HOW TO HANDLE HYPOTHYROIDISM:
Suspect, Detect, Defeat.

ALSO IN THIS ISSUE:
• Updated Thyroid Cancer Treatment Guidelines Reflect Advances In Care
• Does Thyroid Cancer Affect The Ability To Have Children?
• The Facts About Diabetes Eye Disease
• Menopause Essentials: What You Need To Know
Everything you like about this magazine... and (much, much) more.

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A Letter from the Editors

Updated Thyroid Cancer Treatment Guidelines Reflect Advances In Care
Experts have recently released thyroid nodule and thyroid cancer guidelines that reflect recent advances in the field leading to new, more individualized treatment recommendations.

Does Thyroid Cancer Affect the Ability To Have Children?
As thyroid cancer diagnoses become more common, both men and women who undergo treatment for the disease are concerned that the therapies might interfere with child-bearing. Here we sort fact from fiction.

How To Handle Hypothyroidism: Suspect, Detect, Defeat.
Hypothyroidism – an underactive thyroid gland – is the most common of all thyroid diseases, but is frequently misdiagnosed or even goes undiagnosed altogether, wreaking havoc on the body’s functions. Learn more about the condition’s symptoms, diagnosis and treatment.

A Guide To Understanding Hypoparathyroidism In Adults
A condition which can lead to problems with bones, muscles, kidneys and more, hypoparathyroidism occurs when the parathyroid glands don’t produce adequate levels of parathyroid hormone. This guide highlights causes, symptoms and treatment details.

The Facts About Diabetes Eye Disease
Retinopathy (diabetes eye disease) can be avoided through blood sugar control, but when the condition does occur, there are a number of innovative therapies available that can help treat the problem.

Make a Plan Towards a Healthier You in 2016
The National Diabetes Education Program (NDEP) offers helpful tools and resources to get you started on a path to a healthier lifestyle in the coming year.

Do Fish Oil Supplements Really Work?
Research reports suggest that fish oil supplements could favorably impact memory, heart function, blood sugar fats, inflammation and more. Could this widely popular supplement be a modern-day fountain of youth?

Menopause Essentials: What You Need To Know
Whether you’re approaching menopause, are in its throes, or have a friend or loved one going through “the change” and have questions, you’ll find many answers here.

News to EmPower You
The latest studies about the effects of caffeine and varying medical opinions regarding ideal blood pressure targets are examined.
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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.

For more information, visit us at www.empoweryourhealth.org
A Letter from the Editors:

Dear Reader,

We’re extremely pleased to present the year’s first issue of EmPower Magazine, a quarterly patient education publication created by the American College of Endocrinology (ACE).

As in years past, the winter issue focuses on thyroid awareness and features a collection of articles that highlight various aspects of thyroid diseases, with a particular emphasis on hypothyroidism. One of the most misunderstood, misdiagnosed and prevalent medical conditions in the U.S., hypothyroidism is the focus of our 2016 annual thyroid awareness campaign: How To Handle Hypothyroidism: Suspect, Detect, Defeat.

The special thyroid section also features articles on recently updated thyroid cancer treatment guidelines, an examination of the effects of thyroid cancer treatment on fertility in both men and women, and a guide to understanding hypoparathyroidism, a rare and complex condition.

We also examine diabetes-related eye disease, the possible benefits of fish oil supplements, and the fundamentals of menopause.

In addition to EmPower Magazine, we offer a number of valuable resources that provide insightful information about endocrine system health issues. We invite you to visit www.thyroidawareness.com for more in-depth information about thyroid disease. And you can learn more about our other patient programs, as well as view past issues of the magazine and an interactive illustration of the endocrine system, at our popular website, www.EmPowerYourHealth.org.

We hope that these materials prove to be helpful to you, a friend or loved one.

Here’s to a happy and healthy year ahead!

Sincerely,

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Executive Editor

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Guest Editor

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Dr. Dace Trence is Director of the Diabetes Care Center and Professor of Medicine at the University of Washington Medical Center in Seattle. She is also the University of Washington Endocrine Fellowship Program Director and Director of Endocrine Days, a medical education program for endocrinologists practicing in the Pacific Northwest. She is on the American College of Endocrinology Board of Trustees, chairs the EmPower Committee and is also chair of the AACE Nutrition and Lifestyle Scientific Committee.

Dr. Jeffrey R. Garber is a member of the Beth Israel Deaconess Medical Center and Brigham and Women’s Hospital endocrine divisions, in addition to serving as Harvard Vanguard Medical Associates’ endocrine division chief. Dr. Garber is a past president of AACE and ACE. He has taken an active role in promoting and reviewing AACE’s publications and has served in a number of clinical areas, most notably those pertaining to thyroid disease in various arenas such as FDA hearings.
Thyroid nodules (lumps) and differentiated thyroid cancer (DTC, a non-aggressive form of thyroid cancer which usually grows slowly and can be cured) are quite common. The number of cases diagnosed in the last few decades has increased a great deal. This is largely due to their discovery by CT scans, MRIs and ultrasounds performed for non-thyroid conditions.

As most of these nodules do not have any symptoms due to thyroid enlargement or malfunction, a framework for how best to approach the clinical care and treatment of these nodules is crucial. The American Thyroid Association (ATA) released thyroid nodule clinical guidelines in 2009, but significant advances in the field since that time have led to evidence-based revisions and new, more individualized recommendations.

Released in October 2015 by an ATA task force composed of experts in the field, the new guidelines for thyroid nodules and DTC provide valuable, updated information to help physicians and patients determine when intervention is necessary and when to take a more conservative approach to evaluation, surveillance, disease management and surgical approaches to thyroid nodules.

So what are the important points made in this comprehensive document that you should be aware of when you are told you have a thyroid nodule? Let’s focus on five areas that show significant advancements that I believe will, or should, change the way we think about thyroid nodules and DTC, and thus impact the care and management of thyroid nodules.

**Ultrasound of the thyroid: what the nodule appearance says about whether there should be concern**

Many specialists use specific ultrasound features, as well as different combinations of ultrasound features, to assess the risk of malignancy in those with thyroid nodules in order to guide which thyroid nodules should undergo fine-needle aspiration (FNA) biopsy. An FNA is a procedure in which the physician uses a fine gauge needle to collect a small sample of thyroid tissue for a biopsy. Not all nodules require biopsy. Nodule features that help determine the need for an FNA include hypoechogenicity (darker than normal tissue); whether a nodule is more solid or more liquid; irregular nodule borders; bright, internal-appearing spots suggestive of microcalcifications (small specks of calcium), which are the formation of a solid or semi-solid lumps within the thyroid gland; blood flow pattern; and a shape that is taller than it is wide.

Other investigators have attempted to develop scoring systems for risk of malignancy. The new guidelines use a scoring system to develop a risk pattern (high, intermediate, low and very low risk, as well as a benign pattern). The guidelines include a number of examples of thyroid nodule appearance to show each risk pattern, which will be useful immediately as a comparison for those who perform ultrasound and review ultrasound images.

**Not all thyroid nodules need biopsy**

Based on the ultrasound risk pattern discussed above, the task force guidelines provide a detailed approach to biopsy of thyroid nodules. If your physician believes
your risk pattern suggests a “high” or “intermediate risk” nodule, a biopsy should be performed for nodules in this category which are one centimeter (just under \( \frac{1}{2} \)”) or larger in size. For those nodules with “low” risk for malignancy, it is reasonable to biopsy slightly larger nodules, those over 1.5 centimeters. For “very low” risk pattern nodules, biopsy is not recommended, if at all, until the nodule is over two centimeters in size. So size matters as well as risk pattern. And if the appearance of the nodule suggests a purely cystic (fluid-filled) nodule, you do not need a biopsy.

Overall, the feeling among experts is that very small nodules, even if they look a bit suspicious for cancer, do not automatically require biopsy. The risk of identifying cancer in these nodules is admittedly high, but emerging evidence shows that patients tend to do very well with only ongoing observation and careful follow-up. However, if these nodules grow, or if new, abnormal-looking lymph nodes appear on subsequent ultrasounds, the patient’s ongoing evaluation and treatment plan will change. (Editor’s note: Lymph glands are any of numerous bean-shaped masses in the neck that are part of our immune system. They are made up of white blood cells called lymphocytes that help fight infection).

Using biopsy and/or surgical tissue appearance helps guide treatment
The key to any appropriate disease management is good and complete data. The task force feels that a careful and comprehensive review of biopsied tissue features that help predict recurrence rates is needed. A prime example is the reporting of lymph node involvement. Evidence shows that the rate of recurrent or persistent disease is higher if you have more than five involved lymph nodes, nodes that contain tumors more than three centimeters in size and nodes that show that the cancer has spread outside the node margins (the margin is the area where the nodule is in contact with normal tissue). This approach will need continued review and perhaps even further clarification as time goes on and more data is collected on how many traits are needed for optimal decision-making.

Response to therapy
Physicians need to assess the risk of persistent and recurrent disease over time. Thyroid cancer is typically very slow growing and we know that, once treated, it can recur even years later. The 2015 guidelines have attempted to categorize patient groups to include “excellent,” “indeterminate,” “biochemical incomplete” and “structural incomplete” responses to therapy. Being in one defined group, however, can change over time to being in another, so it is very important for patients to schedule ongoing follow-up and reassessment clinic visits. But these categories are supported by emerging evidence that hopefully will provide physicians with a uniform way to communicate to you and other medical providers your ongoing risk of recurrent/persistent disease.

Managing thyroid cancer when radioactive iodine treatment does not work
The guidelines include 11 recommendations to help guide treatment for individuals with thyroid cancer in the relatively uncommon event that surgery and radioactive iodine therapy are not effective, including when other therapies could be considered. These include surgery; thermal ablation, a clinically advanced technique in which focused ultrasound produces cell death in a targeted area with minimal damage to the surrounding tissue; radiotherapy; or alcohol ablation. This involves injecting small thyroid cancers with alcohol using imaging such as ultrasound to ensure precise placement of the injection.

Also included are recommendations regarding when individuals should be considered for clinical trials and who to consider for chemo-like therapy. A detailed discussion of these approaches is beyond the scope of this article, but knowledge about who these treatments might be beneficial for is increasing.

While there are many areas of treatment for thyroid nodules and thyroid cancer that still require more study data to fully understand their potential role in optimal treatment and management, these newly published guidelines are a significant step forward and will help physicians determine when to intervene and when its best to take a more conservative approach.

For more information on thyroid cancer, visit http://thyroidawareness.com/thyroid-cancer.

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The diagnosis of thyroid cancer has become much more common over the last few decades among people of all ages, genders, races and ethnicities. This diagnosis can affect both women and men, who are often at a point in their lives when they are planning to have children. Being diagnosed with thyroid cancer, and undergoing the treatments necessary, often raises questions regarding whether it is safe to try conceiving, or when/conception even occur.

For most individuals, thyroid cancer is initially treated with surgery and then sometimes followed by additional treatment with radioactive iodine; however, nearly all individuals will require lifelong thyroid hormone medication after their thyroid cancer treatment.

The diagnosis and treatment of thyroid cancer raises many questions about family planning, especially as treatment progresses. Some of the questions that physicians hear include: Will thyroid cancer affect my ability to have a baby? Will the thyroid hormone medication change the risk of complications in pregnancy? Is it safe to get pregnant after treatment with radioactive iodine? Will my child or children be at increased risk for thyroid cancer?

Here’s what we know: While thyroid hormone is a key hormone in supporting one’s ability to conceive and to carry a pregnancy to delivery, many women who require thyroid hormone for non-cancerous indications still have normal, healthy babies. Thyroid hormone is a safe medication to take during pregnancy, with no risk of birth defects. However, thyroid hormone doses typically need to increase during pregnancy, so if you are taking thyroid hormone medication for any reason, it’s imperative that you have frequent monitoring (usually blood tests) to make sure you have enough thyroid hormone in your body to support the growing baby.

If you’ve been diagnosed with thyroid cancer, you are often put on doses of thyroid hormone medication that are called “suppressive,” meaning that blood levels may be targeted to a hyperthyroid (higher than normal) level to help decrease the risk of thyroid cancer recurrence. During the first trimester of pregnancy, relatively high levels of thyroid hormone are considered normal and mildly increased levels of thyroid hormone are well tolerated. In order to make sure that your levels are in an acceptable range, you should discuss your plans for pregnancy with your endocrinologist so your thyroid dose can be adjusted before attempting to conceive.

Many patients diagnosed with thyroid cancer will require treatment with radioactive iodine (RAI) after surgery. However, this treatment is not safe for pregnant women and, thus, must be delayed if a woman is found to be pregnant before RAI treatment. After treatment with radioactive iodine, both men and women may experience short-term changes in being able to conceive. Several studies have shown a decrease in men’s sperm concentration and sperm quality in the first three to six months after receiving radioactive iodine, which for some may persist for up to a year after treatment. While sperm banking is not generally recommended since the majority...
of men recover normal testicular function, patients receiving large total doses of radioactive iodine and who wish to have additional children may benefit from a semen evaluation and possibly sperm banking prior to repeated treatment.

Women, too, have a short-term decrease in fertility in the first three to six months after RAI treatment and often have irregular menstrual bleeding during that time period. For some women, irregular periods may last up to a year after treatment. Women receiving RAI therapy are strongly encouraged to avoid pregnancy for at least six months and, ideally, one year after treatment.

Multiple studies have shown no long-term effects on the outcomes of pregnancy in women who have received RAI therapy, except for a slight increase in the risk of miscarriage in those who get pregnant in the first year after treatment. However, as more women delay pregnancy until their mid-to-late 30s, the timing for radioactive iodine therapy may become challenging for women who are also trying to conceive.

The good news is that radioactive iodine is no longer recommended for everyone diagnosed with thyroid cancer. Currently the iodine treatment is considered optional for what is referred to as “low-risk” thyroid cancer. Discuss with your thyroid cancer specialist whether you are considered to be in this category and what this means for your treatment needs and ongoing follow-up. Be proactive with your medical team and ask questions. And make sure your concerns about family planning are answered when discussing the need for and timing of radioactive iodine. It is important to note that nursing women should not receive radioactive iodine, as iodine is concentrated in breast milk.

Pregnancy is a time of increased stimulation to the thyroid gland, and women with normal thyroid glands will increase thyroid hormone production during pregnancy. Due to this increased activity in the gland, many small thyroid nodules will increase in size and thyroid cancers can actually be diagnosed in pregnancy. Since most thyroid cancers tend to have a very good prognosis and tend to be very slow-growing, the 2015 American Thyroid Association guidelines recommend most individuals wait until after delivery to have their thyroid surgery. Each patient and case is unique, so you should discuss the timing of your recommended surgery with your physicians. But the risk of thyroid cancer survival and recurrence is no different between women diagnosed while pregnant versus non-pregnant.

Lastly, many patients worry about the possibility of transmitting the risk of thyroid cancer to their children. Treatment with radioactive iodine will not increase the risk of future children having thyroid cancer. While the most common types of thyroid cancer, papillary and follicular thyroid cancer, are not generally thought to be inherited, there are some families that may have a thyroid cancer genetic link. Specific gene mutations have not yet been identified for papillary thyroid cancer, but there is ongoing research in this area in families where multiple first-degree relatives have all been affected.

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For the majority of men and women with thyroid cancer, there is no expected increased risk of thyroid cancer in their children and no recommendation to screen patients’ children for thyroid cancer. There are some rare exceptions with recommendations to screen families, such as in a condition called multiple endocrine neoplasia, where there is a risk of multiple hormone-producing glands being at risk of tumors and cancers, including an uncommon type of thyroid cancer known as medullary thyroid cancer. But these are rare conditions.

Thyroid cancer continues to increase in incidence, particularly in men and women of reproductive age who are thinking about starting families. While both survival and reproductive outcomes are quite good overall, questions concerning pregnancy and family planning should be discussed as part of ongoing treatment and surveillance. Be open about your circumstances and work with your thyroid cancer team to achieve the best outcome for yourself.

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We’ve all experienced changes in our bodies from time to time that seem more of a nuisance than a medical issue. Take, for example, forgetfulness or fatigue, difficulty falling asleep or staying asleep, perhaps even muscle or joint pain.

Too often we chalk these symptoms up to the stresses of modern life or (yikes!) simply getting older. And that may seem to be reasonable...that is, until these changes become pervasive, persistent and bring day-to-day life as you know it to a grinding halt.

This is hypothyroidism, an often-hidden health problem in which the master gland of metabolism—the thyroid—produces less hormone than the body needs, impacting virtually all organ systems in the body. It is one of the most misunderstood, misdiagnosed and prevalent medical conditions in the U.S.: studies estimate that more than 10 million Americans suffer from the disease. Yet hypothyroidism frequently goes undiagnosed.

The American Association of Clinical Endocrinologists (AACE) and the American College of Endocrinology (ACE) hope to enlighten those who are unaware they might be suffering from an underactive thyroid with the 2016 public awareness campaign: “HYPOTHYROIDISM: Suspect. Detect. Defeat.” Throughout the year, the organizations will be sharing helpful information on websites (thyroidawareness.com, empoweryourhealth.org), in ACE’s quarterly patient education magazine EmPower®, and in media appearances and social media. Meanwhile, here are the fundamentals regarding what you need to know about the symptoms of hypothyroidism, how the disease is diagnosed and treatment options.

Suspect

For a condition that affects so many and whose impact can be devastating, it might seem odd that there seems to be a lack of knowledge about hypothyroidism (and thyroid disease in general). But there are several reasons for this.

The early effects of hypothyroidism are often mild, appear gradually and aren’t concentrated in a single area of the body, so it’s easy to disregard them or attribute them to other causes. Also, two people with the disease may have entirely different symptoms, and one person’s can develop quickly, while the other person’s symptoms may take years to emerge. Some people with hypothyroidism have no symptoms at all. And as we age, diminished or faulty hormone production is common, so it’s understandable that older patients in particular often go undiagnosed.

Plus, the body has the ability to compensate somewhat over the short term by increasing the stimulation to the thyroid to produce more hormone.
However, as production of thyroid hormone decreases and the body slows down, the disease progresses and classic symptoms of the condition begin to appear. They may include any of the following:

- **Constant fatigue**
  Low thyroid function results in less energy.

- **Depression**
  Fatigue is often accompanied by depression. Body functions slow down, including the brain. Routine mental tasks become more difficult. Appetite may decrease and you may sleep more.

- **Weight gain and fluid retention**
  An underactive thyroid slows down all your body processes (your metabolism). With lower energy needs, you require fewer calories, so your appetite can decline, but your body converts fewer calories into energy, leading to weight gain. Fluid retention occurs due to decreased excretion of sodium and water by the kidneys.

- **Dry, brittle hair and nails**
  Nails and hair are composed of very active cells that are highly sensitive to the metabolic slowdown seen in hypothyroidism.

- **Dry, itchy skin**
  Skin issues are among the most common symptoms of hypothyroidism. When your body slows down it produces less heat and you sweat less, leading to dry skin.

- **Muscle or joint pain or stiffness**
  Many people with hypothyroidism experience aches and pains that resemble arthritis.

- **Constipation**
  The muscles of the digestive tract contract to move its contents through the bowel. Hypothyroidism slows down these contractions.

- **Sensitivity to cold**
  This is due to the body conserving heat energy by constricting the blood vessels to the skin, minimizing heat loss.

- **Menstrual cycle changes**
  Hypothyroidism causes an imbalance of female hormones, leading to excessive and irregular menstrual bleeding.

- **Slow pulse**
  Low levels of thyroid hormone commonly cause the heart to beat more slowly than normal, a condition called bradycardia.

- **High cholesterol**
  Low levels of thyroid hormone cause the liver to make fewer LDL receptors, which pull LDL (bad) cholesterol out of the blood.

- **Increased sensitivity to medication**
  A slower metabolism alters the way in which the body processes medication or clears it from the system, causing medications to be more potent or have more side effects.

Although symptoms can vary dramatically from person to person, and not every symptom means that you have an underactive thyroid, if you have been suffering from health issues and your physician has yet to determine what the underlying cause is, ask to have your thyroid function checked.

Before you can fully understand what doctors are looking for when they suspect hypothyroidism, it is helpful to know some details regarding how the complex interactions and connections between the thyroid and the body’s other endocrine systems work together to keep your body in balance.

The thyroid gland weighs less than 1 ounce and is located at the front of your throat below the voice box (larynx). Shaped like a butterfly, the thyroid has two lobes connected by a middle section of tissue called the isthmus. The thyroid extracts iodine that has been passed into the bloodstream from food that we eat and uses it to make two kinds of hormone: T4, or thyroxine, which is relatively inactive, and T3, or triiodothyronine, the more active thyroid hormone. As thyroid hormone is produced, it is stored in microscopic follicles in the thyroid gland. When your body needs the hormone, the thyroid releases a small amount of T3 into the bloodstream along with T4,
which is converted to “active” T3. The T3 travels through the blood to the liver and other organs in quantities needed to meet your cells’ metabolic needs.

The thyroid itself gets its direction from the pituitary gland, a pea-sized structure located at the base of the brain which releases thyroid stimulating hormone (TSH) that tells the thyroid how much hormone to make. When the thyroid does not produce enough hormone, the pituitary gland produces more TSH in order to stimulate it. Hence, an elevated TSH level indicates hypothyroidism.

Detect

When visiting a doctor to be assessed for possible thyroid problems, you will be asked to provide a medical history, highlight any troubling symptoms you are experiencing. The physician will also perform a physical exam to look for signs of the disease. He/she will assess the size of your thyroid gland and look for enlargement by manually feeling around your neck area. He/she will also check for any signs of hypothyroidism, such as dry skin, a puffy appearance and coarse or thinning hair.

If your doctor suspects thyroid dysfunction, diagnostic tests will be ordered, beginning with blood work. Only blood tests can confirm if you are hypothyroid, and a test that measures TSH levels in your blood is the single best indicator. Thyroid hormone levels may be checked to determine the severity of disease as well as antibodies against the thyroid to determine its cause.

If you are found to have a TSH level that does not fall within an established “reference range,” your doctor may recommend treatment. And if a primary care physician diagnoses your thyroid disorder, you may be referred to an endocrinologist, a medical doctor whose specialty is the body’s glandular, or endocrine, system.

Defeat

The goal of hypothyroidism treatment is to replicate normal thyroid function and return your body to a balanced state. Standard treatment consists of daily intake of a synthetic thyroid hormone, levothyroxine sodium, which comes in pill form and works in the same way your own thyroid hormone would normally work. The initial dose is carefully selected by the physician based on your age, weight, gender, other medical conditions and the severity of your hypothyroidism. You should consult with your endocrinologist about other medications you are taking, such as iron, calcium supplements, antacids and cholesterol-lowering medications, since they can interfere with the effectiveness of thyroid medicines.

Because each person’s thyroid hormone needs are very precise, finding the proper dose of levothyroxine can take some time, and adjustments in medication dosage are typical until the patient’s TSH level is within normal range. Keep in mind that the medication is slow-acting, so you are unlikely to feel its full effects immediately.

Once the thyroid hormone dosage that is right for you has been determined, you should stick to the same dosage of the same medication, whether brand name or generic manufacturer, and take it at the same time each day.

Once you and your doctor agree on the brand and thyroid hormone dosage that is right for you, you should not switch the brand of hormone replacement medication you are taking. While each brand is FDA-approved and all have the same active ingredient, inactive ingredients vary from brand to brand and can have a significant impact on how much T4 your body absorbs. However, sticking with the same generic formulations may be difficult. Pharmacies often dispense different generic drugs based on what is in stock, the cost of the medicines and the formulation’s availability. If your insurance plan only covers generic drugs, make sure your pharmacist provides the same pills from the same manufacturer every time.

Patients should experience relief from some symptoms within a few weeks, while some changes such as dry skin may not improve until several months after starting treatment. Once your TSH levels are stabilized, they’ll typically be checked every six to 12 months and the dosage adjusted if necessary.
Before synthetic thyroid hormone tablets were developed, people with thyroid conditions were treated with extracts from sheep thyroid glands that were dried, powdered and placed in pill form. Known as dessicated thyroid hormone, this formulation is made today primarily from pig thyroid glands and is available online and in some pharmacies.

While proponents of dessicated thyroid promote its natural qualities, including that it contains other substances made by the thyroid gland, it has its challenges. Because dessicated thyroid contains relatively large amounts of T3, it can lead to toxicity or hyperthyroisism. Since most cases of hypothyroidism in adults are permanent and often progressive, many patients need to take thyroid medication throughout their lives. The good news is that the medication is relatively inexpensive, has minimal side effects and can restore a hypothyroid patient to optimal health.

For more information about hypothyroidism and other thyroid disorders, visit www.thyroidawareness.com.

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**HYPOTHYROIDISM GLOSSARY**

As with any health issue, the period following a diagnosis of hypothyroidism can be understandably overwhelming—the body (and often the brain) is not functioning properly. A number of tests may be run to determine the cause of the disorder, and the patient begins the process of working towards a “new normal.”

During the process, you’ll likely hear a number of thyroid-related medical terms and abbreviations that can be confusing but are extremely important for you to become familiar with. Here’s a helpful glossary.

**Antithyroid Antibodies**
Antibodies that are directed against the thyroid gland and associated with inflammation of the thyroid. Testing for antithyroid antibodies in the blood is useful in the diagnosis of chronic thyroiditis (see below), also known as Hashimoto’s thyroiditis, the most common cause of hypothyroidism in the United States.

- **FT3**
  Free Triiodothyronine (trahy-ahy-oh-doh-thahy-ruh-neen) Test
  A free T3 or total T3 (TT3 - see below) test may be ordered when hyperthyroidism is suspected and TSH levels are very low.

- **FT4**
  Free Thyroxine (thahy-rok-seen ) Test
  Free thyroxine (T4) can be measured directly (FT4) or calculated as the free thyroxine index (FTI--see TT4).

- **TFTs**
  Thyroid Function Tests

- **TG**
  Thyroglobulin (thi-ro-glob-ye-lin)
  Thyroglobulin is a protein produced by the cells of thyroid and is used within the thyroid to store T3 and T4. After the thyroid gland has been removed, thyroglobulin should no longer be present. This is the reason thyroglobulin levels are useful for monitoring those who have been treated for thyroid cancer.

**Thyroiditis:** Inflammation of the thyroid gland.

- **TRH**
  Thyrotropin (thahy-ruh-troh-pin )-Releasing Hormone Test
  TRH is the hormone that is secreted by the hypothalamus gland in the brain to stimulate TSH production in the pituitary gland. In the past, this test was done when either pituitary gland or hypothalamus problems were suspected to be the cause of hypothyroidism. Now that TSH measurements have become more precise, TRH testing is no longer necessary.

- **TSH**
  Thyroid Stimulating Hormone
  TSH is produced and secreted by the pituitary gland to stimulate the thyroid gland to make and release thyroid hormones (T4 and T3) into the blood. Through a feedback loop, these hormones reach the pituitary and decrease the secretion of TSH.

- **TT3**
  Total Triiodothyronine ([trahy-ahy-oh-doh-thahy-ruh-neen) Test
  A T3 blood test measures both bound and free triiodothyronine in the blood. T3 has a greater effect on the way the body uses energy than T4, even though T3 is normally present in smaller amounts than T4.

- **TT4**
  Total Thyroxine (thigh-ROX-een) Test
  Thyroxine (T4) is the main hormone produced by the thyroid gland. Most of the T4 in the blood is attached (“bound”) to a protein called thyroxine-binding globulin. Less than 1 percent of the T4 is unattached (“free”). A total T4 blood test measures both bound and free thyroxine. Free thyroxine affects tissue function in the body, but bound thyroxine does not.
You can become an active participant in protecting your well-being by visiting www.thyroidawareness.com.

The site features in-depth content about thyroid disease risk factors, symptoms and treatment options, as well as downloadable flyers about the range of thyroid conditions.
Among the many hormone disorders that fall within the category of endocrine disease, one of the most uncommon is hypoparathyroidism, a rare and complex condition in which the body secretes abnormally low levels or no parathyroid hormone (PTH). And although they have similar names and are situated close to one another, the function of the thyroid and parathyroid (parathyroid means “near the thyroid”) glands are completely separate.

**What are the parathyroid glands?**
The parathyroid glands are located in the mid-lower neck, usually adjacent to the thyroid gland. In their normal state, the parathyroid glands are quite small, measuring only a few millimeters in diameter and weighing, on average, less than 50 milligrams (around one–thousandth of an ounce). There are typically four parathyroid glands: two on the left and two on the right. Their function is to produce PTH, which is responsible for controlling calcium metabolism in our bodies. PTH works to keep our blood calcium level within a normal range by means of its effect on the bones, which store calcium, the intestines, which absorb calcium, and the kidneys, which excrete calcium.

When parathyroid glands are normal in size and are functioning properly, the PTH level increases slightly when the blood calcium level goes down and decreases slightly when the blood calcium level goes up. When the parathyroid glands and calcium metabolism are working normally, our bones are encouraged to absorb and deposit calcium, keeping them strong and resistant to fractures.

Hypoparathyroidism occurs when the parathyroid gland(s) do not produce adequate levels of PTH, resulting in hypocalcemia (low calcium levels), which can be harmful and life-threatening, especially when severe in the first few days following its appearance.

Having the right amount of calcium in your blood is essential to proper functioning of many organs and systems including the heart, kidneys, nervous system, bones and teeth. Thus, people who lack adequate PTH may experience muscle problems, bone damage, kidney damage, heart problems, cognitive issues and emotional swings.

**What are the causes of hypoparathyroidism?**
By far, the most common cause of hypoparathyroidism in adults is surgery on or around the thyroid and parathyroid glands. When the thyroid is surgically removed, the tiny parathyroid glands can be mistakenly removed or damaged, resulting in hypoparathyroidism.

Another surgical cause of hypoparathyroidism is deliberate removal of the parathyroid glands themselves. This can be necessary when the parathyroid gland(s) becomes too overactive and increase in size and PTH production (Continued on page 14)
A Guide To Understanding Hypoparathyroidism In Adults

(Continued from page 13)

(hyperparathyroidism). High levels of PTH can cause hypercalcemia (high calcium levels) and osteoporosis as well as other problems. Hyperparathyroidism usually affects one parathyroid gland, but may affect all four.

Dysfunction of the parathyroid glands after thyroid or parathyroid surgery can be temporary or permanent. Temporary hypoparathyroidism happens quite often after thyroid surgery, but the condition usually subsides within days or weeks. Fortunately, permanent hypoparathyroidism is a rare surgical complication resulting from the removal or damage of too much parathyroid tissue. Fortunately, only one parathyroid gland, or even just part of one, needs to survive and recover for the patient to have normal calcium metabolism. Permanent hypoparathyroidism happens in about 1 or 2 percent (one to two out of 100) of thyroid and parathyroid surgeries when done by a highly experienced thyroid and parathyroid surgeon.

Another cause of hypoparathyroidism is destruction of the parathyroid glands by the immune system in people with autoimmune diseases, where the body mistakenly attacks its own tissues. This condition is usually diagnosed in childhood or adolescence. Antibodies damage the parathyroid glands, and they are not able to produce enough PTH to maintain normal calcium levels.

There are other rare causes of hypoparathyroidism, including genetic disorders resulting in abnormal parathyroid gland development or PTH production; infiltration of the parathyroid glands by iron overload (hemochromatosis), an accumulation of iron in the body from any cause; granulomatous diseases (which occur when the immune system attempts to wall off substances it perceives as foreign); radiation-induced damage; or viral infections. These are all extremely rare.

What are the symptoms of hypoparathyroidism?

The symptoms of hypoparathyroidism can be acute or long-term. Those caused by an acute drop in calcium levels are related to the fact that calcium stabilizes nerves and muscles. When the calcium level in the blood is low, the nerve and muscle endings in the body become irritable. This is called “tetany.” The symptoms of tetany can be mild (numbness around the mouth, tingling in the hands and feet, muscle cramps) or severe (hand, foot and throat spasms, and seizures). The more severe symptoms of low calcium levels, if left untreated, can be life-threatening.

When the hypoparathyroidism continues for a long period of time, other organs can be affected. Some of these problems are a result of the high doses of calcium supplements needed to maintain a safe and normal blood calcium level. Kidney stones can develop if the calcium level in urine is too high. Patients with chronic hypoparathyroidism can have other effects such as basal ganglia (brain) calcifications, cataracts, skeletal changes, dental abnormalities and skin and nail changes. These problems can be minimized or avoided if the calcium level is watched carefully and remains in the recommended range.

How is hypoparathyroidism diagnosed and treated?

The diagnosis of hypoparathyroidism is made based on blood work when an abnormally low calcium level is detected with a low PTH level – usually well below the normal range in this situation. Other laboratory abnormalities include a higher-than-normal phosphate level.

Once hypoparathyroidism is diagnosed, other tests should be done to help manage and treat the patient. These tests include a blood level for vitamin D and magnesium and a collection of urine for 24 hours to measure the urine calcium level. Vitamin D and magnesium stores in the body play an important role in calcium balance, and this becomes even more important in patients with hypoparathyroidism.

At present there is no known cure for hypoparathyroidism. Treatment includes oral calcium and vitamin D. For adults with stable chronic hypoparathyroidism, the dose of oral calcium is typically one to two grams of elemental calcium daily in divided doses. This can be calcium carbonate or calcium citrate. Calcium carbonate is less expensive and works very well for most patients. Calcium citrate may be better absorbed and cause less stomach discomfort, so this may be preferred by some patients. All of these types of calcium are available as over-the-counter supplements.
The vitamin D recommended is called calcitriol or Rocaltrol® and usually requires a prescription. This special form of vitamin D should be used, since regular vitamin D supplements do not work well in patients with primary hypoparathyroidism. An important aspect of calcium and vitamin D supplementation is that the blood calcium level should be kept in the low-normal range. The magnesium should be kept normal for PTH to be secreted and also for its actions. That is, the patient should take only enough calcium and vitamin D to keep the symptoms of hypocalcemia (low blood calcium level) at a minimum. Without enough parathyroid hormone, too much calcium may be deposited in the kidney and urine, which can lead to kidney stones and kidney damage. Keeping the blood calcium in the low-normal range prevents this. If the calcium level is allowed to get too high, or even in the mid-normal range, calcium supplementation has to be reduced.

If the calcium level cannot be maintained with calcium and vitamin D supplements and the patient is still symptomatic, another option is the addition of a special medication called recombinant PTH 1-84. This is a medication injected under the skin that should only be used with the supervision of an expert in the treatment of hypoparathyroidism. If the patient feels well on calcium and vitamin D, then this medication is not recommended.

Every patient with primary hypoparathyroidism should have an endocrinologist experienced in treating this condition and should visit with them at least every six months.
One of the most feared complications of diabetes is blindness from diabetes-related vision loss, or diabetic retinopathy. Retinopathy involves changes to blood vessels in the retina, the light-sensitive nerve layer at the back of the eye that contains cells that trigger nerve impulses that pass via the optic nerve to the brain, where a visual image is formed. The changes in the blood vessels can cause them to bleed or leak fluid, resulting in distorted vision. This is caused by prolonged hyperglycemia (high blood glucose levels). With high glucose levels, the cells that surround and support the small blood vessels of the retina are lost, which leads to the following problems:

**Microaneurysms**
Microaneurysms are caused when the lining of the blood vessels bulges through the blood vessel wall. Microaneurysms are key in diagnosing diabetic retinopathy, but do not cause visual loss.

**Exudates**
These are a mass of cells and fluids caused by leakage of fluid, protein and fats from the blood vessels. Exudates do not interfere with vision unless the leakage occurs in the macula (macular edema), an oval-shaped, yellowish area near the center of the retina. It is the only part of the retina with 20/20 vision, so swelling in this region interferes with vision.

**Retinal Infarcts**
Infarcts – small, localized areas of dead tissue – occur when there is a poor blood supply to the retina which results in the death of multiple small parts of the retina. They appear as yellow exudates and are most likely to result in vision loss when an infarction occurs near the optic nerve.

**New Vessel Growth**
A lack of nutrients, especially oxygen, to the remaining retina causes the formation of new vessels in an attempt to restore retinal oxygenation. New vessels are formed due to the release of Vascular Endothelial Growth Factor (VEGF), a protein produced by cells to stimulate new blood vessels. These thin-walled blood vessels grow into the vitreous gel, the clear gel that fills the space between the lens of the eye and the retina, and can rupture and bleed into the vitreous. The resultant hemorrhage absorbs the light entering the eye so that light does not reach the retina and vision is lost. Also, these vessels are surrounded by fibrous (scar) tissue which can contract, putting traction on the retina and separating the retinal layers, which can result in loss of vision. If these vessels grow as far forward as the iris (the colored part of the eye), the eye’s drainage ducts may get blocked and result in increased pressure within the eye (glaucoma).
How to avoid diabetic retinopathy
First and foremost, retinopathy can be avoided through blood sugar control.

In the Diabetes Control and Complications Trial, a major, 10-year clinical study that compared good glycemic (blood sugar) control (average HbA1c of 7.2 percent, or an average blood sugar of about 155) with poor glycemic control (average HbA1c of 8.0 percent, or an average blood sugar of about 180), participants that had type 1 diabetes, the diabetes that occurs when one’s own antibodies interfere with the production of insulin, showed a 44 percent lower risk of developing retinopathy than in those with the higher HbA1c.

The United Kingdom Prospective Diabetes Study, the largest study ever performed of type 2 diabetes (the type of diabetes caused by your body not using insulin properly plus producing less insulin over time) showed that those who had an average HbA1c of 7 percent (average blood sugar of 150) had 25 percent less retinopathy than those with an average HbA1c of 7.9 percent (average blood sugar just under 180). Even in those with better glycemic control, if some eye changes were already present, there was a decreased need for pan-retinal photocoagulation laser therapy, a procedure in which a laser beam is used to destroy all of the dead areas of retina where blood vessels have been closed. When these areas are treated with the laser, the retina stops manufacturing new blood vessels, and those that are already present tend to decrease or disappear. As these abnormal vessels disappear, the risk of vitreous hemorrhage and retinal detachment are reduced.

Lowering blood pressure also decreases the risk of developing retinopathy; studies suggest avoiding tobacco use will also help. And while exercise is encouraged to help control glucose levels, straining such as occurs when lifting weights may cause bleeding and should be avoided in those with advanced retinopathy.

Detecting diabetic retinopathy
If you are over 10 years old or have had type 1 diabetes for more than five years, or if you have type 2 diabetes, you need an annual eye exam including dilation performed by an ophthalmologist or an optometrist – both specialists in the exam of the eye. This usually means that you will have drops put into the eye to open or enlarge the central black area of the eye, the pupil, allowing the doctor to better see the nerves and blood vessels in the back of the eye. An examination through a non-dilated pupil is not acceptable because many areas of the retina cannot be visualized without pupil dilation. Retinal photography through a non-dilated pupil with the photographs being read by an ophthalmologist is only acceptable as a screening tool. If the ophthalmologist discovers retinopathy on a retinal photograph, an examination through a dilated pupil is necessary.

Since retinopathy may worsen during pregnancy, it is recommended that a retinal examination be performed before pregnancy as well as during the first trimester (first three months) of pregnancy. Not all optometrists are trained in the ability to perform a diabetes eye exam, so be specific when you schedule your appointment that you need this specialized type of exam.

Treating diabetic retinopathy
If or when diabetic retinopathy occurs, it is very treatable, especially if detected at an early stage. Once the diagnosis of diabetic retinopathy is made, management of the condition should be provided by an ophthalmologist, preferably a retinal specialist who treats any condition that affects the retina, the light-sensitive area at the back of the eye that contains the (Continued on page 18)
structures responsible for clear, sharp vision. These specialists also treat problems within the vitreous, the jelly-like material that forms the eye’s shape, and diseases that affect the optic nerve, which carries visual signals to the brain. If leakage in the macular area (called macular edema) or growth of new blood vessels occurs (proliferative retinopathy), then intervention with photocoagulation or anti-VEGF injected into the vitreous gel is needed.

Pan-retinal photocoagulation (laser therapy) reduces the area of retinal tissue that is not receiving enough oxygen so that the surviving retinal tissue will have sufficient oxygen. Well-oxygenated tissue will not produce VEGF, which stops the growth of abnormal new vessels. Key areas for vision such as the optic nerve and macula are avoided during laser therapy. While central vision is maintained, laser therapy comes with the price of night vision and color vision loss and decreased peripheral (side) vision.

More recently an alternative to laser therapy has been developed with drugs that are called inhibitors of VEGF. These drugs are injected into the central fluid portion of your eye and counteract effects of VEGF by decreasing leakage from and growth of abnormal blood vessels. Very recently the use of these drugs (ranibizumab, aflibercept, bevacizumab and pegaptanib) has been shown to be just as effective as traditional laser therapy.

Occasionally surgery is needed to restore as much vision as possible. Surgery can repair a retinal detachment, where the retina is separated from the wall of the eye, or remove a hemorrhage in the fluid portion of the eye that is blocking passage of light to the cells that are responsible for sight. To treat a hemorrhage in the fluid of the eye, the fluid is removed and replaced with a salt and water solution. Often an air bubble to “splint” the reattached layers of the retina is inserted. If symptoms of retinal detachment (appearance of dark specks, dots, strings or globs) or any visual loss occurs, notify your ophthalmologist or retina specialist immediately. Medical attention should be obtained promptly since repair of the retina must take place within one to two days to be successful.

Anyone who has diabetes can develop diabetic retinopathy. And while surgery can slow or stop the progression of the disease, it’s not a cure. Because diabetes is a lifelong disease, future retinal damage and vision loss are still possible. The good news is that researchers are studying new treatments for the disease that may help.

Researchers at the National Institute of Health’s (NIH) National Eye Institute are seeking ways to detect diabetic retinopathy at earlier stages. For example, a technology called adaptive optics, developed by astronomers to improve the resolution of their telescopes by filtering out atmospheric distortions, is being studied to determine if it can improve the detection of subtle changes in retinal tissue and blood vessels. And other medical centers across the country are studying new, innovative treatments for diabetic retinopathy, including medications that may help prevent abnormal blood vessels from forming in the eye. These treatments appear promising, but more study is needed.

Meanwhile, you can help reduce your risk of vision loss by taking your diabetes medication as prescribed, keeping a healthy weight, controlling your blood pressure, cholesterol and blood sugar levels and, if you smoke, kicking the habit.
Make a Plan Towards a Healthier You in 2016

BY THE NATIONAL DIABETES EDUCATION PROGRAM

The beginning of a new year is the perfect opportunity to look ahead and think about what you want to do to improve your health. Even if you know what you want to do, figuring out how to do it and fitting it into your daily routine can be a challenge. Making changes step-by-step – such as losing a small amount of weight and becoming more active – can go a long way towards better health.

The National Diabetes Education Program (NDEP), a program of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), has valuable tools and resources to help you get started.

The first step is to make a plan. The NDEP’s Make a Plan tool (http://ndep.nih.gov/resources/diabetes-healthsense/make-a-plan.aspx) can help you think about what is important to you and your health and how you can break down your goals into small, achievable steps. This tool will help you set one goal to work on first. This should be something that is important to you, and is something that you are willing and able to do.

For instance, if your goal is to be more active, you may want to start walking 10 or 15 minutes a day. Make sure your goal is realistic. If you know that you work late, it might not be realistic for you to say that you are going to go for a walk after work. Instead, you might try getting out for a walk in the morning, or using some time during your lunch break to fit this in your schedule.

Choose one goal to work on first. Start this week. Pick one change you can start to make immediately.

Don’t give up. It’s common to run into some problems along the way. If things don’t go as planned, the NDEP’s Make a Plan tool can help you think about other ways to reach your goal.

Another resource to help you with your health goals is the Weight-Control Information Network’s (WIN) Changing Your Habits: Steps to Better Health tip sheet (http://www.niddk.nih.gov/health-information/health-topics/diet/changing-habits/Pages/changing-your-habits.aspx). This resource can help you understand and overcome barriers to accomplishing your health goals and provides tips on how to keep your health goals part of your daily routine.

For more information from the National Diabetes Education Program and other NIDDK programs, please visit niddk.nih.gov.

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.
ne of the more common and popular nutritional supplements on the market today is fish oils, or omega-3 fatty acids. Fish oil is found in fish or supplements. Fish that have particularly high amounts of omega-3 fatty acids include mackerel, tuna, salmon, sturgeon, mullet, bluefish, anchovy, sardines, herring and trout. These fish contain approximately 1 gram of omega-3 fatty acids in about 3.5 ounces of fish. Supplements are usually made from mackerel, herring, tuna, halibut, salmon, cod liver, or the blubber of seals or whales and may be combined with calcium, iron, or vitamins A, B1, B2, B3, C, or D and, to better preserve freshness, often contain small amounts of vitamin E.

The interest in fish oil is likely due to research indicating that it can offer a variety of health advantages. Some reports suggest fish oils offer possible benefits in slowing changes in age-related memory and thinking disorders, in helping prevent heart disease, in boosting the immune system, even in contributing to muscle and bone strength.

Like the fountain of youth, let’s review the actual science.

From 1935 to 2010, United States population statistics showed that death rates decreased by 60 percent. If current trends continue, the number of U.S. citizens that will be 65 years or older by 2050 is estimated to be around 88 million, or 20 percent of the total population, and 4 percent, or 19 million citizens, will be age 85 years or older. Because some memory loss is anticipated and expected as a normal process of aging, these statistics reflect a large percentage of the population who want to preserve their cognitive skills. How often have you wished that you could remember where you parked the car? Or a person’s name? Or perhaps the name of that great restaurant you visited five years ago?

Researchers have examined whether a 12-month course of fish oil supplementation with concentrated DHA (docosahexaenoic acid, an omega-3 fatty acid which is essential for healthy brain function) might be beneficial in older individuals who already had shown signs of some thinking impairment — what is often called mild cognitive impairment (MCI). They measured a variety of different thinking and memory functions before and after fish oils were administered. Significant improvements were seen in research participants’ short-term and working memory, immediate verbal memory and delayed recall capability. Twelve-month memory testing also showed significant improvement after treatment, with the fish oils being well tolerated and with minimal side effects. Rate of learning also increased significantly after supplementation, but not mental processing speed, accuracy or mood. Available evidence generally supports a positive correlation between omega-3 status/supplementation and brain function, at least in older individuals.

Regarding heart function, individuals with a history of having had a heart attack who took in 1 gram of fish oil supplements daily for six months had a reduction in some, but not all, types of irregular heartbeats, enhancing the effect of anti-arrhythmic therapy. Additional positive heart function effects seen in other studies have included more stable heart rates and less heart failure in the groups taking fish oils.

Scientific evidence has long suggested the beneficial effects of fish oils decreasing blood triglyceride (sugar fats) levels — part of the cholesterol panel your doctor orders — resulting in various prescription forms of fish oils. These are generally more potent fish oil
preparations, some containing more specific amounts of a particular fish oil than others. The role triglycerides play in the development of heart disease is not clear, but there is an association of higher triglyceride levels with increased coronary artery disease risk, more so in women than in men.

We know that inflammation in the body is associated with the risk of developing many diseases such as heart disease and diabetes. Research suggests that fish oils might have a beneficial effect in decreasing inflammation, but not all studies confirm this research. Some suggest that taking fish oils intravenously might be more effective than the much more commonly used capsule form, but there is no clear agreement. There is data that suggests a decreased cell mutation effect, and mutations are thought to be associated with the development of many cancers. But studies with specific cancers have been sparse thus far, preventing any firm conclusions as to possible benefit or lack of benefit.

Progressive loss of muscle mass and function, what is often referred to as sarcopenia, occurs in all of us as we get older. Approximately one to two percent of muscle mass per year is lost after the age of 50. This loss of muscle mass and strength is accompanied by fat accumulation in muscle, muscle thinning and an overall structural muscle change leading to loss of strength. Sarcopenia is a medical concern as it represents a considerable healthcare cost: about 1.5 percent of total healthcare costs were attributable to sarcopenia in the United States in 2000.

Muscle weakness is associated with an increased risk for falls and subsequent bone fracture, but the stimulation of muscle protein production by fish oil supplements could be useful for the treatment and prevention of sarcopenia. And there is some evidence that fish oils could help maintain muscle mass: A study of 300 participating older Italians suggested that omega-3 fatty acid blood levels, as well as supplementation, were strongly correlated with maintenance of muscle mass and function in these older adults. But not all muscle studies have shown a positive effect. For example, a 12-week study in older adults participating in a resistance training program showed no difference in muscle mass and strength between those taking fish oils versus those who were not. There were some differences seen between women and men regarding benefits in specific muscle and joint groups, but this was a short study of only three months. An important question is whether short-term results can be sustained over time, something we don’t know from currently available data.

Bone health has been reported to be significantly correlated with omega-3 status. But studies comparing those actually taking fish oils supplements versus those not taking them have yet to be conducted.

And there have been a number of studies looking at whether fish oils could improve or stabilize mood issues, although results have not been consistent enough to confirm their value in this regard.

Many of the benefits of fish oil appear to come from the omega-3 fatty acids it contains, which cannot be produced by the body but are essential to the body’s well-being and development. Nor can the body manufacture omega-3 fatty acids from omega 6-fatty acids, which are relatively common in a standard Western diet.

Fish oil supplements are felt to be safe for most people, including pregnant and breast-feeding women, when taken in low doses (3 grams or less per day). However, there is a flip side to over-supplementation. For some, fish oils may increase your blood sugar, although this tends to be a short-term effect. In high doses of more than 3 grams per day, bleeding can be seen due to fish oil’s capacity to keep blood from clotting. Also, high doses of fish oil might also reduce the immune system’s activity, reducing the body’s ability to fight infection. So if you are taking medication to prevent blood clots or to decrease your immune system’s activity (organ transplant patients, for example), discuss fish oil safety with your medical team before taking. In addition, if you are allergic to seafood, this may also increase your risk of allergy to fish oil supplements.

At the end of the day, if you eat a well-balanced diet that regularly includes fish, you might not need to supplement your diet with fish oil at all. In fact, it might actually be more beneficial to start introducing more fatty fish into your diet before considering a visit to your local supplement aisle.
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.
For most females, it’s an inevitable, and sometimes unwelcome, rite of passage.

Menopause is strictly defined as having no periods for one year. In fact, a woman’s ovaries often lose function gradually for many months to years before they stop producing estrogen altogether. This “peri-menopausal” interval may be a time when periods become less regular or different than usual. Hot flashes may occur. And the loss of estrogen may already be having effects on a woman’s bones and other tissues.

Menopause occurs because a woman’s ovaries reach a time in life when they no longer produce enough estrogen to cause periods and no longer release eggs (ovulation) in order to become pregnant. Menopause may be “spontaneous,” which is a normal occurrence in one’s life cycle or “induced,” occurring when the ovaries are removed surgically or are damaged by radiation, chemotherapy or other medications which cause them to stop working. The loss of hormones is the same in both types of menopause.

Considered a normal stage of life especially with today’s longer lifespans, it is estimated that the average woman spends about one third of her life in menopause, i.e., without estrogen being produced by the ovaries.

At what age does menopause typically occur?
There is no way to predict exactly when a woman will undergo menopause or begin having symptoms that signal menopause has begun. It is considered to be normal if it occurs any time after the age of 35, although some suggest the age cutoff should be 40. Prior to that age, menopause is called primary ovarian insufficiency (POI). This condition used to be called “premature ovarian failure” or “premature menopause,” but these terms are misleading, because women with POI do not always stop menstruating (having periods), and their ovaries do not always completely shut down.

Are there other conditions that seem the same as menopause?
There are many medical conditions which directly or indirectly affect the ovaries’ ability to work. Since these are conditions which often carry other risks and which are usually treatable, it is very important that a woman consult her doctor to find out whether she is truly “in menopause” or perhaps has another condition affecting the ovaries. When a woman stops having periods at a younger age, doctors will look for other reasons for the lack of periods, especially when a woman stops having periods at a very young age.

It’s important to note that doctors distinguish between conditions that are clearly known to be caused by a lack of estrogen, those that are really common during the aging process, and conditions which may occur randomly at that time in a woman’s life.

Estrogen treatment
Many conditions that occur with menopause can improve with estrogen replacement treatment, which comes in several forms—transdermal such as patches, sprays,
Menopause Essentials: What You Need To Know
(Continued from page 23)

creams or gels administered through the skin, oral tablets, or a soft, flexible vaginal ring that is inserted directly into the vagina. Depending upon a woman’s age and other medical conditions, she and her physician should consider the benefits of treatment versus risks of this therapy, as well as how long treatment should continue if it’s successful.

If there is an important medical reason that estrogen should not be used, other measures, including non-hormonal medication, should be discussed. Recent studies suggest that SSRI medications (selective serotonin reuptake inhibitors), a class of medication also used to treat anxiety and depression, can be helpful in reducing hot flashes and improving sleep and quality of life.

Estrogen treatment should always be accompanied by progesterone in women who have not had a hysterectomy (removal of the uterus), as there is an increase in the risk of cancer of the uterus when estrogen is used without progesterone.

There may be differences in the type of progesterone hormone in various hormone preparations. These so-called “bio-identical” hormones are not approved by the FDA and are not recommended by the American Association of Clinical Endocrinologists (AACE) as treatment for menopause.

The Effects of Estrogen Loss

Hot flashes are one of the hallmarks of estrogen loss. They present as a rapid-onset feeling of warmth that spreads over the body, but tends to be concentrated around the head and neck area. Hot flashes are often accompanied by a red, flushed face and sweating, which can be followed by chills. The severity of these hot flashes can be mild to intense. Mild hot flashes do not require any treatment, while severe hot flashes may disturb sleep and affect the quality of a menopausal woman’s life.

Another common symptom of menopause is vaginal dryness, which may cause discomfort and difficulty with intimacy. On occasion, it is severe enough to cause bleeding. Normally, estrogen helps maintain a thin layer of fluid that keeps the vaginal walls lubricated. However, during menopause, the drop in estrogen levels reduces the amount of moisture available and also makes the vagina thinner and less elastic. Dry tissue in the lower...
part of the urinary tract (urethra) may cause urinary burning and increased frequency in urinating.

Osteoporosis, or weakening of the bones, may be caused by lack of estrogen (in addition to being part of the aging process). Estrogen treatment can improve osteoporosis and reduce the risk of broken bones (fractures). There is a risk with estrogen treatment in some women (see below), so unless there are other reasons to use estrogen, drugs targeted directly to the bones are preferred.

Lack of interest in sex (libido) is a complicated condition. For some women, vaginal dryness, severe hot flashes and sleep deprivation may reduce their interest in intimacy. But there are so many other factors which contribute to a woman’s desire for intimacy, so lack of estrogen is often not the answer to this problem.

Depression is a common disorder, and many women in the menopausal age group suffer from depression. Estrogen is not a treatment for depression. But hot flashes and loss of sleep may make matters worse.

Each woman should have a discussion with her physician regarding these problems.

What are the risks of hormone treatment?
Hormone replacement therapy (HRT) increases the risk of stroke and of blood clots in the legs which may travel to the lungs. Although the increase in risk is extremely small, there are some women who are already at greater risk because of clotting disorders which are inherited. Recent studies suggest that estrogen delivered through the skin (transdermal) may be less likely to cause problems with the blood clotting system.

Also, there is a small increase in risk of breast cancer with the use of estrogen, which may be slightly greater when progesterone is added.

The risk of heart attack in younger post-menopausal women is low, and estrogen may even reduce the risk of heart attack in this population. However, as a woman ages, the risk of heart disease increases and the chances that estrogen adds to this risk may increase. Some women who already have a high risk of heart disease may also not be good candidates for estrogen therapy.

Although menopause is the point in a woman’s life when she can no longer produce children, it can also be seen as a positive beginning to a new stage of life...and an opportunity to make improvements that will help prevent major health issues.

If you want to know more about menopause and its treatment, discuss your own particular condition with your doctor. For additional patient information about menopause and women’s health conditions, visit http://empoweryourhealth.org/womens-health-conditions. AACE clinical guidelines offer healthcare professionals the most current information about menopause and can be found at: https://www.aace.com/files/menopause.pdf
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 a great young adult. That’s why at Lilly, we’re proud to support the Diabetes Scholars Foundation, offering scholarships to help 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.
Caffeine: Good for you or not?
Are you reaching for your morning cup of coffee, or perhaps your second? You’re not alone. More than half of American adults drink some form of coffee each day, according to the National Coffee Association. But is it good for you...or not?

This ongoing controversy has had quite a bit of attention recently following reports in two major medical journals, the New England Journal of Medicine and Circulation.

In one report, researchers from the National Cancer Institute reported results from data that included 400,000 adults ages 50 to 71. Those who drank three or more cups of coffee per day had a lower risk of death than non-coffee drinkers. For men who drank one cup of coffee daily, risk went down 6 percent, for two or three cups about 10 percent, for four or five cups daily about 12 percent, and for six or more cups of coffee per day a 10 percent reduction.

For women, one cup daily resulted in a 5 percent decreased risk, for two to three cups 13 percent, for four to five cups 16 percent, and for six or more cups, 15 percent. Decreased risks were seen in mortality from several conditions, including heart disease, diseases related to lung function, stroke, injuries and accidents, and diabetes and infections, but not for deaths due to cancer.

In another study that included 208,000 men and women, the results showed that those who drank 1.1 to three cups of coffee per day had a 9 percent lower risk of dying than non-drinkers, while those downing 3.1 to five cups per day had a 7 percent lower risk of dying. Those who drank more than five cups per day had a 2 percent increase in their risk of dying.

Because many people who drink a lot of coffee also smoke, researchers did a further analysis, taking smoking out of the observed results. The resulting data were even more surprising. If study participants who were smokers ingested 1.1 to three cups per day, they had an 8 percent drop in mortality, and if they drank 3.1 to five cups per day, they had a 15 percent lower risk of death. Those drinking five or more cups had a 12 percent drop in mortality.

Although these associations seem wonderful for coffee lovers, they really are not hard science. All of these results were based on data from food recall diaries that the study participants were asked to complete, which aren’t always accurate. (Think about how well you remember what you had for yesterday’s lunch.) At best, these results suggest that drinking coffee is not necessarily bad for one’s health.

So what’s in coffee that was suggested as being health beneficial? Not caffeine. People who drank caffeinated or decaffeinated coffee had similar health results, which suggests there is some other component in the coffee that is potentially beneficial. Some experts have suggested that there are anti-inflammatory substances in coffee (antioxidants among them) that counteract the inflammation process believed to be associated with so many chronic diseases, diabetes among them.

Other studies have found that coffee reduces the risk of certain medical conditions, including stroke, depression, dementia and some cancers, such as colon cancer — a finding that was not supported by the above studies, as cancer occurrence was no different between coffee drinkers and non-drinkers.

If you’re reaching for another cup of Joe, consider the downsides of excess coffee consumption — feeling like you just ran up 10 flights of stairs with your heart pounding and your fingers shaking so badly that your computer keys feel like jelly. There are many reasons to be cautious with coffee intake: caffeine can raise blood pressure and also may raise blood cholesterol. Difficulty falling asleep, irritability, an upset stomach, and a fast heartbeat can also be associated with too much caffeine intake. The amount of caffeine that will result in these undesirable side effects varies from person to person and their sensitivity to caffeine’s effects, including how strong the brew is made.

**Take-home message:**
Armed with these study results, coffee drinkers can enjoy coffee in moderation and be more reassured about the impact on their health.
Blood pressure: what is too high?

It’s not difficult to find information about blood pressure in the news lately: Suggestions abound about the appropriate targeted pressure standards – 130/80... or 140/90...or maybe something else. Much of the renewed interest in ideal blood pressure targets has been generated by reports about the results from the recent SPRINT (Systolic Blood Pressure Intervention Trial) study, a clinical trial sponsored by the National Institutes of Health (NIH).

High blood pressure is a very common health problem and a disease risk factor, including coronary heart disease, stroke, heart failure, chronic kidney disease and decline in cognitive function. Previous studies have suggested a progressive increase in this risk associated with blood pressure even above 115/75 (measured as mmHg). Prior research has shown that decreasing an elevated systolic (referring to the top number) blood pressure does lower the risk of complications. However, the best systolic blood pressure to reduce blood pressure-related disease risk remains unclear. And the benefit of treating to a systolic blood pressure well below 140 mmHg has not been proven in a large, definitive clinical trial.

Among the research studies was SPRINT, a multicenter, randomized, controlled trial that compared treating systolic blood pressure. One group received care for a systolic measure of less than 140 mmHg, the current standard target for control, and the other group received more aggressive treatment, with a goal systolic pressure of less than 120 mmHg. Study participants had to be age 50 or older with an average baseline systolic blood pressure equal or greater than 130 mmHg.

Study participants also had to have evidence of having cardiovascular disease, chronic kidney disease, a 10-year Framingham cardiovascular disease risk score of equal or greater than 15 percent (a calculation that, based on a number of heart disease risk factors, would translate to a risk of a 15 percent or more chance of developing heart disease in the next 10 years) or age equal to or greater than 75 years. Outcomes tracked were myocardial infarction (heart attack), acute coronary syndrome (new onset of chest pain due to coronary disease), stroke, heart failure, or cardiovascular disease death. Other outcomes focused on included death from any cause, a decrease in kidney function or development of kidney failure, dementia, decline in cognitive function and evidence of stroke-like disease.

The study was stopped earlier than planned (at around 3 ½ years after launch) as results so strongly favored the lower systolic blood pressure. At one year, the achieved average systolic blood pressure was 121.4 mmHg in the intensive-treatment group and 136.2 mmHg in the standard-treatment group. Death from any cause was significantly lower in the intensive-treatment group, and there was a 25 percent lower relative risk of the primary tracked disease outcomes mentioned above. The intensive-treatment group had lower rates of several other important outcomes, including heart failure, death from cardiovascular causes and death from any cause.

But there was a cost to intensive blood pressure control. Fainting was more common among the intensive-treatment group than among those in the standard-treatment group. There was no difference between the two groups in falls resulting in injury. However, there was a higher rate of kidney injury and kidney failure in the intensive-treatment group. These treatment side effects need to be considered when you discuss treatment with your doctor, as well as your personal benefits versus risks. People with diabetes were excluded from SPRINT, which is being debated among experts, as previous studies focused exclusively on persons with diabetes suggested a different blood pressure target, and whether having diabetes suggests a different blood pressure target than not having diabetes.

**Take-home message:**

To recap, lower blood pressure is better, but can come with significant side effects. And if you have diabetes, the jury is still out.

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