroid disease, recommend considering hypothyroidism treatment in the following situations:

• When thyroid stimulating hormone (TSH) exceeds 10 because of the increased risk for heart failure and heart disease resulting in death when levels are in this range

• When TSH levels are between the upper limit of a given laboratory’s normal range and 10, particularly if there are symptoms of hypothyroidism, positive thyroid antibodies (TPOAb), heart disease or risk factors for heart disease

• Women in the first trimester of pregnancy or who are planning a pregnancy, including assisted reproduction in the immediate future, when TSH is between 2.5 and the upper limit of normal for a given laboratory’s reference range or they have TPOAb antibodies

• Women who are pregnant or planning a pregnancy, including assisted reproduction in the immediate future if they have or have had positive levels of serum TPOAb and their TSH is greater than 2.5.

The goal of treatment is a normal TSH if the patient is not pregnant. If pregnant, the target TSH is more restrictive. Ask your endocrinologist what these TSH values should be for you. Also, TSH should be promptly checked after conception and thyroid hormone dosing adjusted as needed.

WHAT ARE THE TREATMENT OPTIONS?

Following a 1999 report which suggested a benefit of T4 and T3 combination therapy, a number of studies have attempted to additionally support this benefit. However, these studies have not shown an advantage to the combination thyroid hormone approach. Treatment of hypothyroidism is best done with synthetic T4 as the single thyroid hormone preparation. Additionally, T4 and T3 combinations should not be used by pregnant women or those planning pregnancy because of the potential for harm.

To get the best results from your thyroid hormone medication, T4 is best absorbed when taken with water 60 minutes before breakfast, or at bedtime four hours after the last meal on an empty stomach. It is easier for many to consistently take it with water between 30 and 60 minutes prior to eating breakfast, although absorption of the medication is best if the 60-minute spacing can be used.

RESULTS OF HYPOTHYROIDISM TREATMENT

Some features of hypothyroidism, such as skin changes, may take anywhere from three to six months to return to normal after serum TSH has returned to normal. Overtreatment with T4 can stress the heart by causing...
fast and/or irregular heart rhythms, lead to bone loss and create emotional difficulties such as anxiety. So how best to know if treatment doses are just right?

The most reliable way of figuring out when treatment of primary hypothyroidism is effective is the TSH value. The expert panel recommends thyroid tests should be repeated 4–8 weeks after starting treatment or after a change in dose. Once your TSH goal has been reached, repeat testing should be done after six months and then at 12-month intervals, or more frequently if your health changes or your clinician feels the thyroid level should be rechecked. In pregnancy, your thyroid levels should be checked more frequently!

WHEN TO CONSULT AN ENDOCRINOLOGIST
Although many physicians can diagnose and treat hypothyroidism, consultation with an endocrinologist is needed with the following patients and/or in the following situations:

- Children and infants
- Patients in whom it is difficult to get to a stable thyroid level
- Pregnancy
- Women planning conception
- Cardiac disease
- Presence of goiter (thyroid enlargement), nodule (lump) or other structural changes in the thyroid gland
- Presence of other endocrine disease such as adrenal (the gland that sits on top of the kidney that produces life-sustaining stress hormones) and pituitary disorders
PREGNANCY
Higher than usual T4 levels, with lower than usual TSH levels, are typical of early normal pregnancy and appear to be important for normal brain development in the fetus. Since T4 and T3 combination hormone combinations lower T4 levels, these should not be used during pregnancy. Women using these preparations should be switched to T4 when planning to conceive and, at the very latest, when found to be pregnant. When a woman with hypothyroidism becomes pregnant, the dosage of T4 should be adjusted to a very specific target TSH, and T4 should also be checked to make sure it, too, is in the normal range for pregnancy.

DIABETES MELLITUS
Approximately 10 percent of people with type 1 diabetes mellitus (the type where insulin treatment is required because the pancreas does not make any insulin) will develop chronic inflammation of the thyroid -- called “thyroiditis” -- which can lead to hypothyroidism. TSH measurements should be checked in these individuals at regular intervals.

INFERTILITY
Some patients with infertility and menstrual irregularities have underlying chronic thyroiditis in addition to a borderline or clear-cut hypothyroidism. TPOAb positive...
patients, even when the thyroid levels are normal, can have an excess miscarriage rate. In some patients who are hypothyroid, thyroid hormone replacement therapy can normalize menstrual cycles and restore fertility. Because of the importance of thyroid levels being normal before attempting pregnancy, thyroid levels should be checked in women who are thinking about starting a family if they are at increased risk for thyroid disease or are TPOAb positive, particularly if they have had miscarriages.

**OBESITY**
Hypothyroidism and obesity are often linked. Early medical observations of significant weight loss following the treatment of severe hypothyroidism were based on seeing people lose excessive fluid that typically accumulates when severely hypothyroid. However, appetite is stimulated by taking too much thyroid hormone, which makes it a poor weight-loss drug, and higher than normal thyroid levels in the body may have serious negative effects on the cardiovascular system, skeleton and mood.

**DEPRESSION**
The possibility of hypothyroidism must be considered in every person with depression since depression can be due to hypothyroidism. All people receiving lithium therapy require periodic thyroid evaluation because taking lithium may produce a goiter and hypothyroidism. Occasionally, some people who have depression are treated not only with antidepressants but also with thyroid hormone, even though they have normal thyroid function. No firm evidence has shown that thyroid hormone treatment alone can alleviate depression.

**SUPPLEMENTS IN THE TREATMENT OF HYPOTHYROIDISM**
Over-the-counter products marketed for “thyroid support” or as a “thyroid supplement” or to promote “thyroid health” are not recommended, as they have not been shown to help the thyroid function. Some products may contain thyroid hormone, while others might contain excess iodine, which could be associated with health risks (see paragraph below).

**EXCESS IODINE INTAKE AND HYPOTHYROIDISM**
In those with normal thyroid hormone levels, especially if they have chronic thyroiditis, intake of seaweed or kelp or other sources of excessive iodine intake may cause hypothyroidism. Iodine in any form should not be used to treat hypothyroidism in iodine-sufficient regions such as the USA. However, pregnant women can take a prenatal vitamin with iodine in it. (Editor’s Note: Not all prenatal vitamins have iodine).

**DESICCATED THYROID**
Animal-derived desiccated thyroid contains T4 and T3. Viewed by some as a “natural” source of thyroid hormone, this has made it attractive to some people who may not even have biochemically confirmed hypothyroidism and wish to lose weight or increase their sense of well-being. There is substantially more data on the use of synthetic T4 in the management of well-documented hypothyroidism, goiter and thyroid cancer than for desiccated thyroid hormone. There are no controlled trials supporting the preferred use of desiccated thyroid hormone over synthetic T4 in the treatment of hypothyroidism or any other thyroid disease.

**THYROID-ENHANCING PREPARATIONS**
Selenium should not be used to prevent or treat hypothyroidism.

**AREAS FOR FUTURE RESEARCH**
Despite all of the information we have about hypothyroidism, many issues still have to be resolved. To further improve upon treatment of the vast majority of those with hypothyroidism will require ongoing research to figure out the following:

- Whether treating mild hypothyroidism will prevent heart disease and improve brain function
- Why some people feel better on T4/T3 combinations than T4 alone, how to identify them and how to treat them safely with this combination
- Whether prenatal screening for hypothyroidism will prevent pregnancy complications and help early childhood development
Childhood obesity has more than tripled in the past 30 years in the United States. The Centers for Disease Control (CDC) defines a child as being overweight if their body mass index (BMI) is at or above the 85th percentile and lower than the 95th percentile for their given age and sex. A child whose BMI is at or above the 95th percentile for their age and sex is considered obese. BMI is calculated using a child’s weight and height and does not measure body fat directly, but it is a reasonable indicator of body fatness for most children and teens.

Based on 2007-2008 NHANES (National Health and Nutrition Examination Survey) data, approximately one-third of U.S. children and adolescents are overweight or obese. Since the 1976-1980 NHANES, the prevalence of obesity among U.S. children has increased across all age groups (2-5 years, 5 percent to 10.4 percent; 6-11 years, 6.5 percent to 19.6 percent; and 12-19 years, 5 percent to 18.1 percent). Notable racial and ethnic disparities exist in childhood obesity: Hispanic girls and boys 2-19 years of age are significantly more likely to be obese than their white peers.

CONDITIONS CAUSED BY AND SEEN WITH OBESITY

Of particular concern are the number and variety of weight-related conditions which have accompanied childhood obesity’s rapid rise. When compared to their normal-weight peers, obese children are more likely to have risk factors for heart disease, such as type 2 diabetes (no longer referred to as “adult” diabetes), high blood pressure or high cholesterol. In fact, one survey found that 70 percent of obese children aged 5-17 years had at least one risk factor for heart disease. These children are also more likely to have other weight-related conditions, such as obstructive sleep apnea, a disorder characterized by episodes of interrupted or low breathing during sleep; and fatty liver disease, in which excessive fat is deposited in the liver, potentially leading to serious and chronic liver problems. Obesity’s effects, however, extend beyond the physical realm. Overweight and obese children are more likely to face social stigma, have poor self-esteem, and develop various forms of emotional disorders, primarily depression. In addition, young obese persons typically remain obese in adulthood, worsening the cumulative effect of many weight-related conditions.

TOO MUCH “SCREEN TIME”

Contributory and causal factors for the epidemic of childhood obesity appear to be changing and continue to be identified and evaluated. Environmental considerations seem particularly significant at this particular point in history. “Screen time,” which takes many forms (computers, televisions, handheld devices), has increased dramatically over the past five years for children and adolescents. Studies have shown that children who watch more than one hour of television per day are more likely to be obese than those who watch less. Unfortunately, the average American child watches more than four hours of television per day, totaling an astonishing two months of non-stop television watching per year. Surveys have revealed that more than 70 percent of American children aged 8-18 years have a television in their bedrooms.

BAD DIETS

Dietary habits of young people have also come under increased scrutiny, given the crucial role nutrition plays in weight management and overall health. The benefit of appropriate nutrition tends to start very early on, as infants who are breastfed longer or started on solid food after four months of age are less likely to become obese as adolescents. An alarming trend has been the dramatic three-fold rise in soft drink consumption over the past 20 years. In fact, 56 to 85 percent of children in school consume at least one sugar-sweetened drink per day, including fruit-based juices. Conversely, milk consumption has been halved during this same period of time, with the exception of sugar-sweetened varieties such as chocolate milk. These trends are noteworthy, because for every sugar-sweetened drink a child has the risk of obesity increases by 160 percent. Poor nutritional intakes have also resulted in an increased prevalence and severity of dental problems in children.
In addition to more sugar-sweetened drinks, our children are also having fewer healthy, well-balanced meals. Increasingly hectic lifestyles often crowd out home-cooked meals eaten with family members. Low-income and some racial/ethnic minority groups are often exposed to poor food environments, with few grocery stores and an abundance of fast-food and convenience stores. These trends are resulting in Americans consuming almost 34 percent of their meals outside of the home and accounting for 42 percent of their food budget. Past studies have shown that children who report eating fast food consume, on average, 150 more calories per day than children who don’t eat fast food, increasing their risk of gaining weight.

EFFORTS UNDERWAY TO CURB THE OBESITY EPIDEMIC
The cause of rapidly rising childhood obesity is multifactorial. As such, the related treatment modalities must also be multifactorial. Early identification of and intervention in children who are at risk of becoming obese are crucial to stemming the tide of this epidemic. Key organizations, including the American Academy of Pediatrics and the CDC, are increasing their focus on childhood obesity and providing additional treatment guidelines. For example, in overweight or obese children yet to go through their growth phase (younger than 5 years of age), the goal is weight maintenance. For older children, weight loss is recommended, since height gain alone will not correct the obesity. In these children, a weight loss goal of 1 to 2 pounds per month is noted to be appropriate.

Because most children spend a significant amount of time in the school setting, changes also are underway to improve the quality of nutrition offered at various educational sites. The American Beverage Association, with the support of the Clinton Foundation and the American Heart Association, proposed guidelines which would cap the number of calories in beverages in schools to no more than 100 per container. As of the 2009-2010 school year, 98.8 percent of all audited schools were in compliance.

WHAT CAN PARENTS DO?
The strongest predictor of child lifestyle choices is parental lifestyle choices. As such, many groups are now providing dietary and behavioral interventions at the family level. One such group was able to show successful weight control over 10-year periods.

LIMITED ROLE OF MEDICATION
Medication can play a role in weight management, but only one pharmaceutical is currently approved for use in adolescents. Studies in this age group are marred by significant drop-out rates, a limited number of subjects and very short-term results. Due to the lack of quality, long-term data, medications for adolescent weight management are not often recommended.

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CHILDHOOD OBESITY’S RAPID RISE

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WHEN COULD SURGERY BE CONSIDERED AN OPTION?
We are finding a similar situation with bariatric (weight loss) surgery. Currently, bariatric surgery is the most definitive and longest-lasting weight loss treatment. There are a small number of studies in adolescents showing significant weight loss and improvement or resolution in related conditions, such as type 2 diabetes, hypertension and obstructive sleep apnea. In adults, patients are considered candidates for bariatric surgery if they have a body mass index (BMI; as kg/m²) of 40 or higher, or a BMI of 35 or higher if one or more weight-related conditions are present. For example, an adult who is 5’ 0” and is 205 pounds has a BMI of 40; someone who is 5’ 4’ and weighs 205 pounds has a BMI of 35.2.

In pediatrics, stricter guidelines should be followed when considering bariatric surgery. The following guidelines are usually followed:

- BMI ≥ 40 with one or more serious weight-related condition(s)
- BMI ≥ 50 with less serious condition(s)
- Failure of non-surgical weight loss
- Greater sexual maturity (Tanner stage IV or higher) and 95 percent of adult height based on estimated bone age

However, because of relative physical and psychological immaturity and limited research, consideration of adolescent bariatric surgery must occur on a very thorough and case-by-case basis.

CONCLUSION
In summary, obesity in the pediatric population has risen at an alarming pace in the past several decades. Causal factors of this epidemic are multifactorial, including economic, environmental and genetic considerations. Because obesity is a chronic disease, overweight and obese children typically progress to obese and less healthy adults. Prevention and intervention strategies must be developed and utilized to slow the devastating effects pediatric obesity is having on the physical, emotional and financial health of our country.

GETTING TO KNOW YOUR THYROID GLAND

Continued from page 5

ACE’s robust website, [www.thyroidawareness.com](http://www.thyroidawareness.com), offers in-depth content about thyroid disease risk factors, symptoms and typical treatments. Downloadable PDFs about the varied thyroid conditions are available, as well as Neck Check cards detailing how to perform a self-exam to detect a thyroid abnormality. And the website also features an interactive “find an endocrinologist” function to assist in locating a physician who specializes in the diagnosis and treatment of thyroid disorders.

Given the prevalence of thyroid disease, we owe it to ourselves and our loved ones to share the message of thyroid awareness...not only during the month of January, but on an ongoing basis. You can show your support by taking advantage of the many resources offered by ACE and by posting our iconic blue paisley ribbon -- a symbol of thyroid awareness -- to your Facebook or Twitter profile. Simply visit [www.twibbon.com/support/thyroid-awareness-month](http://www.twibbon.com/support/thyroid-awareness-month) and choose how you’d like to support the campaign.
What do you call kids who don’t let type 1 diabetes stand between them and their dreams?  
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It takes a special type of kid to handle the rigors of high school, manage the daily demands of type 1 diabetes, and grow into great young adults. That’s why at Lilly, we’re proud to support the Diabetes Scholars Foundation, offering scholarships to help them pay for college.

To learn more about these scholarships, visit diabetesscholars.org/Lilly. And take this page to discuss with your healthcare provider. For more information about all the helpful programs Lilly offers families with type 1 diabetes, visit lillydiabetes.com.
A NEW KID MOVES IN ON THE DIABETES SCENE: Injections Besides Insulin

BY ALAN J. GARBER, MD, PHD, FACE

Within the last half dozen years, injections besides insulin have become available to treat diabetes. They are called incretins. They are similar to a hormone normally found in our “gut” (gastrointestinal tract) called GLP-1, which goes up when we eat.

HOW INCRETINS WORK
GLP-1 and incretins control blood sugar levels by:

• Making the pancreas put out insulin, which lowers blood sugar levels.

• Lowering glucagon, a hormone that also comes from the pancreas. Glucagon levels are usually high in those with Type 2 diabetes and go up with meals. But unlike insulin, glucagon raises blood sugar. So, by lowering glucagon, incretins keep the sugar from going too high.

• Making the stomach empty slowly. This reduces the rate at which carbohydrate is digested, which keeps sugars from rising quickly after meals.

• Reducing appetite. This leads to weight loss in the majority of diabetes patients.

SIDE EFFECTS
Side effects of these drugs are generally limited to nausea. Vomiting sometimes occurs. However, these symptoms usually just happen when starting or adjusting the dosage of medication.

Why do incretins have to be injected and why are they becoming more popular?

Just like normal human intestinal hormones, the incretins are all proteins, which would be digested if they were taken by mouth as pills or liquid. Therefore, incretins must be injected, just like insulin. Many patients resist and are even fearful of injecting medicine whether it is insulin or incretins. Even so, there are many
reasons why this new class of anti-diabetes therapies should be considered when treating diabetes:

- Very little risk of hypoglycemia (low blood sugars)
- No weight gain, something that most other diabetes treatment drugs—including insulin—may cause. In fact, most patients lose weight when they take incretins.

The ability of the various types of incretin medications to lower blood sugar varies. In general, the very short-acting medicines given twice daily are usually not as effective as the longer-acting once daily and once-weekly medicines. Longer acting versions – liraglutide and exenatide long acting release (LAR) – may lower blood sugar as much or even more than the strongest pill types of medication used to treat type 2 diabetes mellitus. Because these longer-acting incretins are so effective, as well as relatively free from important side effects such as weight gain and hypoglycemia, it has become more popular to use them early on to control high blood sugar

Many patients believe that because this new class of agents must be injected, that they are like insulin and, therefore, should only be used as last-resort drugs with a high likelihood of side effects. However, these new agents are easy to use, much easier than insulin which has to be adjusted based on blood sugar levels, meal content and exercise and do not cause weight gain and hypoglycemia. Endocrinologists often start incretins when just metformin, which is considered a first-line drug to control type 2 diabetes, is not able to control blood sugars adequately. The addition of a once-daily or once-weekly administration of a small subcutaneous injection appeals to many patients, since it can be taken without changing their mealtimes, meal content and exercise.

RESEARCH
Research is currently underway to see if incretins can help the heart. Studies in animals have shown that incretins can protect against the development of heart failure (when heart muscle does not pump blood normally and fluid accumulates throughout the body) and protect against the loss of heart muscle function after heart attack. Of course, animals and humans differ, so studies that show a very positive effect in animals might not show the same effect in humans. So far though, physicians have learned that after taking incretins for a while blood pressure goes down and cholesterol levels drop, which fits with what we know about research in animals. Stay tuned!

**CHARACTERISTICS OF INJECTABLE INCRETIN DRUGS**

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<td>Nausea Occasional vomiting (Usually subsides in several weeks)</td>
<td>Nausea Rare vomiting (Usually subsides in several weeks)</td>
</tr>
<tr>
<td>Frequently used with</td>
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<td>Metformin Pioglitazone Once daily insulin</td>
<td>Metformin Pioglitazone Sulfonylureas</td>
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<tr>
<td>Dosing</td>
<td>Before meals</td>
<td>Once weekly at any time</td>
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**Dr. Alan Garber** graduated from Temple University, Philadelphia, completed a PhD in chemistry and a residency in internal medicine. Subsequently, he was a fellow in metabolism and then a junior faculty member at Washington University Medical School and Barnes Hospital in St. Louis. He transferred to Baylor College of Medicine, where he was an investigator for the Howard Hughes Medical Institute and is presently a Professor in the Departments of Medicine, Biochemistry and Molecular Biology, and Molecular and Cellular Biology. Dr. Garber currently serves as president of the American Association of Clinical Endocrinologists (AACE).
This New Year, Resolve to Take Just One Step Toward a Healthy Life

January is the start of a new year and a time when many people make New Year’s resolutions to get healthy. Staying at a healthy weight and keeping active can help prevent or manage a number of diseases, including type 2 diabetes. Small changes – such as losing a small amount of weight (such as 10-14 pounds if you weigh 200 pounds) and becoming more active – can go a long way toward improving your health. But even if you know what to do, figuring out how to do it and fitting it into your daily routine can be hard.

So how do you get started? Begin by taking just one step. This new year, make your resolution stick by taking the first step toward a healthier life. The “Just One Step” tool from the National Diabetes Education Program (NDEP) will help you take the first of many small steps that can lead to big rewards. The tool will help you think about:

- What step you will take to help reach your goal (for example, walking)
- When and how often you will do it (for example, go walking on Monday, Tuesday and Wednesday during the lunch hour)
- How much time you will put into your step (for example, walk 15 minutes each day to start)

The key to reaching your health resolution-and keeping it all year long-is to set a realistic goal and make a step-by-step plan. The NDEP’s “Just One Step” tool will help you take the first of many steps that can lead to big rewards.

Know that some days will be easier than others. If you do not follow your plan one day, get back on track the next day. If you have trouble following your plan most of the time, consider whether your plan is realistic for you.

You may need to break your steps down into smaller ones. For example, if you planned to walk 30 minutes each day but have trouble fitting it in, consider three 10-minute walks instead.


For help to change habits and to lose weight, check out the resources available on NDEP’s Diabetes HealthSense at http://ndep.nih.gov/resources/diabetes-healthsense.

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.
That’s why we created Cornerstones4Care™. This FREE program gives you personalized support to help you follow the care plan your doctor prescribed. Cornerstones4Care™ is packed with tools, tips, and information about the four key parts of a diabetes care plan:

- **Healthy Eating**: Add easy-to-make, diabetes-friendly recipes to your meal plan
- **Physical Activity**: Find creative ways to get the activity you need
- **Taking Medicine**: Learn about different treatment options to discuss with your doctor
- **Diabetes Self-Management**: Stay on track with checking and recording your blood sugar

Join today at EPCooks2.Cornerstones4Care.com

BONUS! Join today and get FREE diabetes e-books
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