

FEBRUARY 2016

THE LEADING MAGAZINE FOR ENDOCRINOLOGISTS

# Endocrine news

## Matters *of the* Heart

### THE VITAL LINK BETWEEN THE CARDIOVASCULAR & ENDOCRINE SYSTEMS:

- Low estrogen & cardiovascular disease risk
- The premenopausal danger of xenoestrogens
- Diabetes, high blood pressure, women & mortality
- Do calcitriol levels hold the key to new treatments?

### HOPE ON THE HORIZON

Potential new treatments for adrenal cancer

### ENDO 2016 PREVIEW:

Bringing the bionic pancreas to the presidential plenary

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FROM THE **EDITOR**

FEBRUARY 2016

# Endocrine news

THE LEADING MAGAZINE FOR ENDOCRINOLOGISTS


## An Online Celebration of 100 Years of the Endocrine Society

**I**T'S HARD TO BELIEVE THAT 100 YEARS AGO A SMALL GROUP OF clinicians and scientists got together solely based on their interest in endocrinology and a desire to solve the mysteries behind the complex system of hormones and glands and serving patients suffering from debilitating disorders. From that casual meeting in 1916 is what blossomed into the Endocrine Society.

As part of the ongoing Year of Endocrinology, throughout 2016 the Society will honor its 100 years of making history in the world of endocrinology practice and science with a website devoted to the Centennial celebration. Visit [www.ESCentennial.org](http://www.ESCentennial.org) to not only experience where the Society has been as past achievements are recognized, but see what's in store for the future of endocrinology. And in true "interactive" fashion, you can be a part of it all with your own contributions. Here's how you can get involved:

- ▶ Visit the Centennial website each month as new content is added to the historical timeline at [ESCentennial.org](http://ESCentennial.org) to test your knowledge of the history of endocrinology and reacquaint yourself with the seminal moments in Society history.
- ▶ Follow the journey with highlighted accomplishments in endocrine practice and research through a monthly feature of the most prevalent endocrine diseases and conditions that began in January with the thyroid.
- ▶ Celebrate the Centennial while also learning about the latest scientific and practice information available in the field during **ENDO 2016** in Boston.
- ▶ All members get the chance to show their pride in April as the Society launches Endocrinology Month, a new initiative to help gain recognition and support for the discipline, and raise the profile of the important work done on your behalf by the Endocrine Society members and staff.
- ▶ Take a moment each week to review resources, new initiatives, and special content, which will be shared via email, the Centennial website, special programming, Hormone Health Network, the news media, social media networks, and, of course, through *Endocrine News*.

Speaking of, February has been designated as Heart, Adrenal, and Cardiovascular Health Month, and to that end, we are featuring a cover story by Kelly Horvath called "Matters of the Heart" (p. 12), which details the many links between the endocrine system and the cardiovascular system. On page 18, Glenda Fauntleroy goes into great detail in "Adrenal Cancer: Hope on the Horizon," as patients of this rare cancer are becoming their own advocates while researchers are making headway in potential new treatments.

We hope you're enjoying the Year of Endocrinology. Be sure to check out exclusive content on [www.endocrinenews.org](http://www.endocrinenews.org) as well as the Centennial site. 

— **Mark A. Newman**, Editor, *Endocrine News*

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*Endocrine News* informs and engages the global endocrine community by delivering timely, accurate, and trusted content covering the practice, research, and profession of endocrinology.

The mission of the Endocrine Society is to advance excellence in endocrinology and promote its essential and integrative role in scientific discovery, medical practice, and human health.

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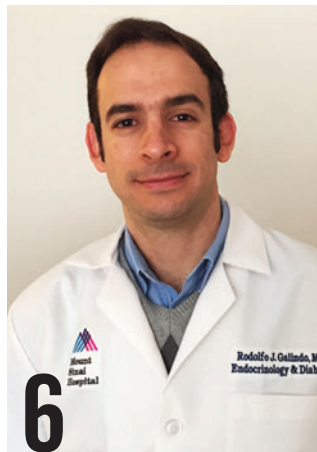
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## Take an Online Journey Through the History of the Society...and Endocrinology

**T**HE CELEBRATION OF THE SOCIETY'S CENTENNIAL Year has started! The Centennial website — [www.escentennial.org](http://www.escentennial.org) — launched last month and initial reactions have been very favorable. At the beginning of each month, we will launch an addition to the Endocrinology Calendar. In January, we recognized scientific and medical contributions in the area of thyroid disease and thyroid cancer. New videos were produced that provided reflections on the history of thyroid disease by both established and early-career physicians and scientists. You can find links to relevant new articles published in *The Journal of Clinical Endocrinology & Metabolism (JCEM)* as well as resources for patients facing diagnosis of a thyroid disorder. Additionally, there are predictions from thyroid experts on where the field is going. In collaboration with the American Thyroid Association, there was a live “Twitter Chat.” And this is just the first month!

Cardiovascular, adrenal, and lipid health is the focus for February. This celebrates the endocrine connections to the American Heart Month, a national campaign of the Centers for Disease Control and Prevention. New content is available on the Centennial website, and different features are provided for scientists, physicians, and the public.


The interactive “History of Endocrinology” timeline provides a wealth of information, starting with the Society’s founding in 1916. The timeline recognizes milestones in the history of the field and the Society. Organized by decade, there are summaries reflecting specific moments in time as well as individual entries, many of which link to engaging videos.

The Centennial Task Force, led by M. Susan Smith, PhD, and Mitch Lazar, MD, has brought to life the discoveries that are the basis for endocrine science and practice today.

Another popular area is the Society Hall of Presidents. All of the Society’s Presidents are represented with pictures and brief bios. Did you know that from 1916 to 1985, the president of the Society opened the annual meeting with a Presidential Address? All but a handful were published in *Endocrinology* or *JCEM* and, if available, are linked to the

bio. The reflections provide insights into both the person and the state of the science during the individual’s presidency. And, if you’re wondering, the Presidential Address was stopped to allow for a Presidential Lecture at the annual meeting with an invited speaker. This practice continues today with the Presidential Plenary lectures.

The celebration of the Society’s anniversary has only just begun. If you haven’t already done so, please visit the Centennial website, and come back throughout the year as new information will be added each month. You can also share your thoughts and suggestions as a feedback form that is now available on the site.

I hope you enjoy the special website and participate in our Centennial Celebration at **ENDO 2016**, April 1 – 4 in Boston. 

**Lisa H. Fish, MD**  
President, Endocrine Society

“  
The interactive ‘History of Endocrinology’ timeline on the Centennial website provides a wealth of information, starting with the Society’s founding in 1916.  
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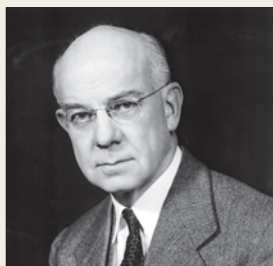
**We should be really worried about the funding of basic science and academic research.** We should all be calling our congresswomen and men to try and get more funding. It's been terrible what we've seen in the last couple of years in terms of some of the decisions that have been made about cutting funding. But having said that, the basic research that is done in academia is really the foundation of how then, ultimately, the industry can leverage that work to try to make it into drugs for patients.”

— CAROL GALLAGHER, PHARMD, biopharmaceutical expert, on the importance of research dollars for rare disorders such as adrenal cancer (*Adrenal Cancer: Hope on the Horizon*, p. 18)

FROM THE CENTURY OF  
ENDOCRINOLOGY TIMELINE

# 1914:

Edward C. Kendall  
Isolated Thyroxine  
in Crystalline Form



While working at the Mayo Clinic, biochemist Edward C. Kendall isolated thyroxine in crystalline form on Christmas Day, 1914. Kendall spent many years trying to synthesize thyroxine without success. In 1926, Charles R. Harington successfully synthesized thyroxine. Kendall's research interest later focused on the adrenal cortex and corticoids as a treatment for a number of inflammatory diseases. In 1950, Kendall was awarded the Nobel Prize for Physiology or Medicine along with Mayo Clinic physician Philip S. Hench and Swiss chemist Tadeus Reichstein, for their work with the hormones of the adrenal gland.

For more about the  
Century of Endocrinology, go to:  
[www.ESCentennial.org/timeline](http://www.ESCentennial.org/timeline).



According to the American Diabetes Association's "Standards of Medical Care in Diabetes," **the term "diabetic" will no longer be used when referring to individuals with diabetes.** This follows the ADA's position that "diabetes does not define people."

— SOURCE: DIABETES CARE, JANUARY 2016



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# 41%

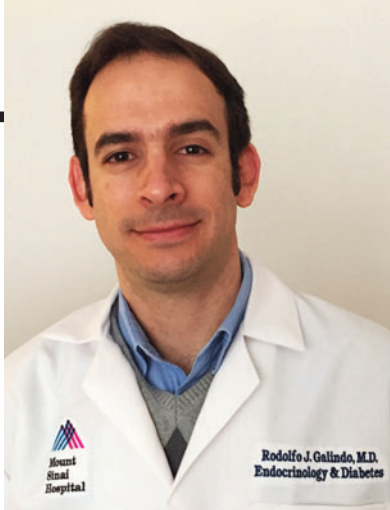
Number of endocrinologists who reported being "burned out," according to the latest *Medscape Lifestyle Report*. Burnout in these surveys is defined as loss of enthusiasm for work, feelings of cynicism, and a low sense of personal accomplishment.

— SOURCE: MEDSCAPE LIFESTYLE REPORT 2016

# 26%

Greater risk to people who consume one to two cans or more of sugary drinks have of developing type 2 diabetes, compared to people who do not consume such drinks.

— SOURCE: HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH



## WHY ENDOCRINOLOGY?

# The Classic Art of the Medical Science

**BY RODOLFO J. GALINDO, MD**, Assistant Professor of Medicine, Icahn School of Medicine at Mount Sinai, Division of Endocrinology, Diabetes, and Bone Diseases, Mount Sinai St. Luke Hospital, New York, N.Y.

**D**eciding to become a doctor in the middle of high school was not a complicated decision. However, I did not know if I was going to be an endocrinologist, or a surgeon, or a radiologist. That process required a few more steps. I soon entered the historic and renowned Higher Institute of Medical Sciences of Havana at the University of Havana. Under the dedicated hands of the professors of physiology and biochemistry, I discovered the fascinating hormonal system, with all of its intricate interactions and stepped actions. This was too abstract, just words in books and experiments, but still fascinating. Ultimately, I wanted to be a doctor in contact with patients and to help those suffering from maladies.

The next step was the internal medicine clerkship. I was exposed and trained under “Master Clinicians,” still practicing “the classic art of the medical science.” As a student, you need to really listen to your patient’s history, perform a thorough physical exam, and be able to present a differential diagnosis with just that: your hands, ears, and ideas. Laboratory and imaging studies will only confirm your initial diagnosis. I was never trained to memorize medicine; rather I was trained to apply an analytical approach to understand, diagnose, and treat diseases. Endocrine disorders allowed me to use that analytical approach of understanding the pathophysiology and molecular defects to diagnose and treat any patient. Thus, I started to gravitate

toward internal medicine. The future was too uncertain at this time to make a decision about sub-specialization, but I found that endocrinology was fascinating. I was committed to internal medicine, and my pathway was to be a clinician. I decided that I would spend my career in clinical medicine, teaching medicine to other trainees and caring for my patients.

“  
**I was committed to endocrinology and academic medicine; I needed to give back and teach with such passion and dedication as I had received from my professors.**  
”

The next step was the internship and residency, that beautiful time of learning medicine at high speed and volume. I was very fortunate again and matched into the Internal Medicine program at the Albert Einstein College of Medicine-Jacobi Medical Center (formerly the Bronx Municipal Hospital). The program also had a tradition of Master Clinicians. I felt back home in Havana again, learning from Drs. Milford Fulop, Leslie Bernstein, and Stephan Kamholz who were practicing and teaching the “classic art of the medical science” and applying the most advanced diagnostic tests, some of them developed or validated at Albert Einstein years before. The diabetes epidemic could not pass unperceived while working with an underserved population in the Bronx. I became very interested in inpatient diabetes and diabetes in minorities.

There was an internationally known physician at Emory University in Atlanta, Dr. Guillermo Umpierrez, who was working on every single question I had with regards to inpatient diabetes. However, Atlanta was far away from




New York City where my family was, and as Dr. Umpierrez later told me, “family always come first.” I was exposed to a variety of interesting cases with calcium disorders, severe insulin resistance, or adrenal syndromes under the teaching eyes of Drs. Norman Fleischer, Ulrich Schubart, and Joel Zonszein from Einstein’s Endocrinology Division at the Albert Einstein College of Medicine. I was intellectually fulfilled since I was able to use my analytical approach to understanding diseases and applying therapeutic decisions. I was committed to endocrinology and academic medicine; I needed to give back and teach with such passion and dedication as I had received from my professors.

The fellowship matching process was the next move and I started fellowship training in a rigorous training program at North Shore University Hospital and Long Island Jewish Medical Center under the leadership of Drs. Tracy Breen and Yael Harris. Our inpatient diabetes rotations were superb under the careful watch of Drs. Alyson Myers and Rifka Schulman.

We were managing complicated cases of type 1 diabetes with high insulin sensitivity and frequent hypoglycemia on insulin pumps and continuous glucose monitoring systems but also cases of severe insulin resistance using U-500 insulin, also sometimes via insulin pumps. Having the opportunity to see patients with congenital adrenal hyperplasia during my pediatric electives and under the teaching eye of Dr. Phyllis Speiser was terrific. I was finally able to match the different phenotypes of these cases with their specific step in the “complicated” steroid synthesis pathway. The pituitary center also required our collaboration constantly, and Cushing’s disease and acromegaly stopped being a rare disease in my eyes. Despite being fascinating, managing

these patients was very challenging, particularly the famous Cushing’s case that frequently recurred or manifested in a very subtle way.

The Metabolic Bone Program under Dr. Stuart Weinerman’s supervision almost converted me to a “bone head.” It’s impossible not to be interested with the fascinating cases of McCune Albright syndrome or rickets. The densitometry unit was always finding different abnormalities or new presentations in these patients. Nevertheless, I was committed to diabetes and clinical research. I was honored with the FLARE award, sponsored by the Endocrine Society, which allowed me to start a mentor relationship with Dr. Umpierrez. This time, we decided to work on my niche, post-transplantation diabetes, and collaborate in future studies of inpatient diabetes.

In conclusion, I would not have been an endocrinologist without the exemplary influence of my professors during my career. This column will serve to acknowledge their dedication to medical education and honor their example to younger generations. The next step is an endless work-in-progress: “teaching the classic art of medicine” to students and residents and watching them excel in their future endeavors. 

*P.S. After finishing this column, I learned that Milford Fulop, Distinguished University Professor Emeritus of the Department of Medicine and Einstein’s longest full-time faculty member, had died. The Einstein and Jacobi community will always miss him and honor his legacy of academic medicine.*

To celebrate 100 years of the Endocrine Society, throughout 2016 *Endocrine News* is running a “Why Endocrinology?” column in each issue. If you’d like to share your story with our readers, contact Mark A. Newman at [mnewman@endocrine.org](mailto:mnewman@endocrine.org).

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## Breastfeeding May Protect Women and Their Children from T2D



**B**reastfeeding may protect women and their children from developing type 2 diabetes (T2D), according to evidence presented at the World Diabetes Congress in Vancouver, Canada, this past December.

The prevalence of diabetes has increased rapidly in Canada, especially among people of First Nation (FN) descent. Previous studies have indicated that exclusive or partial breastfeeding may reduce the risk of T2D in mothers or offspring. The impact of breastfeeding initiation on the development of subsequent diabetes among mothers and offspring has not been determined in a large-scale database study.

So researchers led by Garry Shen, MD, PhD, of the University of Manitoba, investigated the impact of breastfeeding initiation on subsequent diabetes among FN and non-FN mothers and their offspring in Manitoba between 1987 and 2011. The team studied 334,553 deliveries during the 24-year period in Manitoba province (60,088 FN births and 274,465 non-FN births). The main exposure, breastfeeding initiation at discharge, was obtained from hospital abstracts. Computer modelling was used to explore the association between breastfeeding initiation and the risk of subsequent incident diabetes in mothers (n=180,107) and their offspring (n=250,392). Diabetes was determined from hospital International Classification of Disease (ICD) codes.

Breastfeeding initiation was recorded in 56% of FN mothers and 83% of non-FN mothers. Breastfeeding initiation was associated with a 14% reduced risk of diabetes among FN mothers and a 23% reduced risk among non-FN mothers.

A protective effect of breastfeeding initiation was also observed for T2D among offspring of the above mothers during up to 24 years of follow-up, reducing the risk of diabetes by 18%. Different from mothers, FN status did not significantly affect association between breastfeeding and incident diabetes, so the analyses across FN and non-FN offspring were pooled together. This 18% risk reduction represents the reduction in risk to all children of both ethnicities. The protective effects of breastfeeding initiation among mothers and offspring were independent of FN status, gestational diabetes, gestational hypertension, family income, location of residence, age of mothers at birth, parity, and the birthweight of offspring.

BY DEREK BAGLEY



**Findings:** The authors say “Breastfeeding initiation was associated with a reduced risk of subsequently developing diabetes among women and their offspring. Breastfeeding initiation should be promoted in general population, especially for FN mothers who have lower rates of breastfeeding initiation.”

“ Some early evidence suggests that metabolic risk states may have an influence on brain structure.”

## White Matter Microstructure and Cognitive Function in Young Women with PCOS

**Y**oung women with polycystic ovary syndrome (PCOS) may have altered white matter microstructure, which impairs cognitive performance, according to a study recently published in the *Journal of Clinical Endocrinology & Metabolism*.

Researchers led by Michael O’Sullivan, PhD, of the Maurice Wohl Clinical Neuroscience Institute in London, UK, and Aled Rees, PhD, of Cardiff University’s Neuroscience and Mental Health Research Institute, point out that PCOS leads to an increased risk of type 2 diabetes (T2D), as well as hyperandrogenism, and that insulin and androgens affect brain function. “Some early evidence suggests that metabolic risk states may have an influence on brain structure,” the authors write.

The investigators set out to determine whether young women with PCOS display altered white matter microstructure and cognitive function, so they analyzed 36 women (18 with PCOS and 18 controls) matched for age, IQ, and BMI. The participants underwent tests to evaluate their metabolic and anthropometric states, as well as a diffusion MRI to look at their white brain matter and a cognitive performance assessment. “Cognitive scores and white matter diffusion metrics were compared between groups,” the authors write. “White matter microstructure was evaluated across the whole white matter skeleton using tract-based spatial statistics. Associations with metabolic indices were also evaluated.”

The researchers found that PCOS was associated with a measure of water diffusion along the main axis white matter pathways in the brains of those with PCOS, and localized alterations in the proportion of grey matter (as opposed to cerebrospinal fluid). Cognitive performance was reduced among the women with PCOS when compared with controls. The women with PCOS showed deficits across a variety of cognitive tests, despite these women having similar education and premorbid intelligence as their control counterparts. “In PCOS,” the authors write, “there was a reversal of the relationship seen in controls between brain microstructure and both androgens and insulin resistance.”

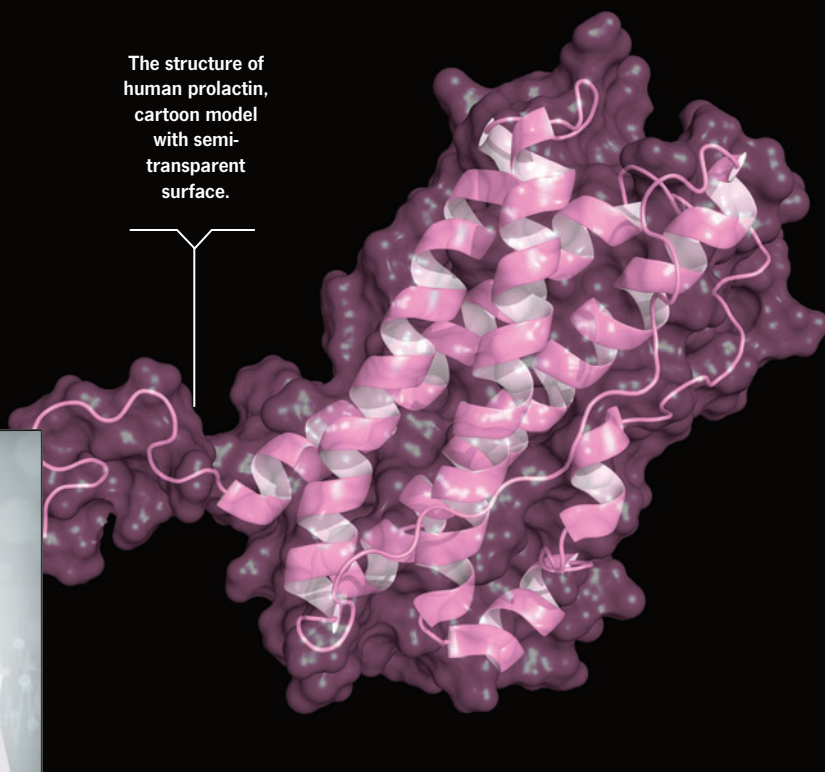


**Findings:** O’Sullivan and his team conclude, “White matter microstructure is altered, and cognitive performance is compromised, in young adults with PCOS. These alterations in brain structure and function are independent of age, education, and BMI.” However, they go on to write, if these changes could be reversed, that could lead to a potential target for treatment. “Based on the current results,” they write, “both insulin resistance and hyperandrogenism are potential targets, and advanced MRI has a potential role as a biomarker of treatment effect.”

## Prolactin May Be Effective Treatment for T1D



The structure of human prolactin, cartoon model with semi-transparent surface.



**T**he growth factor prolactin, when combined with an immunotherapy, could be an effective treatment for type 1 diabetes (T1D), according to a study recently published in *Endocrinology*.

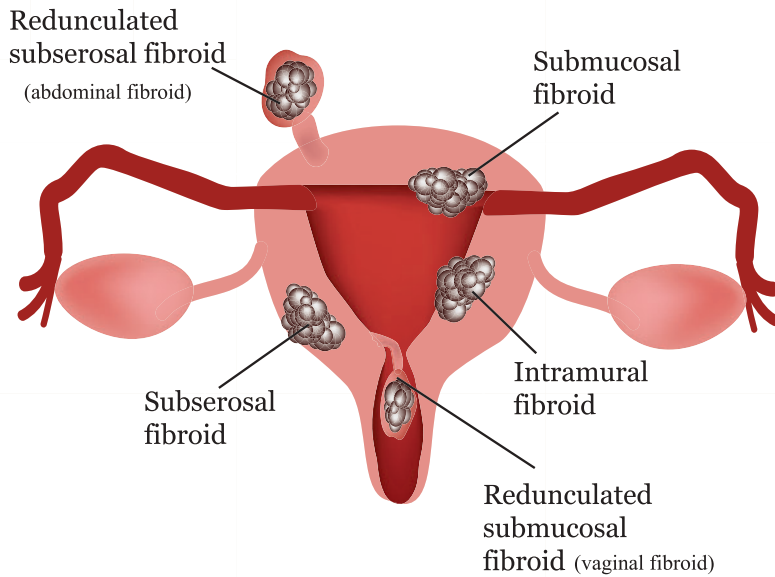
Researchers led by Carol Huang, MD, PhD, of the University of Calgary in Alberta, Canada, write that immunotherapy can restore self-tolerance thereby halting continued immune-mediated  $\beta$ -cell loss, but that residual  $\beta$ -cell mass and function is often insufficient for normoglycemia. They hypothesized that combining a growth factor with immunotherapy can clear this hurdle, particularly prolactin (PRL), since previous studies have shown that PRL “can stimulate  $\beta$ -cell proliferation and up-regulate insulin synthesis and secretion while reducing lymphocytic infiltration of islets, suggesting that it may restore normoglycemia through complementary mechanisms.”

The team treated diabetic, non-obese (NOD) mice with a five-day course anticluster of differentiation 3 monoclonal antibody (aCD3), an immune modulator. They added a three-week course treatment of PRL to the treatment of some mice and found that the mice treated with this combination achieved diabetes reversal in higher proportion compared to the mice treated with aCD3 alone. “The aCD3 and PRL combined group had a higher  $\beta$ -cell proliferation rate, an increased  $\beta$ -cell fraction, larger islets, higher pancreatic insulin content, and greater glucose-stimulated insulin release,” the authors write.

**Findings:** The researchers conclude that while they did not see a significant difference in the number or proliferative capacity of T cells, they did see a higher proportion of insulinitis-free islets in the aCD3 and PRL group. “These results suggest that combining a growth factor with an immunotherapy may be an effective treatment paradigm for autoimmune diabetes,” they write.

# Types of uterine fibroids

TRENDS & INSIGHTS



## Elevated Testosterone Levels May Raise Risk of Uterine Fibroids

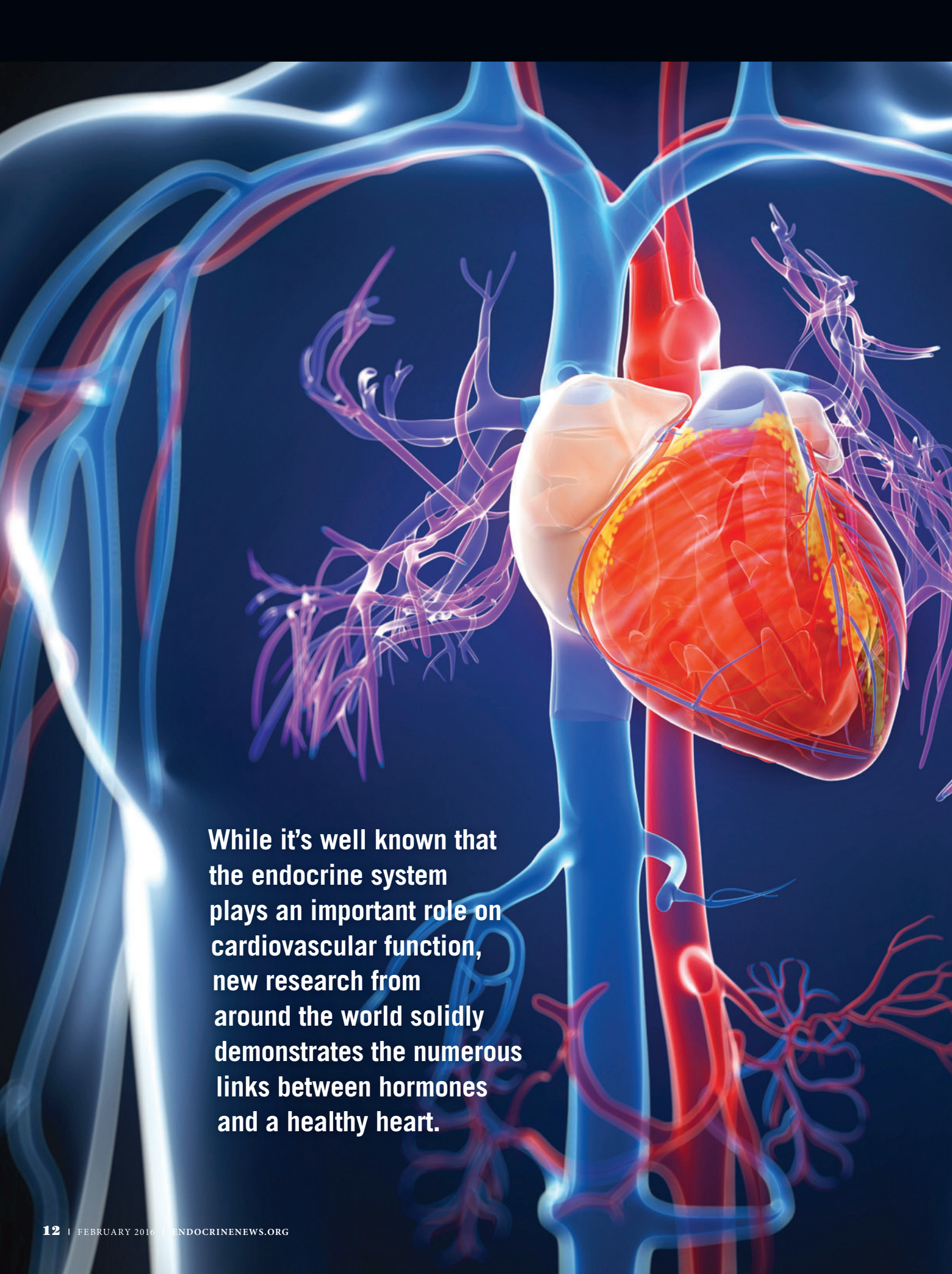
**W**omen who have high levels of both testosterone and estrogen in midlife may face a greater risk of developing benign tumors on the uterus called uterine fibroids than women with low levels of the hormones, according to a new study published in the *Journal of Clinical Endocrinology & Metabolism*.

Three out of four women develop uterine fibroids by age 50, says one of the study's authors, Jason Y.Y. Wong, Sc.D, of Stanford University School of Medicine. "Our research suggests women undergoing the menopausal transition who have higher testosterone levels have an increased risk of developing fibroids, particularly if they also have higher estrogen levels," Wong says. "This study is the first longitudinal investigation of the relationship between androgen and estrogen levels and the development of uterine fibroids."

The 13-year longitudinal study examined hormone levels and the incidence of uterine fibroids in women participating in the Study of Women's Health around the Nation (SWAN). Among the 3,240 women enrolled at the beginning of the study, 43.6% completed the follow-up visits. During nearly annual visits, participants had their blood tested for estrogen and androgen levels. In addition, the women were asked whether they had been diagnosed with or treated for uterine fibroids.

Among the participants, 512 women reported having a single incidence of fibroids, and an additional 478 women had recurrent cases. Participants who had high levels of testosterone in the blood were 1.33 times more likely to develop a single incidence of fibroids than women who had low levels of testosterone. Women who had high levels of testosterone and estrogen faced an even greater risk. Although women with high levels of both hormones were more likely to report a single incidence of fibroids, they also were less likely to have a recurrence than women with low levels of the hormones.

**Findings:** "Our findings are particularly interesting because testosterone was previously unrecognized as a factor in the development of uterine fibroids," says another study author, Jennifer S. Lee, MD, PhD, of Stanford University School of Medicine and Veterans Affairs Palo Alto Health Care System in Palo Alto, Calif. "The research opens up new lines of inquiry regarding how fibroids develop and how they are treated. Given that managing uterine fibroids costs an estimated \$34.4 billion in annual medical expenditures nationwide, it is important to identify new ways to better treat this common condition." <sup>EN</sup>



**While it's well known that the endocrine system plays an important role on cardiovascular function, new research from around the world solidly demonstrates the numerous links between hormones and a healthy heart.**



BY KELLY HORVATH

# Matters OF THE Heart

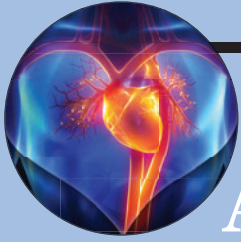
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**T**he old saying “the way to someone’s heart is through the stomach” might be more true than we knew, but not in the sense that good cooking can secure a mate.

As February marks American Heart Month, four recent studies shed new light on just how the endocrine system affects cardiovascular health. Although some studies have greater implications for one sex or the other, one clear theme emerged among three of the four: Diabetes and the factors that predispose individuals to developing diabetes should be targeted to prevent cardiovascular disease development among at-risk patients. The fourth study may offer clues for how to tailor cardiovascular disease treatment once prevention is no longer an option.

## AGE-RELATED HORMONE CHANGES AFFECT METABOLIC RISK

In “Men’s Heart Disease Risk Linked to High Testosterone and Low Estrogen,” presented at **ENDO 2015**, lead investigator Elaine Yu, MD, MSc, assistant professor at Harvard Medical School in Boston, and her colleagues investigated why men have more heart disease than premenopausal women in a study of 400 healthy men ages 20 to 50 years.



## AT A GLANCE

- ▶ **Worsening insulin resistance and increased fat in muscle due to low estrogen levels could explain the male prevalence of cardiovascular disease; however, higher LDL cholesterol and blood pressure are not regulated by sex hormones.**
- ▶ **Xenoestrogens in the abdominal fat of premenopausal women are associated with disrupted glucose homeostasis and inflammation, thereby possibly contributing to metabolic complications, which, in turn, can increase cardiovascular disease risk.**
- ▶ **Among the cluster of metabolic syndrome symptoms, diabetes and high blood pressure most significantly elevate risk of death from cardiovascular disease for patients with metabolic syndrome, particularly among women.**
- ▶ **Decreased calcitriol levels and decreased ratio of calcitriol to PTH 1-84 may help predict risk of cardiovascular death in patients with chronic heart failure and could therefore point to potential therapies.**

Using a physiological model of selective induced hypogonadism that blocked the natural conversion of some amounts of testosterone to estrogen with the drug anastrozole, researchers sought to “investigate the relative contributions of gonadal steroids on cardiometabolic risk factors,” Yu says.

They found that the resulting higher levels of testosterone reduced levels of high-density lipoprotein (HDL) “good” cholesterol, whereas the correspondingly lower levels of estrogen resulted in higher fasting blood glucose levels, worsening insulin resistance, and accumulation of body fat, which are markers for diabetes — a significant risk factor for heart disease. “On the other hand,” Yu adds, “low testosterone levels led to significant increases in HDL cholesterol and leptin, irrespective of estrogen levels.”

Neither sex hormone was shown to regulate low-density lipoprotein (LDL) “bad” cholesterol levels or blood pressure, which are two of the most important predictors of cardiovascular risk.

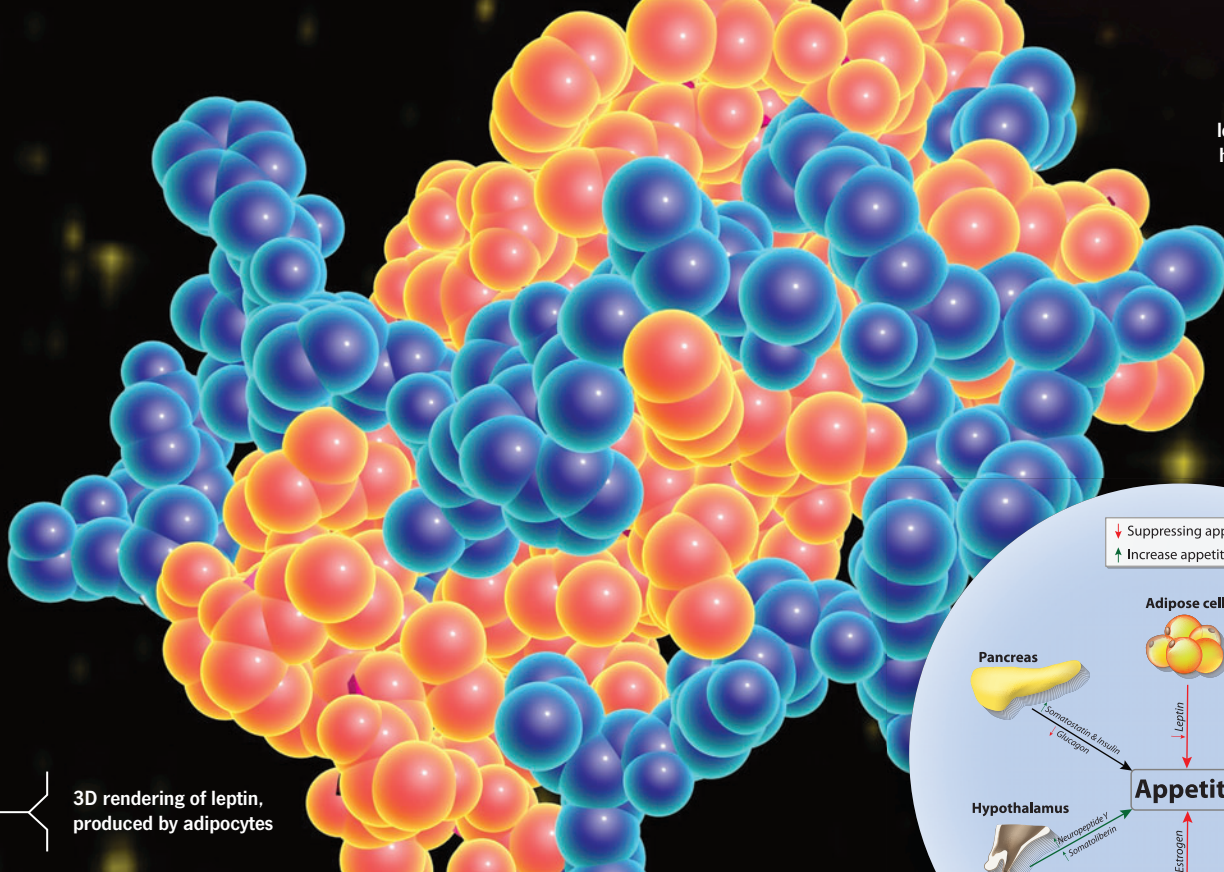
“These findings suggest that age-related declines in estrogen and testosterone may directly impact metabolic risk in men, although the implications for overall cardiovascular risk are uncertain,” Yu says. “Even though leptin is made by adipocytes, its circulating level is regulated by androgens in men.”

## XENOESTROGENS MAY REVERSE EFFECTS OF ENDOGENOUS ESTROGEN

In “Inflammatory and Cardiometabolic Risk on Obesity: Role of Environmental Xenoestrogens,” published in *The Journal of Clinical Endocrinology & Metabolism*, Diana Teixeira, BSc, in the Department of Biochemistry at the University of Porto in Portugal, and colleagues proposed that xenoestrogen (environmental pollutants with hormone-like activity present in the environment and in plastics) levels should be considered as biomarkers for cardiometabolic risk, having demonstrated a positive correlation between xenoestrogen levels in abdominal fat and the presence of metabolic syndrome (cluster of at least three of the following symptoms: abdominal obesity, high triglyceride levels, low HDL cholesterol levels, high blood pressure, and high fasting blood sugar) in obese women in previous studies. “The positive association is especially evident in the phase of a woman’s life cycle when estrogen signaling is most evident, before the menopause, proposing that these compounds act through interference with the signaling of endogenous estrogens, decreasing estrogens’ cardiometabolic protective effects,” Teixeira says.

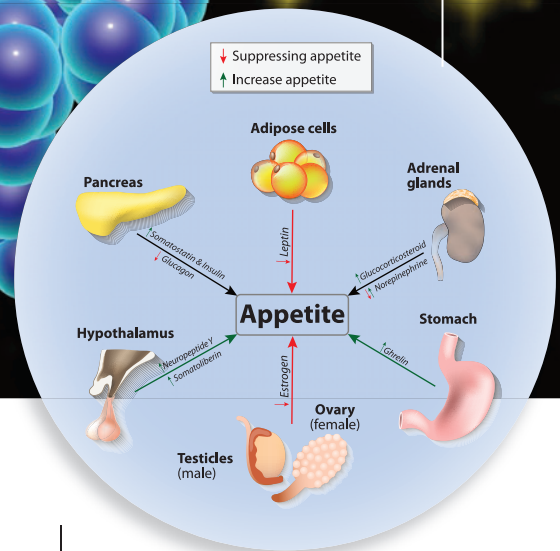
Additionally, other studies have proposed that xenoestrogens in fat can be involved in inflammatory activation/perpetuation, a critical condition





3D rendering of leptin, produced by adipocytes

Interference with leptin and estrogen by hypogonadism in men and xenoestrogens in women leads to a decrease of their cardiometabolic protective effects as shown in the accumulation of abdominal fat and worsening insulin resistance.



for metabolically unhealthy fat, explains Teixeira. “On the other hand, the accumulation of xenoestrogens in abdominal fat is correlated with the increase in the number of monocytes in circulation, a possible intermediate step to their migration to the fat. This reinforces the hypothesis that xenoestrogen exposure, through its effect on the immune system, may contribute to the high rate of metabolic disorders,” she says. Somewhat surprisingly, researchers also found that obese women with higher xenoestrogen levels had more difficulty losing weight such as through bariatric surgery.

To reduce their personal load of these ubiquitous compounds, Teixeira recommends counseling patients about simple lifestyle changes: Manage weight; avoid plastics in the handling/storage of foods; change diet to include avoiding high-fat animal foods (insofar as xenoestrogens accumulate along the food chain mostly in the fat tissues of animals) opting for organic foods, avoiding processed and refined foods; and use safe household cleansers and health and beauty products.

## METABOLIC SYNDROME: ASSOCIATED RISK

In “Increased Cardiovascular Mortality in Subjects with Metabolic Syndrome Is Largely Attributable to Diabetes and Hypertension in 159,971 Korean Adults,” published in *The Journal of Clinical Endocrinology & Metabolism*, researchers led by Kichul Sung, MD, PhD, Department of Cardiology, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine in Seoul, Korea,

“...Age-related declines in estrogen and testosterone may directly impact metabolic risk in men, although the implications for overall cardiovascular risk are uncertain. Even though leptin is made by adipocytes, its circulating level is regulated by androgens in men.”

— ELAINE YU, MD, MSC, ASSISTANT PROFESSOR, HARVARD MEDICAL SCHOOL, BOSTON, MASS.



“...The accumulation of xenoestrogens in abdominal fat is correlated with the increase in the number of monocytes in circulation, a possible intermediate step to their migration to the fat. **This reinforces the hypothesis that xenoestrogen exposure, through its effect on the immune system, may contribute to the high rate of metabolic disorders.**”

— DIANA TEIXEIRA, BSC, DEPARTMENT OF BIOCHEMISTRY, UNIVERSITY OF PORTO, PORTO, PORTUGAL

investigated the link between cardiovascular mortality and the presence of metabolic syndrome. Among the 159,971 subjects who participated in a health screening program between 2002 and 2009, 12.6% had metabolic syndrome at the time of the initial screening. The researchers found that those with metabolic syndrome had a 1.6-fold increase in cardiovascular mortality compared to those who did not have the condition. Significantly, this difference disappeared when people with diabetes or high blood pressure were excluded from the analysis, Sung explains. Also significant is that women with metabolic syndrome faced a greater risk of death from any cause than did men.

“The analysis tells us that diabetes and high blood pressure are significant factors that elevate the risk of death from cardiovascular disease among people with metabolic syndrome,” Sung says.

## CALCITRIOL/PTH RATIO: A POTENTIAL THERAPEUTIC TOOL

Also presented at **ENDO 2015**, “In Chronic Heart Failure, Monitoring Calcitriol and Its Ratio to Parathyroid Hormone May Help Prevent Death,” explored the role that 1,25(OH)<sub>2</sub>D, the biologically active metabolite of vitamin D, and parathyroid hormone (PTH) play in cardiac remodeling and worsening of heart failure in a single-center prospective cohort of 170 male and female patients with chronic heart failure from either ischemia (119) or dilated cardiomyopathy (51).

Researchers including lead study author Damien Gruson, PhD, professor and associated laboratory director in the Department of Laboratory Medicine at Cliniques Universitaires Saint Luc in Brussels, Belgium, found that serum levels of 1,25(OH)<sub>2</sub>D decreased markedly with increased heart failure severity and that the 1,25(OH)<sub>2</sub>D to PTH(1-84) ratio was strongly predictive of outcomes. “This ratio can therefore be relevant for the prognosis of heart failure patients but with also the potential additional advantage of providing determinants for therapy guidance and patient monitoring,” Gruson says.

Thus, using this tool to stratify risk of death from cardiovascular disease, the next step to investigate is whether aggressive supplementation with calcitriol and/or PTH blockade can help certain patients.

While obesity and diabetes have long been factors in cardiovascular health, more studies are demonstrating that hormone levels may play a more important role in heart health than previously realized. As these researchers from around the world have shown, great strides have been made to better understand the cardiovascular/endocrine relationship, but no doubt further research will continue to enhance our knowledge of this complicated bond. **EN**

HORVATH IS A FREELANCE WRITER BASED IN BALTIMORE, MD. SHE WROTE ABOUT EDCS EFFECTS ON PREGNANT WOMEN IN THE OCTOBER 2015 ISSUE.

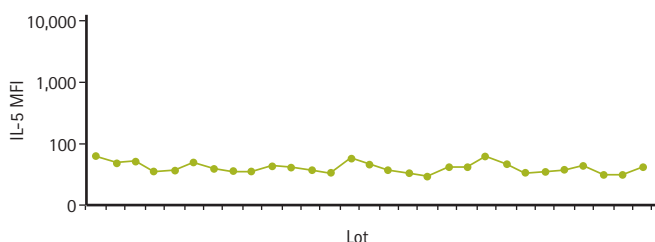
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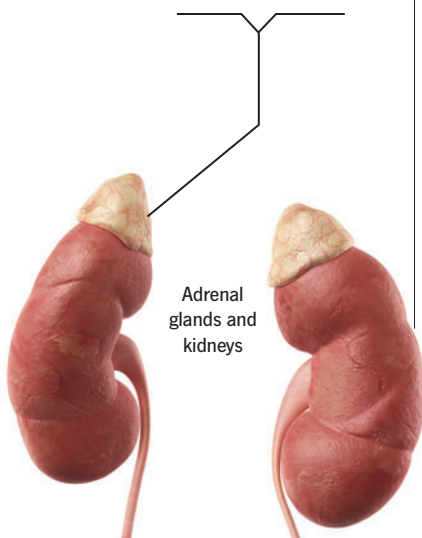
**ADRENAL**  
*cancer:*

*Hope on the*  
**HORIZON**

BY GLENDA FAUNTLEROY

With an estimated worldwide occurrence of only 200 patients each year, adrenal cancer is so rare that most endocrinologists will never have to deal with it. While this paucity of cases makes drug trials difficult, potential new treatments are generating hope.

Of all the cancers that strike the body's endocrine system, **adrenal cortical carcinoma (ACC) is one of the rarest and toughest challenges.**



**I**n fact, the actual number of diagnosed cases of ACC in the U.S. is unknown, according to the American Cancer Society, which places the estimated number of newly diagnosed patients each year as low as 200. Other estimates, however, suggest a higher incidence of one to two per million per year.

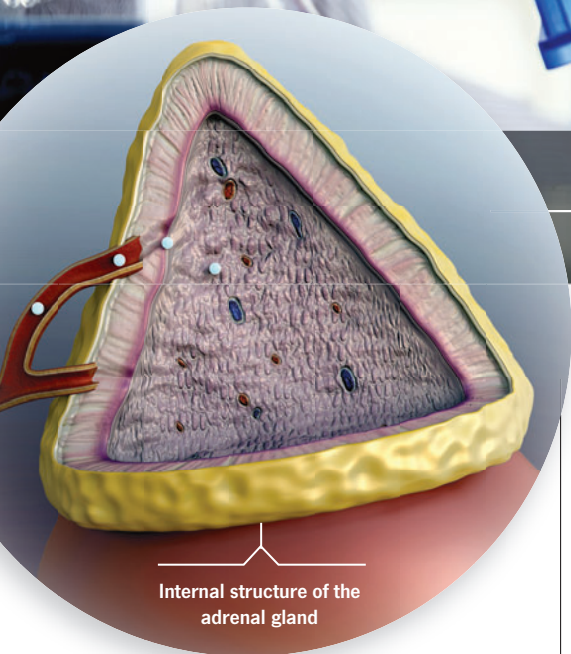
Detecting adrenal carcinomas early is difficult, and they are often quite large when diagnosed. For adult patients with ACC, it is a very aggressive malignancy with an often poor prognosis. Approximately 40% to 50% of newly diagnosed patients present with stage IV with metastases. The five-year survival rate for patients at this stage is about 10%.

But there is hope on the horizon for new therapies for ACC. Last October, the University of Michigan, Ann Arbor, hosted the 5th International Adrenal Cancer Symposium, and leaders were left encouraged.

“What we learned from the symposium is there’s always hope,” says Gary D. Hammer, MD, PhD, director of the Endocrine Oncology Program at the University of Michigan. “New treatments will evolve, and I’m certain of that.”

The 2015 symposium followed previous global conferences held in Paris and Wuerzburg, Germany, and the University of Michigan hosted the initial symposium in 2003. The symposium welcomed specialists from multiple medical disciplines who are involved in the care of adrenal cancer patients, including endocrinologists, surgeons, radiation and medical oncologists, and radiologists.

“The purpose of all those symposiums was really to share knowledge, develop collaborations, and push the science into new collaborative research,” Hammer says.



Internal structure of the adrenal gland

The adrenal cancer community has learned from a few large genomic studies that there are only a handful of mutations, which are clearly important for either the formation of adrenal cancer or its progression. It's those genes that may be the targets of new therapy.

## The Standard of Care

For newly diagnosed patients, the standard of care for the disease, like most cancers, includes surgery, radiation, and chemotherapy. Treatments vary, but patients are most often given the chemotherapy drug mitotane, the only drug approved by the Food and Drug Administration for treating the disease. Mitotane blocks hormone production by the adrenal gland and also destroys both adrenal cancer cells and healthy adrenal tissue.

Neoadjuvant or preoperative chemotherapy also plays a role in ACC treatment. Jeffrey E. Lee, MD, professor and chair of the Department of Surgical Oncology at MD Anderson Cancer Center, discussed the use of neoadjuvant therapy during the October symposium and shared his work with *Endocrine News*.

“Although treatments have varied, most patients have received combinations of mitotane together with etoposide, doxorubicin, and cisplatin chemotherapy,” Lee explains. “The rationale for this combination is supported by the results of the FIRM-ACT trial, which established this regimen as a standard of care for patients with advanced adrenocortical carcinoma.” The results of FIRM-ACT (The First International Randomized Trial in Locally Advanced and Metastatic Adrenocortical Carcinoma Treatment) were published in a June 2012 issue of *The New England Journal of Medicine*.

“ We should all be calling our congresswomen and men to try and get **more [basic science and academic research] funding.**”

— CAROL GALLAGHER, PHARM.D.,  
BIOPHARMACEUTICAL EXPERT/PARTNER,  
NEW ENTERPRISE ASSOCIATES

Lee says selected patients with ACC have been treated with this regimen at his institution since 1995.

“Since the neoadjuvant approach has not yet been tested in a randomized, prospective trial, it is not possible to be certain that outcomes of surgery are improved,” he says. “However, we do see significant tumor reductions at least as frequently as observed in the FIRM-ACT trial. Also, dramatic tumor responses in the vena cava appear to be particularly common, and this can make surgery both more straightforward and more successful.”

Lee adds that the immediate measures of surgical success, for example, the rates of complete resection, are very high. Also, for patients receiving this neoadjuvant therapy, rates of being disease-free for the long term and their overall survival appear to be at least as good as patients with earlier-stage ACC treated in the standard way of surgery first.

“Currently, we are only treating patients with borderline resectable ACC in this way,” Lee explains. “This is because the approach cannot yet be considered standard, and our experience with it is still relatively limited.”

“While ultimately a neoadjuvant or preoperative approach like this could also be of benefit to ACC patients with resectable, early-stage disease, we believe the best next step is to apply the treatment to a larger group of borderline resectable patients in a multi-institutional phase II trial to evaluate response rates, surgical success, and patient outcomes.”

## Collaborating for Better Outcomes

Finding large groups of patients for such multi-institutional trials is another goal of the collaborations that took place at the symposium. Collaboration helps to understand the biology of the disease, to understand the genetics of the disease, and to cooperate with each other and perhaps even with pharmacologic companies to engage in substantive clinical trials, according to Hammer.

“Clinical trials are partly limited by the patient population that you can get engaged in a trial,” he explains. “And for a rare disease where most doctors in the United States have never seen a case, or if they do, have only seen one case in their career, it becomes essential to collaborate for the science and delivery of care.”

“What we’ve learned about adrenal cancer — with this now fifth international symposium — is that we have made our strides through such international engagement,” Hammer says. “[And] we’ve been able to leverage our relationships with each other in the academic world to engage both the government, in terms of funding and research studies, and the pharmacologic industry, for the support of large trials with new drugs that have been developed, [has been done] in part, in association with academic colleagues,” Hammer says.



## AT A GLANCE

- ▶ There is hope on the horizon for new therapies for adrenal cortical carcinoma.
- ▶ International collaboration creates a better understanding of the biology and genetics of the disease and further cooperation — including pharmacologic companies — could result in substantive clinical trials.
- ▶ Although the numbers of patients with adrenal cancer may be small, patients around the world are finding their voice and becoming advocates for their care.



“Clinical trials are partly limited by the patient population that you can get engaged in a trial. And for a rare disease where most doctors in the United States have never seen a case, or if they do, have only seen one case in their career, **it becomes essential to collaborate for the science and delivery of care.**”

— GARY D. HAMMER, MD, PHD, DIRECTOR OF THE ENDOCRINE ONCOLOGY PROGRAM, UNIVERSITY OF MICHIGAN, ANN ARBOR

Hammer adds that a highlight of the symposium presentations was that the adrenal cancer community has learned from a few large genomic studies that there are only a handful of mutations, which are clearly important for either the formation of adrenal cancer or its progression.

“We hope these will be drivers for the cancer, that the cancers are addicted to these genetic mutations,” he says. “It’s those genes that may be the targets of new therapy. And that’s exciting.”


## The Power of Patient Advocates

Although the numbers of patients with adrenal cancer may be small, patients around the world are finding their voice and becoming advocates for their care. The symposium hosted parallel sessions for patients, which gave them an important opportunity to engage with the medical community as well as with other patients and families.

“In the world of healthcare, patients are increasingly and appropriately taking their advocacy and their care into their own hands,” Hammer says. “With the power of the Internet, partly, people are appropriately more empowered to educate themselves, and indeed to push research in appropriate directions through their own funding mechanisms and advocacy campaigns.”

Biopharmaceutical expert Carol Gallagher, PharmD, delivered the symposium’s keynote address, where she echoed this sentiment.

“Across cancers in general, we just need to have a continued effort but even more so in the rare cancers where the number of voices of patients may not be as many,” Gallagher says. “With adrenal cancer you may not have interacted with someone in your family, so getting the word out that we still have a long way to go in terms of helping these patients is important.”

“We should be really worried about the funding of basic science and academic research,” Gallagher adds. “We should all be calling our congresswomen and men to try and get more funding. It’s been terrible what we’ve seen in the last couple of years in terms of some of the decisions that have been made about cutting funding. But having said that, the basic research that is done in academia is really the foundation of how then, ultimately, the industry can leverage that work to try to make it into drugs for patients.” 

FAUNTLEROY IS A FREELANCE WRITER BASED IN CARMEL, IND., AND A REGULAR CONTRIBUTOR TO *ENDOCRINE NEWS*. SHE WROTE ABOUT USING DOGS TO SNIFF OUT THYROID CANCER IN THE JANUARY ISSUE.





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# Bringing the Bionic Pancreas

## TO THE PRESIDENTIAL PLENARY

BY MELISSA MAPES



After years of research and trials, could the bionic pancreas finally be ready to hit the market?

Diabetes is a perennial area of research in endocrinology, but scientists are now on the precipice of a new era of treatment options. To introduce some of the most revolutionary advances, the Presidential Plenary at ENDO 2016 in Boston is focusing on “Technology and Delivery Breakthroughs in Diabetes.”

This session aims to highlight progress in two particular areas: stem cell-derived beta cells and the bionic pancreas. Both breakthroughs show major promise, but on the device side, the bionic pancreas has been the subject of anticipation for some time.

About two and a half years ago, *Endocrine News* spoke to Edward Damiano, PhD, Boston University, about his bionic pancreas project, which he was inspired to pursue when his infant son was diagnosed with type 1 diabetes (T1D). He had just started outpatient trials at that time — using an iPhone-based prototype that involved a sensor and bi-hormonal insulin and glucagon delivery system.

Donors and the T1D community converged to help fund and facilitate the next stages of the device. Today, Damiano is ready to present a fully autonomous, dual-chamber bionic pancreas called iLet at the ENDO plenary.

“Profound positive change will be brought about by the bionic pancreas, and its arrival is imminent,” says Damiano.



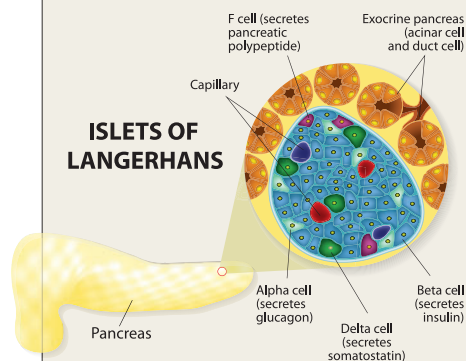
Edward Damiano, PhD, was inspired to pursue his bionic pancreas project when his son David was diagnosed with type 1 diabetes.



## About the NAME

Damiano credits his wife with giving the iLet its name. While they were walking their beagle in Concord, Mass., she announced that it should be dubbed the 'islet.' Damiano agreed immediately but did not think he'd be able to trademark the word 'islet.' He suggested the name to a colleague, who replied that it should be spelled 'iLet.'

Damiano filed the trademark application with his attorney and thus — in homage to the pancreatic islets of Langerhans — the name iLet was born.



# How the iLet is *Different*

**The bionic pancreas has several unique attributes, which Damiano says differentiate it from other artificial pancreas devices. The iLet:**

- 1.** Automates both insulin and glucagon in people with type 1 diabetes
- 2.** Requires only body mass to initialize and comes online immediately (no run-in period)
- 3.** Works for both children and adults across a wide range of insulin needs
- 4.** Determines all dosages autonomously
- 5.** Accounts for outstanding insulin in both the subcutaneous depot and blood in its algorithm
- 6.** Suspends insulin dosing based on the glucose level trend to prevent hypoglycemia
- 7.** Administers micro-doses of glucagon preemptively to prevent hypoglycemia
- 8.** Updates and stores a high-resolution “basal-rate” profile for insulin delivery
- 9.** Allows optional user-initiated (but system-calculated) meal announcements
- 10.** Lets the user temporarily raise the glucose target for added safety during certain activities
- 11.** Allows the user to trigger a glucagon microburst before temporarily disconnecting from the device to shower, etc.
- 12.** Distributes insulin doses more optimally than under usual care
- 13.** Shown to be safe and effective in four outpatient studies in children and adults
- 14.** Operates as a fully integrated, fully automated medical device platform with no smartphone or tablet needed
- 15.** Consists of a unique dual-cannula infusion set, which prohibits inadvertent cross-channeling of insulin and glucagon

## A GAME CHANGER

Damiano believes that the iLet will redefine the patient-provider interaction with regard to diabetes management. The device was designed with the goal of eliminating the four greatest concerns of type 1 diabetes management: 1) eradicating long-term complications through superior blood sugar management; 2) curtailing hypoglycemia and eliminating severe hypoglycemia; 3) automating blood sugar control; and 4) unburdening people with type 1 diabetes and their families of the emotional hardship and fear that is, for now, part of everyday life.

“A device that solves any one of these concerns would be groundbreaking,” Damiano says. “A device that simultaneously solves all four is without precedent and truly game changing.”

His team has received funding from the NIH to conduct the Bionic Pancreas Bridging Study in the second half of 2016, which will be the first outpatient trial testing the iLet and iLet infusion set, and the penultimate study of the bionic pancreas before the final Bionic Pancreas Pivotal Trial in 2017. With his son now well into his teen years, Damiano and other members of the T1D community are excited to see the device crossing the final hurdles to reaching the market.

## WITNESS A REMARKABLE DEMONSTRATION

During the **ENDO** plenary, the features of the iLet will be demonstrated to the audience. The bionic pancreas is unique in that it controls both insulin and glucagon, whereas most artificial pancreases automate only insulin. It does this by using two pumps, which are both fully integrated into the device.

Additionally, the results of the recent outpatient studies with the current version of the bionic pancreas in adults and children will be presented. Study participants had no restrictions put on diet and exercise to test its effectiveness in real-world conditions.

“It provides a truly turnkey solution for both children and adults with type 1 diabetes, and is able to cope with a wide range of insulin needs across all ages.”

— EDWARD DAMIANO, PHD, BOSTON UNIVERSITY



The insulin receptor; Insulin (green) induces the transport of glucose (yellow) into the cell, through binding to the insulin receptor (violet).

“It provides a truly turnkey solution for both children and adults with type 1 diabetes, and is able to cope with a wide range of insulin needs across all ages,” says Damiano.

The bionic pancreas is autonomous in determining all dose deliveries, which saves the user from having to figure out basal-rate profiles, correction factors, or carbohydrate-to-insulin ratios. Damiano describes the system as a “pharmacokinetic model of subcutaneously infused insulin absorption in its mathematical dosing algorithm.” This means it accounts for outstanding insulin in both the subcutaneous depot and blood, thereby avoiding any stacking and overdosing of the hormone.

## NO SMARTPHONE NEEDED

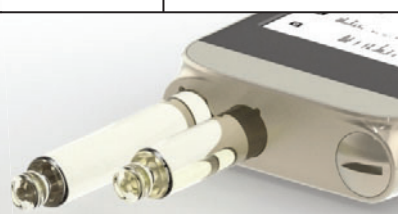
Although the iLet looks similar to an iPhone with a touch-screen display and handheld design, it does not rely on a smartphone, tablet, or laptop to function. Damiano’s team aimed to create an appealing user interface that combines practical functions with aesthetics. To the layperson, it may even be difficult to identify the iLet as a medical device.

Damiano looks forward to sharing his passion for the iLet with the attendees at the Presidential Plenary. As a biomedical engineer by trade, he finds great inspiration

in collaborating with researchers and practitioners from varied backgrounds — which has played a pivotal role in getting the bionic pancreas to its current stage. With the diverse gathering of leaders expected at this year’s ENDO, the sharing of ideas could lead to the next great endocrine innovation. **EN**



The iLet houses two independent pumping systems, one for insulin and one for glucagon. These pumps are automatically commanded by insulin and glucagon dosing algorithms every 5 minutes.



MAPES IS A WASHINGTON D.C.-BASED FREELANCE WRITER AND A REGULAR CONTRIBUTOR TO *ENDOCRINE NEWS*. SHE WROTE ABOUT THE TOP ENDOCRINE DISCOVERIES OF 2015 IN THE DECEMBER ISSUE.

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## THE REPRODUCIBILITY ISSUE

It's been a central principle of the scientific method since the 17th century, yet reproducibility has surfaced as a serious issue in modern research.

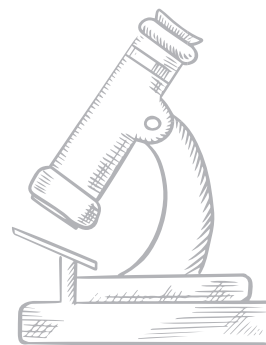
BY MELISSA MAPES

**A**n investigation into 100 published psychology studies recently sparked headlines. In preliminary results, the researchers reported that the key findings in fewer than 40 of the studies could be reproduced — underscoring concerns that have been frequently voiced in the scientific community, but rarely tested.

Because of the resources required to recreate an experiment, it's rare for a lab to undertake the replication of a previously published study. But *The Reproducibility Project* — which conducted the psychology study — was founded with the implicit purpose of testing this critical aspect of healthcare science.

Tim Errington, MA, PhD, metascience project manager for the Center for Open Science (COS), is now helping *The Reproducibility Project: Cancer Biology*, a collaboration between the COS and the Science Exchange, bring the initiative into the biomedical realm.

“I had some of the same experiences that all too many scientists have encountered,” Errington says. “I read about an exciting result and wanted to repeat and build upon it, only to find the methods sparse and the data lacking.”



## EPIC REPRODUCIBILITY FAILS

Errington points to two high-profile examples from Amgen and Bayer. In 2009, Amgen, Inc., sought to replicate an experiment by a group of Boston researchers that showed that cancer tumors could be destroyed by targeting the protein STK33. They invested six months of intensive efforts to try to repeat the results, but to no avail; the study was not reproducible.

# BEST PRACTICES for REPRODUCIBILITY

To make sure that experiments can be replicated, Errington has several tips for researchers:

- ▶ Document and share all aspects of research in an open manner, which is valuable for both expected and unexpected results.
- ▶ Don't just keep track of the data that is generated but also the methods, materials, devices, and workflow.
- ▶ Employ tools that are built to help researchers track this information (like OSF).
- ▶ Consider trying the free statistical and methodological consulting through COS, [https://cos.io/stats\\_consulting](https://cos.io/stats_consulting), which trains scientists in some of the critical aspects of reproducibility.

For more tips, see the recommendations from the *Nature Reviews Neuroscience* article at the following:

[http://www.nature.com/nrn/journal/v14/n5/box/nrn3475\\_BX2.html](http://www.nature.com/nrn/journal/v14/n5/box/nrn3475_BX2.html)

Two years later, Bayer halted two-thirds of its early drug target projects because the company's reproductions of peer-reviewed studies were failing to yield the published results. Bayer then released some surprising statistics: Among 67 recent studies they tried to reproduce, 64.2% were not replicated, 11.9% were partially replicated, and only 20.9% were fully replicable (with the remaining 3% falling into a category deemed "not applicable").

Rather than waiting for another headline to force the issue, Errington and his colleagues aim to identify the underlying issues that cause reproducibility to suffer. He hopes that *The Reproducibility Project* can help improve research processes so that the scientific community can achieve greater efficiency and accuracy.

## THE USUAL SUSPECTS

Several common missteps emerge when digging into the root issues surrounding reproducibility.

First comes low power design, i.e., small sample size. While it's a well-established principle of science to prioritize an optimal sample size and selection, researchers and journals sometimes look the other way in the race to publish new and exciting findings. An article in *Nature Reviews Neuroscience*, "Power failure: why small sample size undermines the reliability of neuroscience," describes low statistical power as "endemic" in neuroscience and implies that the issue extends to many other fields.

"The relationship between study power and the veracity of the resulting finding is underappreciated," the authors write. They underscore the fact that small sample size decreases the ability to weed out spurious results but also point out that other biases are more likely to co-occur in studies with a limited sample.

According to Errington, evidence shows several biases are likely reducing reproducibility in science: flexibility in analysis (p-hacking), publication bias (not publishing null results), and the file drawer effect (not reporting all results).

"Another issue is the identification of materials in the research and a clear understanding of the methodology used," Errington continues. "But there are also problems in the incentive structure at institutions, journals, and with funders that tend to affect reproducibility."

## BIG PICTURE PROBLEMS

The blame for biases should not be placed solely on the shoulders of individual researchers. More often than not, there are institutional and policy-related problems that underlie problems in science.

"The current incentive structure is toward novelty and positive results. And the currency is publications," says Errington. He believes that institutions and policy makers can help improve reproducibility by rewarding open practices. For example, badges can be awarded to journals that encourage reproducible research, such as preregistration and Registered Reports. Several journals have already begun to employ these tactics, which were introduced by the Open Science Framework (OSF).





“Funding and publishing replications should also be encouraged,” Errington goes on. “This includes conceptual replications, where the original research question is tested again with different methods — which is important for growing understanding of an effect — and direct replication, where the original methodology is reproduced as faithfully as possible — which is vital for increasing confidence that the effect occurs.”


Additionally, Errington implores institutions to implement reproducibility training and provide the tools researchers need to properly conduct their studies.

“I’ve been surprised at how difficult it is to obtain the original methodology or data used in published experiments,” Errington says. “It can be really hard for the original researchers to find these details, which may be because the person who conducted the experiment has moved on. But the greater issue is that the common system of tracking experiments in paper notebooks and keeping data on local computers is not ideal.”

If the institution provides better tools and training for tracking this information, fewer gaps will occur in published papers.

## CONTEXTUAL CONSIDERATIONS

Despite discouraging stories in the news, Errington thinks it is important to put reproducibility issues into context. “Our project and other related initiatives do not imply anyone is committing fraud,” he says. “If a replication does not obtain the same results as an original report, it doesn’t mean the original results weren’t true.”

The aims of reproducibility investigations are the same as any other research project — to better understand a topic and improve related practices. Errington hopes that the work of OSF will improve efficiency and productivity in addition to increasing reproducibility. “We want scientists to not only have more confidence in the results they obtain,” he says, “but also find it easier to follow-up on those results as research continues.” 

“

**I’ve been surprised at how difficult it is to obtain the original methodology or data used in published experiments. But the greater issue is that the common system of tracking experiments in paper notebooks and keeping data on local computers is not ideal.**

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MAPES IS A WASHINGTON D.C.-BASED FREELANCE WRITER AND A REGULAR CONTRIBUTOR TO *ENDOCRINE NEWS*. SHE WROTE ABOUT THE TOP ENDOCRINE DISCOVERIES OF 2015 IN THE DECEMBER ISSUE.

# Clinical Empathy:

## A NEGLECTED FORCE FOR IMPROVING CARE

**When clinicians learn techniques that foster communication with patients, the results can be greater compliance, improved outcomes, and even increased physician satisfaction.**

**BY ERIC SEABORG**



**M**any physicians consider this the hardest procedure to master in order to treat patients successfully: empathy, with its essential component, communication.

“People think that there is a hard part of medicine and there is a soft part of medicine, and that communication is the soft, fuzzy part,” says Nirmal Joshi, MD, chief medical officer of Pinnacle Health System in Harrisburg, Pa. “In my opinion, effective communication is just as hard as knowing how to remove a gall bladder or knowing how to care for diabetes, because we are finding that if we don’t communicate as physicians, the incidence of noncompliance is extremely high.” Pinnacle Health instituted a physician training program in communication and empathy that greatly increased its patient satisfaction scores.

Few doctors have been trained in effective communication techniques, especially ones that will be effective in treating lifestyle-related conditions such as diabetes, according to Kathryn Pollak, PhD, professor in community and family medicine at Duke University. “What doctors have been taught to do is to give a lot of information and to give a lot of advice, but those methods do not change behavior. What we know that does work is to be empathic and curious, to try to put yourself in the shoes of the patient,” Pollak says.

### BETTER OUTCOMES WITH EMPATHY

A Joint Commission on Accreditation of Healthcare Organizations report found that communication failures were a root cause of more than 70% of serious adverse health outcomes in hospitals.

And conversely, studies have shown that clinical empathy is clearly associated with better patient outcomes. In two studies of diabetes patients, researchers administered the Jefferson Scale of Empathy to physicians and grouped them according to whether they scored high, medium, or low on empathy skill. The researchers studied diabetes because it has clear patient outcomes that can be tracked in electronic health records.

In a study of 29 family physicians and 891 diabetic patients, the patients of physicians with high empathy scores were significantly more likely to have good control of their hemoglobin A1C and LDL cholesterol compared with patients of physicians with low empathy scores. The second study included more than 240 physicians and examined the incidence of hospitalizations among 20,000 diabetic patients in Parma, Italy. “The rate of hospitalizations due to acute metabolic complications in diabetic patients was much lower for patients of physicians who scored high on empathy and was significantly higher for patients of physicians who scored low on empathy,” says Mohammadreza Hojat, PhD, research professor in the department of psychiatry and behavior at Sidney Kimmel Medical College, Thomas Jefferson University, in Philadelphia.

## SUCCESS WITH TRAINING

Dissatisfied with the patient ratings of doctor-patient communication at his institution, Joshi instituted a communication training program for physicians. His team created a one-hour training exercise that began with the physicians talking for 10 to 15 minutes to a patient-actor and the patient’s “family,” who were trained on a script. The actors then provided feedback on how well the physician performed on specific measures of communication. The physicians next viewed a 20-minute film on best practices to improve doctor-patient communication.

In addition to this training, Joshi made communication improvement an ongoing part of the hospital’s focus by hiring a coach who periodically sits in on patient encounters in order to give real-time advice on how physicians can improve.

About 350 physicians have now been through the training, and over two years patient satisfaction scores have increased a remarkable 40 percentile points. “In some disciplines, the scores are now in the 90th percentile, and in other instances they are between the 50th and the 90th percentile,” Joshi says.

Stacia Melenchek, M.Ed., has been Pinnacle Healthcare’s physician education coach for the past three years. She has a master’s degree in education and had little background in healthcare at the time she was hired, which was by design to bring a consumer perspective to her task.

Some of the procedures emphasized at Pinnacle seem simple: knocking on the door before entering, introducing yourself and explaining your role (because patients see a lot of doctors and others in a hospital), and sitting down rather than towering over the bedside.

But Melenchek also coaches clinicians on making an empathetic connection with the patient by listening carefully and reading their body language: “Being able to read the patient’s facial expression, being able to read the patient’s eyes. Are they raising their eyebrows, are they looking down at the ground, is there a blank stare, are they fidgeting?” The patient may be feeling overwhelmed, and an overwhelmed patient can have trouble processing the information a clinician is eager to impart.

Melenchek also emphasizes giving medical information in plain English. “I educate them to use a fifth- to eighth-grade reading level,” she says.



- ▶ Empathy and better communication from healthcare providers are associated with better patient outcomes.
- ▶ Responding to patients’ facial expressions and body language, asking open-ended questions, and exploring their motivations can establish a rapport that increases patient compliance.
- ▶ Physicians trained in effective communication techniques report greater satisfaction themselves.

**“ In my opinion, effective communication is just as hard as knowing how to remove a gall bladder or knowing how to care for diabetes, because we are finding that if we don’t communicate as physicians, the incidence of noncompliance is extremely high.”**

— NIRMAL JOSHI, MD, CHIEF MEDICAL OFFICER, PINNACLE HEALTH SYSTEM, HARRISBURG, PA.



## BENEFITS FOR PHYSICIANS

The patients are not the only ones who benefit from improved communication, according to Esther Tucci Thoman, manager of physician training at Pinnacle. The physicians have noticed that if they listen carefully and communicate clearly, not only is the patient more likely to adhere better to the plan of care, but the result is less work for the physicians because they get fewer calls and questions from nursing later on.

Some of these tasks seem so simple that physicians are surprised to learn that they are not actually performing them, says Pollak, who also coaches physicians. She records patient-doctor encounters, and when she plays them back, physicians are surprised at the number of times they miss opportunities to respond empathetically.

“Part of the reason it is so hard to be a doctor is because patients don’t always do what we want them to, and that is frustrating,” Pollak says. Physicians frustrated by a patient’s failure to follow advice should try a different tack. “Try to put yourself in the shoes of the patient, to think about: Why is this patient not taking their insulin, why does this patient continue to get sweet tea at Bojangles even though her A1C has been 9 for years?” Pollak says.

We all do things that are not good for our health — such as not getting enough sleep or exercise — and when physicians “realize that they themselves could be judged for their own behaviors, that helps them not judge the patient,” Pollak says. The physician who tries to understand what benefit the patient is getting out of the sweet tea might be able to find a substitute that meets some of the patient’s needs, but perhaps more important, that empathy increases rapport and makes the patient more likely to disclose information and work with the doctor to make changes.

## MORE ACCEPTANCE, LESS JUDGMENT

And again, the patients aren’t the only ones who benefit. Pollak’s team trained the clinical staffs at a primary care clinic and a pediatric obesity-focused clinic in motivational interviewing — an empathetic approach featuring open-ended questions and reflective listening designed to address a patient’s ambivalence about making changes. Patient satisfaction scores improved in the intervention clinics compared with control clinics where clinicians did not receive training. But equally noteworthy, clinicians in the intervention clinics reported lower burnout scores and better staff cohesiveness.

“Accepting people for who they are, not judging them, and trying to be curious about why patients are doing what they are doing makes clinicians happier because they are not carrying that judgment around,” Pollak says.

Another aspect of empathy is noticing when a patient reacts in an emotional way to news, says Anthony Back, MD, professor of medicine at the University of Washington in Seattle: “If the physician doesn’t recognize that and stop for a moment, and say, it looks like this is a big thing for you, the physician will go droning on with medical information. And the patient is not going to hear any of it.”

Back is a founder of a nonprofit, VitalTalk, that has developed courses on communication, mostly based on the group’s many studies funded by the National Institutes of Health. A wealth of information — including videos of patient encounter situations and “cheat sheets” on how to talk to patients in various situations — is available for free at its website, [www.vitaltalk.org](http://www.vitaltalk.org).

Communication techniques can be challenging to learn and require practice, which is why Pollak encourages physicians to think of them as another procedure to learn. But the headline of an op-ed by Joshi in the *New York Times* gives a simple starting point: “Doctor, shut up and listen.” <sup>EN</sup>

SEABORG IS A FREELANCE WRITER BASED IN CHARLOTTESVILLE, VA. HE WROTE ABOUT THE DANGERS OF THE DIETARY SUPPLEMENT BIOTIN IN THE JANUARY ISSUE.

# Transitions of Care

## Taking a Patient from Pediatric to Adult Care Doesn't Have to be Difficult

The needs of a pediatric patient and adult patient with Type 1 Diabetes are different. Make the process of moving your patient to a new practice easier with Transitions of Care, an online resource center developed to prepare and guide you and your patients in the process of changing care teams.

Visit us online and discover how pediatric and adult endocrinologists can work together, along with their patients to provide a successful transition outcome.

Transitions of Care is provided by the Endocrine Society and a broad coalition of partnering organizations.

[endocrinetransitions.org](http://endocrinetransitions.org)



This program is supported by educational grants from Lilly USA, LLC and Medtronic Diabetes.



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## 2016 Legislative Preview: Obama Urges Cancer Cure Moon Shot but Little Congressional Action on Healthcare Expected

**T**he Republican-led Congress and Democratic White House just closed out a surprisingly productive year in 2015, marked by the long-fought repeal of the Medicare physician payment system and passage of a \$1.15 trillion spending bill that included a \$2 billion increase for the National Institutes of Health (NIH) — two of the Endocrine Society’s top legislative priorities.

Now, the question is what will Congress and the president be able to accomplish this year? The general school of thought is that nothing gets done in Washington during a presidential election year, and, in addition, Congress is too divided to agree on anything. But, others argue with the president seeking to burnish his legacy and both the presidency and control of the Senate at stake, some modest legislative compromises could happen. Even President Barack Obama noted during his final State of the Union address in January that he and the Republican Congress “just might surprise the cynics again.”

While the State of the Union message avoided contentious health policy proposals, a signature element was the president’s call for a concerted research effort toward a cure for cancer. The presidential directive dovetails with ongoing congressional development of legislation (HR 6) seeking an overhaul of the process for enticing medical advances and spurring federal medical research.

President Obama tapped Vice President Joe Biden to lead this new effort to secure additional funding for cancer research and tagged the initiative as comparable to the 1960s project to land on the moon. The call for research funding was also joined by a plea for new funding this year to end HIV/AIDS — a prospect the president noted “that’s within our grasp,” plus added resources to attack malaria.

New funding for cancer research could gain congressional approval this year because policy analysts agree that curing cancer may be the one thing the entire Congress agrees on. Legislation to make it easier to move devices and treatments through the Food and Drug Administration (FDA) process more rapidly, however, is still likely to be a heavy lift. While the House of Representatives was able to pass legislation, the Senate panel already blew by self-imposed deadlines to release a draft and hold a markup before the end of 2015. Furthermore, disputes are likely over whether to create — and how to pay for — a mandatory pool of money designated for the NIH and FDA.

What is clear, however, is that if there is to be bipartisan agreement on any health legislation it will need to happen quickly during a narrow window before Congress clears out for campaigns and political conventions this summer.

The Endocrine Society will continue to work with lawmakers on its priorities, including steady and sustainable increases in federal funding for biomedical research, improve federal research policies to reflect endocrine priorities, obtain appropriate reimbursement for endocrinologists and develop new care models that value the role of endocrinologists, and obtain better access and coverage for diabetes and other endocrine diseases. We will keep members apprised of developments in future issues of *Endocrine News* and *Endocrine Insider*.

— MILA BECKER, JD, CHIEF POLICY OFFICER, ENDOCRINE SOCIETY

## NIH Clarifies Instructions to Grantees on Incorporating Sex as a Biological Variable



In 2014, in response to requests by the Endocrine Society, the National Institutes of Health (NIH) announced that it would develop policies to require investigators to account for sex as a fundamental biological variable in NIH-supported preclinical research.

The Endocrine Society wholeheartedly supports the goal of ensuring that sex is considered in studies funded by the NIH, and we are in agreement that a significant component of the rigor and completeness in research, in many or most contexts, is the investigation of sex-specific effects. The Society also believes a consideration of sex as a biological variable is an important component of efforts to ensure that clinical trials are designed on sound biologic principles and prior findings.

The Endocrine Society has closely followed efforts by NIH to craft and implement policies to ensure the consideration of sex as a biological variable in research studies. Recently, in his monthly newsletter to the extramural community, the NIH deputy director for Extramural Research, Michael Lauer, MD, shared that NIH seeks to clarify the expectations of NIH on the inclusion of sex as a biological variable. The post references an earlier publication in the *FASEB Journal* by Janine Clayton, MD, director of the NIH Office of Research on Women's Health (ORWH), about how sex should be considered across the entire biomedical research spectrum from basic research through population health studies. The publications attempt to delineate what NIH means by considering sex as a biological variable, and distinguish the consideration of sex as a variable from the conduct of sex differences research.

The Endocrine Society has been influential in the ongoing effort by NIH to implement workable policies for researchers to appropriately consider biological sex in research grants and publications. For instance, in a response to a Request for Information (RFI) on incorporating sex as a biological variable, the Society highlighted specific ways in which NIH can facilitate the consideration of sex as a biological variable. In addition, the Endocrine Society and the Society for Women's Health Research (SWHR) co-sponsored a congressional briefing designed to educate members of Congress and their staff about the need to include both sexes in all phases of biomedical research. Speakers included Endocrine Society Past-President Teresa K. Woodruff, PhD.

The Society appreciates that many researchers have important questions about how to appropriately include sex as a biological variable in their research proposals and publications. We are appreciative that Lauer is trying to clarify what will be required, but we also understand that the research community may still require more information on how they and grant reviewers are expected to interpret the new policy.

The Endocrine Society will continue to engage the NIH and ORWH on this issue, and we encourage interested members to send their questions, suggestions, and comments to Joseph Laakso, PhD, Associate Director of Science Policy at [jlaakso@endocrine.org](mailto:jlaakso@endocrine.org).

— JOSEPH LAAKSO, PHD, ASSOCIATE DIRECTOR, SCIENCE POLICY, ENDOCRINE SOCIETY

## NIH Announces FY 2016–2020 Strategic Plan

On December 16, 2015 NIH released its NIH-Wide Strategic Plan, Fiscal Years 2016–2020: Turning Discovery Into Health. The Endocrine Society provided input to the NIH during the strategic planning process and sent a letter to the director of NIH, Francis Collins, MD, and NIH Principal deputy director, Lawrence Tabak, DDS, PhD. In our comments, (available at [www.endocrine.org](http://www.endocrine.org)) the Society asked NIH to consider the importance of endocrinology in the context of the Strategic Plan. We emphasized that endocrine science is central to the interrelatedness of fundamental science, health promotion/disease prevention, and treatments/cures; i.e., the three themes of the new Strategic Plan. Tabak responded to our letter, expressing appreciation of the cross-cutting aspects of hormone and endocrine research, and understanding of the need to support interdisciplinary and integrated research projects.

The NIH plan focuses on four essential, interdependent objectives that will help guide the NIH's priorities over the next five years as it pursues its mission of seeking fundamental knowledge about the nature and behavior of living systems and applying that knowledge to enhance health, lengthen life, and reduce illness and disability. Those objectives are: The plan concludes with a bold vision for the NIH, listing some specific achievements and advances that the Agency will strive to deliver over the next five years.

Over the next five years, NIH leadership will evaluate the Agency's progress, in meeting the objectives laid out in the strategic plan, which will be a living document that will be open to refinements throughout its life-cycle. The plan is designed to complement the NIH's Institutes, Centers, and Offices' (ICOs) individual strategic plans that are aligned with their congressionally mandated missions. During this time, the Endocrine Society will reach out to NIH leadership to express our recommendations and concerns. Society leaders will also meet with Institute directors to share our feedback.

More information is available on the NIH-Wide Strategic Plan website ([www.nih.gov/about-nih/nih-strategic-plan](http://www.nih.gov/about-nih/nih-strategic-plan)).

— MILA BECKER, JD, CHIEF POLICY OFFICER, ENDOCRINE SOCIETY





## Endocrine Society Joins Alliance to Support Proper Reimbursement for Specialty Care

As the Centers for Medicare and Medicaid Services (CMS) begins the process to transition physician payment from a system that pays by volume to one that pays for value, the Endocrine Society continues to have concern that new payment models properly value cognitive services and not only focus on procedures. As a result, the Endocrine Society has joined with other specialty societies that treat patients with multiple, concurrent, complex acute, and chronic conditions that require complicated diagnostic strategies and nonprocedural treatments to create a new coalition, the **Cognitive Care Alliance**, to recognize cognitive care.

The Alliance has united physicians who practice primary care, rheumatology, gastroenterology, neurology, and endocrinology and are concerned that the relative pricing for the complex and ongoing purely cognitive services they provide do not accurately capture the intensity of the work and the value provided to the healthcare system.

“It is essential that the physician workforce represents the thinking as well as the doing traditions of medicine. We have lost an alarming number of those physicians able to deal with the cognitive complexities of modern medical practice due to relative underpayment,” says John Goodson, MD, chair, Cognitive Care Alliance. “We can no longer afford to be complacent and have joined together to become a united voice advocating for a national, independent survey of physician cognitive work and the creation of a revised payment structure that ensures a robust and balanced physician workforce in the future.”

The Alliance was formed to ensure that patients have access to the cognitive services needed to remain healthy and to ensure that all acute and chronic conditions are thoughtfully and effectively managed. Its members believe that CMS must ensure that cognitive services are properly defined and appropriately valued with respect to surgical procedures and other interventions.

The Alliance will work on the Resource Based Relative Value Scale (RBRVS) used by Medicare and all other insurance payers to value physician services in relation to one another, which must be revised to reflect the intensity of current cognitive care. The Alliance believes this must be done based on the collection of data by a nationally representative survey that is funded from existing federal resources. With this knowledge, the RBRVS can be modified to reflect the complexities of purely cognitive services. <sup>EN</sup>

— MILA BECKER, JD, CHIEF POLICY OFFICER, ENDOCRINE SOCIETY

### Members of the Cognitive Care Alliance

- ▶ **American Academy of Neurology**
- ▶ **American College of Rheumatology**
- ▶ **American Gastroenterological Association**
- ▶ **Coalition of State Rheumatology Organizations**
- ▶ **Endocrine Society**
- ▶ **Society of General Internal Medicine**

## Society Publishes Clinical Practice Guideline on Addison's Disease

**T**he Society recently issued a Clinical Practice Guideline (CPG) on the diagnosis and treatment of primary adrenal insufficiency, a condition commonly known as Addison's disease, that occurs when the body produces too little of the hormone cortisol.

The CPG, entitled "Diagnosis and Treatment of Primary Adrenal Insufficiency: An Endocrine Society Clinical Practice Guideline," was published online and will appear in the February 2016 print issue of *The Journal of Clinical Endocrinology & Metabolism*.

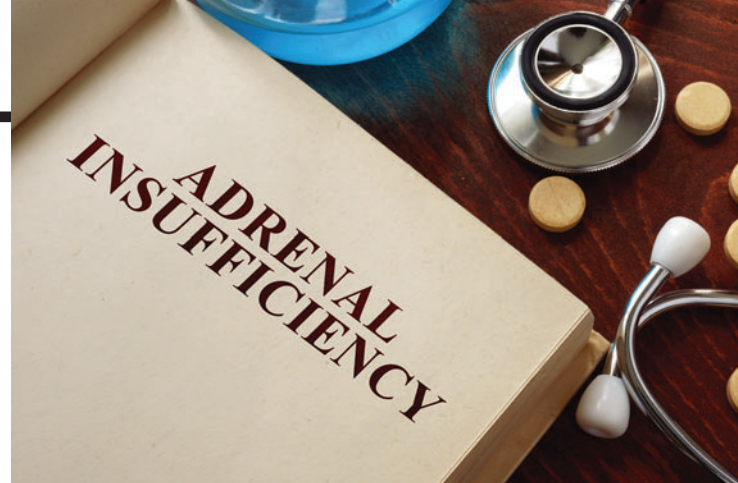
Primary adrenal insufficiency is a rare, potentially life-threatening condition that occurs when the adrenal glands located on top of the kidneys do not work properly. The adrenal glands produce cortisol, a hormone essential for the body's response to stress, maintaining blood pressure and cardiovascular function, keeping the immune system in check, and converting fat, carbohydrates and proteins into energy. When an individual develops primary adrenal insufficiency, they may experience symptoms such as weight loss, fatigue, muscle weakness, decreased appetite, nausea, vomiting and diarrhea.

"Diagnosing primary adrenal insufficiency remains challenging because many of the symptoms are associated with a variety of health conditions," says Stefan R. Bornstein, MD, PhD, of the Universitätsklinikum in Dresden, Germany, and King's College in London, UK, and chair of the task force that authored the guideline. "Postponing treatment of more severe symptoms raises the risk of death. Severe symptoms need to be treated immediately, even if a test still needs to be conducted to confirm the diagnosis."

The Endocrine Society recommends that acutely ill patients who have unexplained symptoms undergo diagnostic testing to rule out primary adrenal insufficiency. Those who have severe symptoms of the condition or adrenal crisis should undergo immediate treatment with medication until diagnostic test results are available. Healthcare providers should conduct a corticotropin stimulation test to confirm the diagnosis when the patient's condition allows.

Other recommendations from the CPG include:

- Patients should undergo a blood test to measure levels of adrenocorticotropic hormone (ACTH) — the hormone that signals the adrenal glands to produce cortisol — to establish a primary adrenal insufficiency diagnosis.



- As part of the diagnostic process, patients should have blood tests to measure the levels of the hormones renin and aldosterone. This test determines if a person has a deficiency of the hormones used to regulate the balance of salt and water in the body.
- Patients who have a confirmed diagnosis of primary adrenal insufficiency should undergo glucocorticoid replacement therapy — typically with hydrocortisone (cortisol), the glucocorticoid hormone naturally produced by the adrenal glands.
- People who have primary adrenal insufficiency and a confirmed aldosterone deficiency should undergo replacement therapy — typically with the synthetic hormone fludrocortisone — to maintain the body's salt and water balance. Anyone receiving this therapy should be monitored by testing blood electrolyte levels and checking for symptoms like salt craving, light-headedness, blood pressure changes, and swelling of the legs and feet.

Other members of the task force that developed this CPG include: Bruno Allolio of University of Würzburg in Würzburg, Germany; Wiebke Arlt of the University of Birmingham in Birmingham, UK; Andreas Barthel of the Universitätsklinikum Dresden and Endokrinologikum Ruhr in Bochum, Germany; Andrew Don-Wauchope of McMaster University and Hamilton Regional Laboratory Medicine Program in Hamilton, Ontario, Canada; Gary D. Hammer of the University of Michigan in Ann Arbor; Eystein S. Husebye of the University of Bergen and Haukeland University Hospital in Bergen, Norway; Deborah P. Merke of the National Institutes of Health Clinical Center in Bethesda, Md.; M. Hassan Murad of the Mayo Clinic in Rochester, Minn.; Constantine A. Stratakis of the National Institutes of Health's Eunice Kennedy Shriver National Institute of Child Health and Human Development in Bethesda, Md.; and David J. Torpy of the Royal Adelaide Hospital, University of Adelaide in Adelaide, Australia.

The CPG was co-sponsored by the European Society of Endocrinology and the American Association for Clinical Chemistry.

# ENDO 2016 to Host Second Annual Obesity Management Workshop

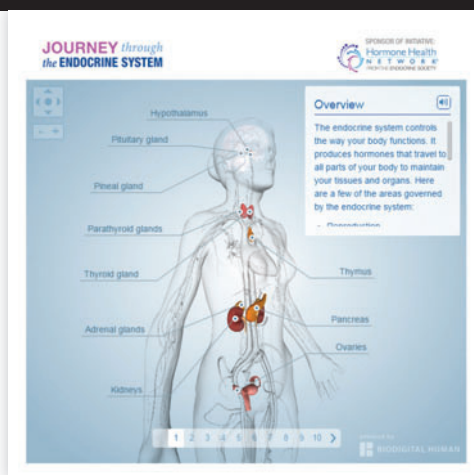


The Endocrine Society will again partner with The Obesity Society to host the second annual Obesity Management Workshop as part of the pre-conference events that take place on March 31 in Boston.

This popular workshop focuses on advanced practice challenges and highlights emerging treatment therapies and strategies for preventing, diagnosing, and managing obesity. The workshop will have an opening plenary on weight loss mechanisms presented by Randy Seely, PhD, and will close with a session on the gut hormones and obesity with David D'Alsessio, MD. The symposia will cover lifestyle considerations and pharmacotherapy and surgery options. A special Meet-the-Professor session by Nikhil Dhurandhar, PhD, will be presented on how to set up an obesity clinic in private practice.

In addition, the scientific statement chairs are developing the outlines for each program: Pathophysiology of Obesity, chair, Michael Schwartz, MD, and The Science of Obesity Management, chair, George Bray, MD.

For more information, go to [www.endo2016.org](http://www.endo2016.org).



INTOUCH

The JTTES tool provides members with patient education resources that they need in a more user-friendly format.

## Hormone Health Network Awarded Innovation Grant

The Endocrine Society's Hormone Health Network (HHN) has been awarded an Innovation Exploration Grant in the amount of \$10,000 by ASAE Foundation. HHN is the Endocrine Society's public education arm.

The ASAE Foundation supports innovation exploration and development, and is one of a number of initiatives designed to raise awareness and engagement in innovation efforts for the association community.

With the funds awarded from the grant, the HHN's proposed initiative "Hormonal Hot Spots" aims to integrate two initiatives of the Endocrine Society: The "Journey Through the Endocrine System (JTTES)" and "Endocrine Facts and Figures" (EFF) in order to develop an innovative educational tool that:

- Educates and elevates target audiences;
- Delivers key messages to visually tell a story;
- Discovers opportunities for increased awareness; and
- Leverages the expertise of the Society's membership.

JTTES launched September 2015 to help enhance the understanding of the intricacies of the endocrine system and its related conditions through the use of contemporary technology, and the Network has plans to continue to expand the platform to include a mobile application to be launched during the Society's Centennial celebration at ENDO 2016 (April 1 – 4).

"It is a tremendous honor to have ASAE recognize the innovative way Hormonal Hot Spots will enhance public understanding of the endocrine system and hormone health conditions such as diabetes, obesity, infertility, and thyroid disorders," says Cheretta A. Clerkley, MBA, CASE, CME, director of the HHN. "We are looking forward to making this information accessible to broad consumer audiences through interactive, fly-through animation of a hormone's journey through the human body."

## Society's Science Writers Conference Explores Trends in Hormone Health



It's not always easy being a reporter covering issues involving the endocrine system. The science is complex, and even well-intentioned journalists can get it wrong sometimes. That's why every two years the Society hosts a Science Writers Conference exclusively for reporters so that they can hear from expert members on some of the hottest topics in the field.


Seventeen journalists learned about emerging science and evolving clinical practices during the Endocrine Society's Science Writers Conference in New York on December 11. The event is designed to build relationships between key health and science reporters and the Society.

The conference drew attendees from *The New York Times*, influential diabetes blog "Close Concerns," Medscape, and MedPage Today. Freelancers who write for magazines such as *Prevention* and *Good Housekeeping* also participated.

Society President Lisa Fish, MD, welcomed journalists to the event. Hormone Health Network (HHN) Committee Chair Henry Anhalt, DO, and HHN Director Cheretta Clerkley introduced the crowd to the new interactive "Journey Through the Endocrine System" tool. Other presentations included:

- Diabetes and aging by Robert Lash, MD
- Quest for a healthy microbiome by Elena Barengolts, MD
- What is BPA-free, and is it really safer? by Deborah Kurrasch, PhD
- Transgender medicine by Joshua Safer, MD, FACP

Recordings of the presentations will be available in the coming weeks on the Society's website. The Society staff as well as journalists from Endocrinology Advisor and MedicalResearch.com live tweeted the event. According to the healthcare social media analytics firm Symplur, the discussion generated 259,000 impressions — an estimate of how many times a Twitter user saw a post about the event.

Janssen Pharmaceuticals supported the event. 



## NIEHS Announces Shared Instrumentation Grant Program

On December 9, the National Institute of Environmental Health Sciences (NIEHS) announced the reissue of a Shared Instrumentation Grant (SIG) program through the S10 grant mechanism.

The goal of the SIG program is to enable groups of investigators funded by the National Institutes of Health (NIH) to "purchase or upgrade a single item of expensive, specialized, commercially available instruments or integrated systems" at a cost of \$50,000 to \$600,000. The S10 grants are intended for programs that will utilize the instrument for NIH research projects (at least 75% of the time) and should benefit at least three different researchers (e.g., principal investigators or program directors).

**TAKE ACTION:** Member researchers are encouraged to consider applying for the S10 grants. For additional information, please see the NIH Grants Guide. Applications are due by May 16, 2016 at 5:00 PM.

# HORMONES AND YOUR HEART

## WHAT YOU NEED TO KNOW

The endocrine system is a network of glands and organs that produce, store, and secrete hormones. Hormones influence many aspects of the cardiovascular system, which includes the heart and blood vessels. While hormones play a key role in maintaining cardiovascular health, high levels of some hormones can contribute to cardiovascular disease.

### HORMONES AND HEART FACTS

The **pancreas** is a large gland behind the stomach and next to the small intestine. It produces insulin, a key hormone that “opens” cells to receive blood glucose needed for energy.

**Insulin Resistance** — cells don’t “open” normally and, in response, the pancreas creates too much insulin.

When too much glucose remains in the bloodstream, you can develop **type 2 diabetes** and **cardiovascular problems**, including **unhealthy cholesterol levels**, **high blood pressure**, and **heart disease**.



### CARDIOMETABOLIC RISK FACTORS

- **High Blood Pressure (Hypertension)** is a main cause of heart and blood vessel (cardiovascular) disease
- **Unhealthy Cholesterol (Hyperlipidemia)** occurs when low density lipoprotein (LDL) or bad cholesterol is too high and/or high density lipoprotein (HDL) or good cholesterol is too low. Either or both of these changes may lead to plaque accumulation on the inner walls of arteries
- **High Triglycerides (Hypertriglyceridemia)** in combination with unhealthy cholesterol may add to plaque formation on the walls of arteries
- **Metabolic Syndrome** is a cluster of risk factors (high blood pressure, high blood triglycerides, low HDL, increased abdominal fat) that increase the chances of developing heart disease, stroke, and diabetes

Visit [hormone.org](http://hormone.org) for more information.

Additional Editing by Robert M. Carey, MD, MACP, *University of Virginia*  
Sources: American Heart Association



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## YOUR DOCTOR CAN DETECT RISK FACTORS BY TAKING KEY MEASURES OF YOUR OVERALL HEALTH. HERE ARE HEALTHY RANGES:

Measure	Healthy Range
Waist circumference	under 40" (men); under 35" (women)
Triglycerides level	under 150 mg/dL
Fasting blood glucose level	under 100 mg/dL
Blood pressure	under 120 mm Hg (systolic) and 80 mm Hg (diastolic)
High-density lipoprotein (HDL) cholesterol	over 40 mg/dL (men); over 50 mg/dL (women)
Low-density lipoprotein (LDL) cholesterol	under 100 mg/dL

## DID YOU KNOW?

Cardiometabolic problems often come from low activity levels and the foods we eat, but other factors — your genes, hormonal diseases, and certain medications — can also contribute to these conditions.

At least **68%** of people age 65 or older with diabetes die from some form of heart disease and **16%** die of stroke.

Adults with diabetes are **2-4** times more likely to have heart disease.

Diabetes is **1 of 7** major controllable risk factors for cardiovascular disease.



## KNOW YOUR RISKS FOR HEART DISEASE:

- 2 to 4 times more likely to have heart disease or stroke if you have diabetes
- 1.8 times more likely to be hospitalized for a heart attack if you have diabetes
- 3 times more likely to have a heart attack if you are a woman with diabetes
- 2 times more likely to have a heart attack if you smoke

*Source: American Heart Association*

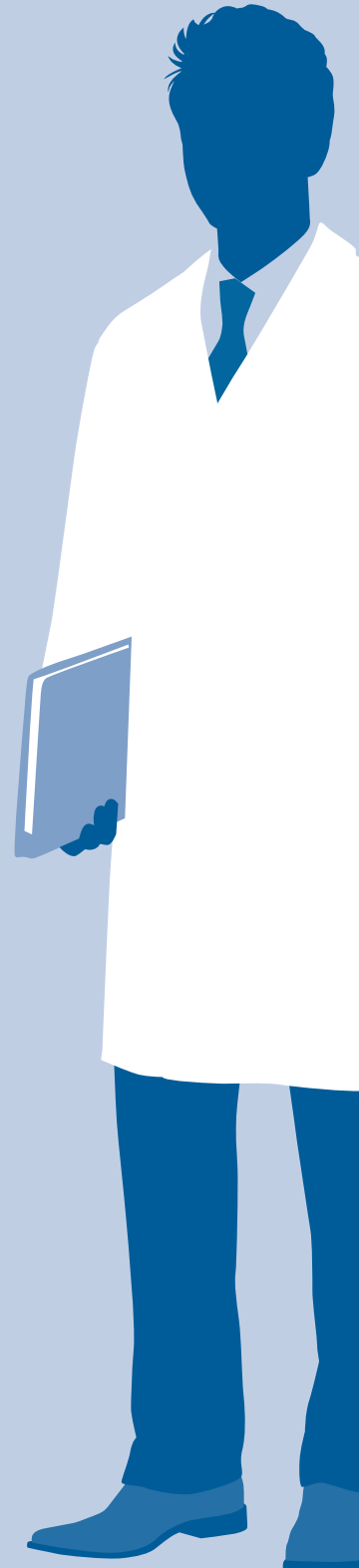
## TREATMENT

A heart-healthy diet and brisk physical activity are nearly always part of a treatment plan for cardiometabolic risk factors. For many, medications will also be part of the plan. Be sure to follow your treatment plan exactly as your doctor prescribes so you can control your cardiovascular risk factors.

## 7 SIMPLE STEPS TO PREVENTION

- Control cholesterol
- Manage blood pressure
- Reduce blood sugar
- Eat right
- Lose weight
- Get moving
- Stop smoking

*Source: American Heart Association*



## Patients have questions. We have answers.

The Hormone Health Network is your trusted source for endocrine patient education. Our free, online resources are available at [hormone.org](http://hormone.org).



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**Academic Internal Medicine**  
Saint Louis University School of Medicine

Saint Louis University, a Catholic, Jesuit institution dedicated to student learning, research, healthcare, and service is seeking applicants for a full-time faculty position in the Department of Internal Medicine at the Associate Professor/Professor rank as **Division Director of Endocrinology**. Applicants must be board certified in Endocrinology. The Division Director will have opportunities to recruit both clinical and research faculty, to plan significant programmatic and facilities enhancements, and to teach fellows, residents, and medical students. The candidate should have a proven record of academic excellence as well as a commitment to excellence in patient care and medical education.

The members of the Division include five full time faculty, a nurse practitioner, and a dietician. The Division provides inpatient and outpatient consultation services to a diverse population with a wide range of endocrine disorders at the Saint Louis University Medical Center and Des Peres Hospital with potential to expand the Obesity program at Des Peres Hospital. The Division supports a two-year clinical fellowship training program, as well as elective rotations for internal medicine residents and medical students. Ongoing research in the Division includes, impact of metformin on Alzheimer's in diabetics, Vitamin D binding protein assay, inpatient insulin protocols, sleep apnea in diabetics and studies on obesity and nutrition.

Competitive salary commensurate with academic rank and other support are provided. Interested applicants should apply online at <http://jobs.slu.edu> and submit a cover letter and current curriculum vitae to: Chad Miller, MD, Chair, Endocrinology Search Committee, Associate Professor, Department of Internal Medicine 12-South, 1402 South Grand Boulevard, St. Louis, MO 63104. Telephone: (314) 577-6143; Fax: (314) 577-6121; Email: [chadmiller@slu.edu](mailto:chadmiller@slu.edu). Review of applications begins immediately and continues until the position is filled.

Saint Louis University is an Affirmative Action, Equal Opportunity Employer and encourage nominations of and applications from women and minorities.

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# ENDO2016

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**APRIL 1-4, 2016** BOSTON, MASSACHUSETTS  
BOSTON CONVENTION AND EXHIBITION CENTER

## REGISTER NOW

### KEY DATES

EARLY REGISTRATION DEADLINE  
JANUARY 13

LATE-BREAKING  
ABSTRACT SUBMISSION PERIOD  
JANUARY 19 – FEBRUARY 17



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