

DECEMBER 2015

THE LEADING MAGAZINE FOR ENDOCRINOLOGISTS

Endocrine news

Technology RISING

Medical technology is entering a brand-new, super-advanced era. To prepare these technologies – and themselves – for “real world” implementation, physicians and scientists need to be proactive.

BREAKING BAD:

Reclassifying osteoporosis

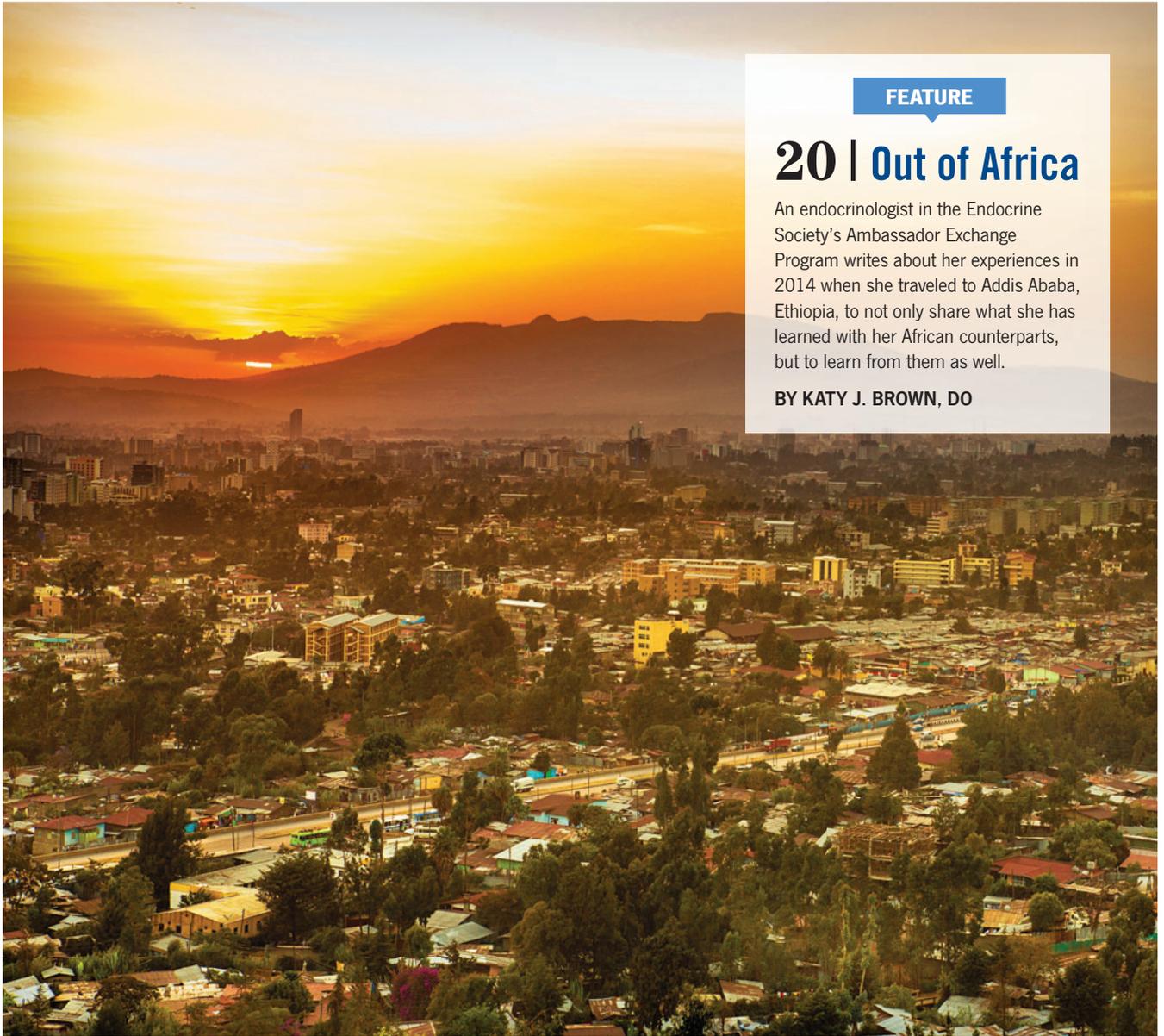
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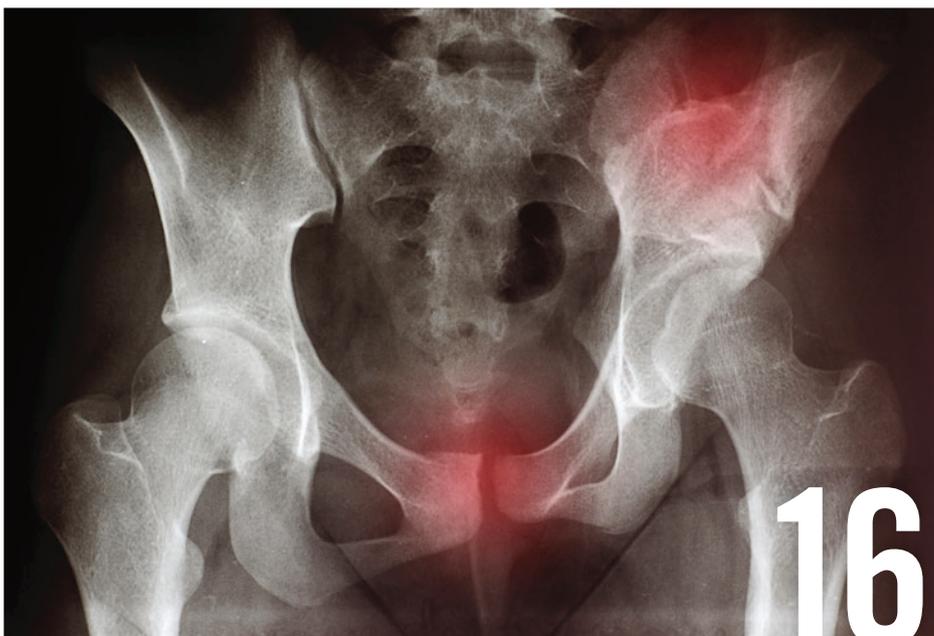
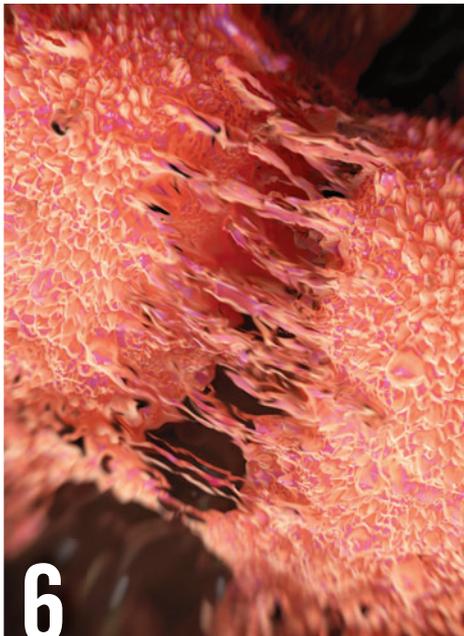
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Hormone Science to Health



Media Education: Getting the Correct Endocrine Information to the Public

WHEN READING THE HEALTH NEWS OF THE day, have you ever found yourself just shaking your head? How could they have gotten it so wrong? Unfortunately, once in a while some well-intentioned reporters put out articles that are inaccurate or incomplete, and this can certainly be confusing to the public. If these writers had the opportunity to connect with the Society's expert members, their readers would be better informed. That's why every two years the Society hosts a Hormones and Health Science Writers Conference, exclusively for reporters.

On December 11th, I will join a group of Society member experts to speak with journalists in New York City. We'll be addressing some controversial and often misunderstood topics including transgender health, the microbiome, diabetes and aging, and why BPA-free may not always mean problem-free.

It's important to clear up misconceptions about hormones and the endocrine system, and to educate reporters on the fundamentals of endocrinology. And as we do so, we'll build strong connections with journalists. Attendees of previous conferences continue to contact us as they greatly value the expertise that our membership provides corroborating that the Endocrine Society is the authoritative go-to source for hormone-related issues.

Making Connections

In 2013, 20 reporters attended the Science Writers Conference, representing outlets such as *The New York Times*, *Shape magazine*, *Everyday Health*, *Medscape*, and *MedPage Today*. We expect a similarly strong turnout this year.

In recent years many media outlets have reduced their staff and reporters are expected to get more done despite having the same number of hours in the day. This poses the significant challenge of creating an agenda of presentations that encourages reporters to make time in their very busy schedules to spend a half-day listening to a series of presentations. The topics need to be compelling and the presenters need to be able to explain these complex issues in a way that reporters and their readers are sure to understand.

Compelling Topics

Past conferences featured presentations on whether or not male menopause is a real condition, the benefits and risks of menopausal hormone therapy, and the potential impact of endocrine-disrupting chemicals on public health.

This year's event includes four presentations on topics currently gathering a significant amount of media coverage:

- ▶ **ELENA BARENGOLTS, MD**, of the University of Illinois will give a presentation entitled the "Quest for a Healthy Microbiome" that will highlight how microbiota plays an important role in the development of obesity and diabetes.
- ▶ **ROBERT LASH, MD**, of the University of Michigan Health System will talk to reporters about how the incidence of diabetes increases as we age but drug choices become more limited as we get older and the medications we're left with may have significant side effects. He will talk through the complexities of treating diabetes in the aging population.
- ▶ **DEBORAH KURRASCH, PhD**, of the University of Calgary will speak to reporters about the danger of fixating on the removal of BPA from consumer goods which could allow other endocrine-disrupting chemicals to be used as replacements. She'll emphasize that "safe" compounds are those that don't interfere with any hormone signaling.
- ▶ **JOSHUA SAFER, MD**, of the Boston University School of Medicine will give attending reporters a presentation on transgender health, highlighting the safety of hormone therapy and the need for more research.

If you'd like to see these presentations or those from previous Science Writers Conferences, please visit: <http://www.endocrine.org/news-room/science-writers-conference>. It is my hope that as we educate reporters, their readers will better understand how important hormones are to overall health. If you have any questions or comments, please contact me at president@endocrine.org 

Lisa H. Fish, MD
President, Endocrine Society

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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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It Was a Very Good Year

AS 2015 WINDS DOWN, WHY NOT TAKE A LOOK BACK AT WHAT HAS proven to be the best year in the history of *Endocrine News*? First off, you're holding the "new and improved" *Endocrine News* in your hands right now; the magazine underwent a months-long intense redesign courtesy of Catherine "Cat" Neill Juchheim of CNJ Creative, LLC, which brought the magazine up to date with not only a new look but something of a new feel that has managed to revitalize the already stellar content. Cat has years of experience working in the consumer and travel magazine trade, winning a number of design awards along the way for complete issues as well as for individual articles. We're glad that we were able to bring her design prowess into *Endocrine News* for its new, refreshing look that was unveiled in September.

September also proved to be momentous month in another area as well — that issue was the largest in the magazine's history. October proved to be the second largest issue [as is the one you're reading now]. While it's easy to point to the large number of pharmaceuticals hitting the market as the reason behind these expansive issues, that's not the entire story: *Endocrine News* is completely unique in the market and has excellent readership numbers, and it offers advertisers the opportunity to reach the universe of the endocrinologist, as well as other physicians who have actively engaged the Society for the latest content in the treatment of patients with endocrine disorders.

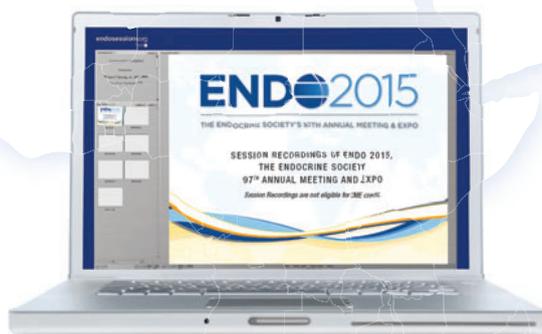
Another major milestone this year was the launching of a new, dynamic website that allows readers to search content unlike the previous static site that simply displayed the current issue in PDF format. Now information on a single topic can be found easily with a simple search term. While it's pretty much like any other website in this manner, it was a first for *Endocrine News* and definitely a long time in the making. A month prior to the new site, we also became a part of the social media world with our Twitter account that essentially debuted with several popular live tweets from the American Association of Diabetes Educators conference in New Orleans in August.

As we embark on the Society's 100th anniversary in 2016, rest assured that you'll see even more changes in *Endocrine News*. For one thing, I'm hoping to feature Endocrine Society members more prominently in the pages of the magazine going forward. After all, it's *your* Society and we want *your* magazine to reflect that. **EN**

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

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Dear Mr. Newman,

As a recipient of the *Endocrine News* (June 2015), I was quite shocked at the cover of this issue.

Are you hinting that Switzerland is a tourist trap? The image you have put on the cover page shows a white cross in a red field and this is the national flag of Switzerland!! If you were hinting at medical problems (and I think this was your intention), you should have shown a white case with a Red Cross!!

It is quite disturbing that a publication from the Endocrine Society is taunted by such an error.

I hope that a correction will be published on the matter.

Thank you for your attention.

Sincerely,

Toni Torresani, PhD, Swiss Newborn Screening Laboratory, Hinteregg, Switzerland

DEAR EDITOR,

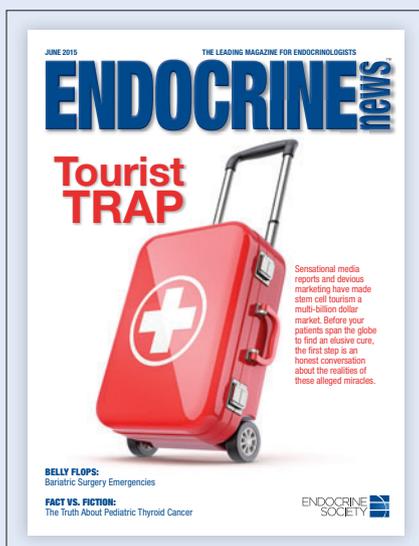
Upon receipt of the June 2015 issue of *Endocrine News* I felt abashed and even profoundly shocked to see on the front page the Swiss flag under the title “Tourist Trap” on a rolling suitcase suggesting that my country is one of the principal culprits for “devious marketing” attracting misinformed patients to scientifically not backed up and officially unapproved stem cell therapy. In the article by Derek Bagley, which is, by the way, excellent, the same figure appears again although Switzerland is neither mentioned in this review nor in the original article by Timothy Caulfield and Amy Zarzeczny. In the latter, only two countries appear in the titles of three references: Germany and Korea. Thus choosing the flag of Switzerland is, to my view, a provocation close to defamation or even calumny.

As a former scientist in the field of endocrinology and also having served for eight years in the Swiss Academy for Medical Sciences as president of the Central Ethics Committee, I am well informed. I can reassure you and the author of this article that my country has very strict regulations on that delicate matter. Firstly, Swissmedic, the Swiss Agency for Therapeutic Products, has issued strict regulations for research concerning the production of specialized cells derived from embryonic stem cells. Projects of research in this field have to be evaluated by experts before being possibly accepted by this agency. The Swiss National Foundation for Scientific Research will not financially support projects that have not received this approval as a prerequisite. An equivalent procedure applies to clinical trials implying stem cells derived cellular therapy. The Swiss Federal Office of Public Health has issued a flyer informing potential patients entitled: “Cure with stem-cells: What is possible today and what is not. Information to the sake of the patient [my translation of that three page-long document since it exists only in our three national languages].”

Hoping that you will understand my dismay, I send you my best regards.

Hon. Prof. Michel B. Vallotton, MD, Chene-Bougeries, Switzerland

Editor's Response:



We assure Drs. Vallotton and Torresani – and all of our Swiss readers – that no slight to their beautiful country was meant in the artwork for the June cover of *Endocrine News*.

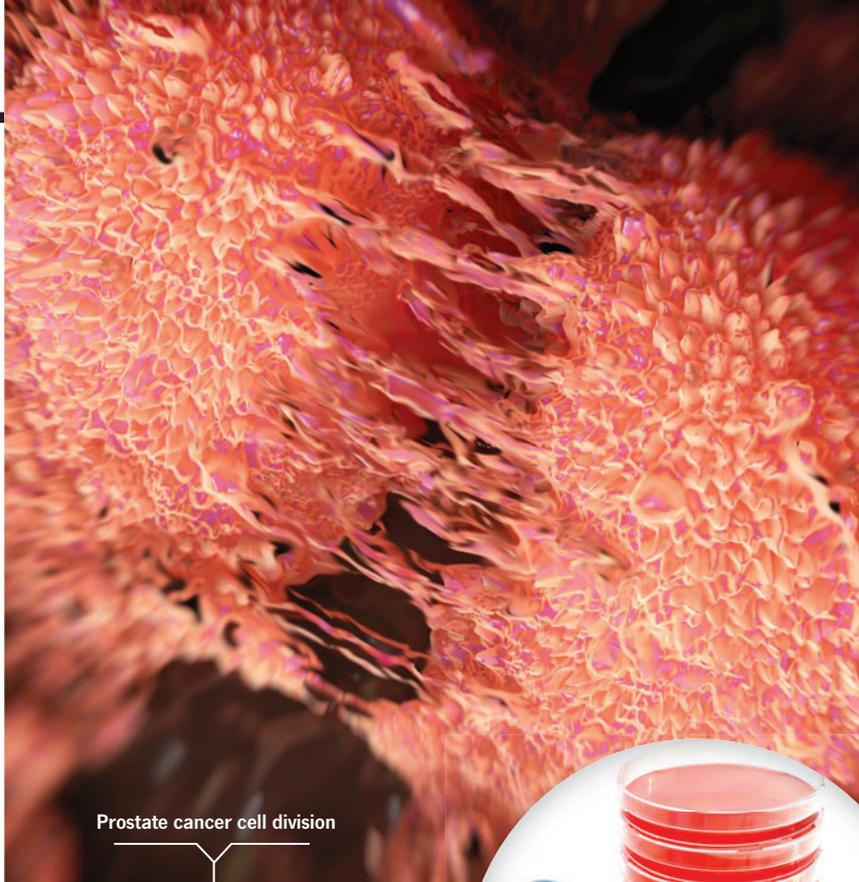
A topic such as “stem cell tourism” proved to be something of a challenge to illustrate, especially considering it was that issue’s cover story. The image needed to be as simple as possible while still ably representing the topic. In my mind, a rolling piece of luggage with a medical symbol was ideal for this purpose.

Since we try to give the covers of *Endocrine News* a “newsstand quality” to grab a reader’s attention, we typically use images that are as simple and to-the-point as possible. Therefore, while other cover options were considered, the one we used worked to illustrate “stem cell tourism” in the simplest manner possible. Also, since the white cross was within a circle on the image it was meant to represent “medical aid” and nothing more. White-on-red and red-on-white versions of the medical cross are common usage – we chose the former.

Thank you both for your letters, and please be assured that we were in no way slighting Switzerland or its well-respected medical professionals, agencies, or the voluminous amount of medical research this country produces.

Mark A. Newman, Editor, Endocrine News

Novel Coregulator that Plays Important Role in Prostate Cancer Identified



Prostate cancer cell division



Researchers have identified a novel coregulator that plays an important role in regulating cellular processes in prostate cancer (PCa), according to a new study published in *Molecular Endocrinology*.

The team led by Daniel E. Frigo, PhD, of the University of Houston, points out that androgen receptors (AR) are the primary drivers of PCa growth and metastasis and that hormone therapies targeting the C-terminal, ligand-binding domain of AR are the usual treatments for advanced PCa, but the cancer often develops resistance to these treatments. They go on to note that “it now appears as if other regions of AR, particularly the N-terminal domain, are crucial for the malignant progression of PCa.”

In this study, the researchers show that “a stretch of proline residues located within the N-terminus of androgen receptor is a bona fide coregulator binding surface, the disruption of which reduces the androgen-dependent proliferation and migration of [PCa] cells.” They used a T7 phage display and identified a novel AR-interacting protein, Src homology 3 (SH3)-domain containing, Ysc84-like 1 (SH3YL1), whose interaction with the receptor is dependent upon this polyproline domain. They found that knockdown of SH3YL1 reduced androgen-mediated cell growth, and that “RNA expression analysis revealed that SH3YL1 was required for the induction of a subset of AR-modulated genes.”

“Notable was the observation that ubiquitin 1 (UBN1), a key member of a histone H3.3 chaperone complex,” the authors continue, “was a transcriptional target of the AR/SH3YL1 complex, correlated with aggressive PCa in patients, and was necessary for the maximal androgen-mediated proliferation and migration of PCa cells.”

BY DEREK BAGLEY

Findings: Frigo and his team conclude that AR conformation, coregulator recruitment, and biology are intimately linked. They write that we now have a better understanding of how androgen-mediated PCa cells operate, and they hope that this work leads to potential new PCa treatments.



Insulin Dose Not an Independent Risk Factor for CV Mortality

Insulin dose did not contribute to an increased risk of cardiovascular (CV) mortality in the Action to Control Cardiovascular Risk in Diabetes (ACCORD) trial, according to a study recently published in *Diabetes Care*.

Researchers led by Elias Siraj, MD, of Temple University in Philadelphia, hypothesized that exposure to injected insulin was quantitatively linked to increased CV mortality, after noting that “intensive treatment of patients with type 2 diabetes and high cardiovascular (CV) risk was associated with higher all-cause and CV mortality.”

So they examined insulin exposure data in 10,163 patients with a mean follow-up of five years and explored associations between CV mortality and total, basal, and prandial insulin dose over time, adjusting for both baseline and on-treatment covariates including randomized intervention assignment. The researchers found that at baseline, higher insulin dose was associated with an increased risk of CV mortality, but when they adjusted for baseline covariates, “no significant association of insulin dose with CV death remained.”

Findings: “Moreover,” the authors continue, “further adjustment for severe hypoglycemia, weight change, attained A1C, and randomized treatment assignment did not materially alter this observation.” Siraj and his team concluded, then, that their analyses did not support their initial hypothesis, and that insulin dose was not associated with an increased risk of CV death.

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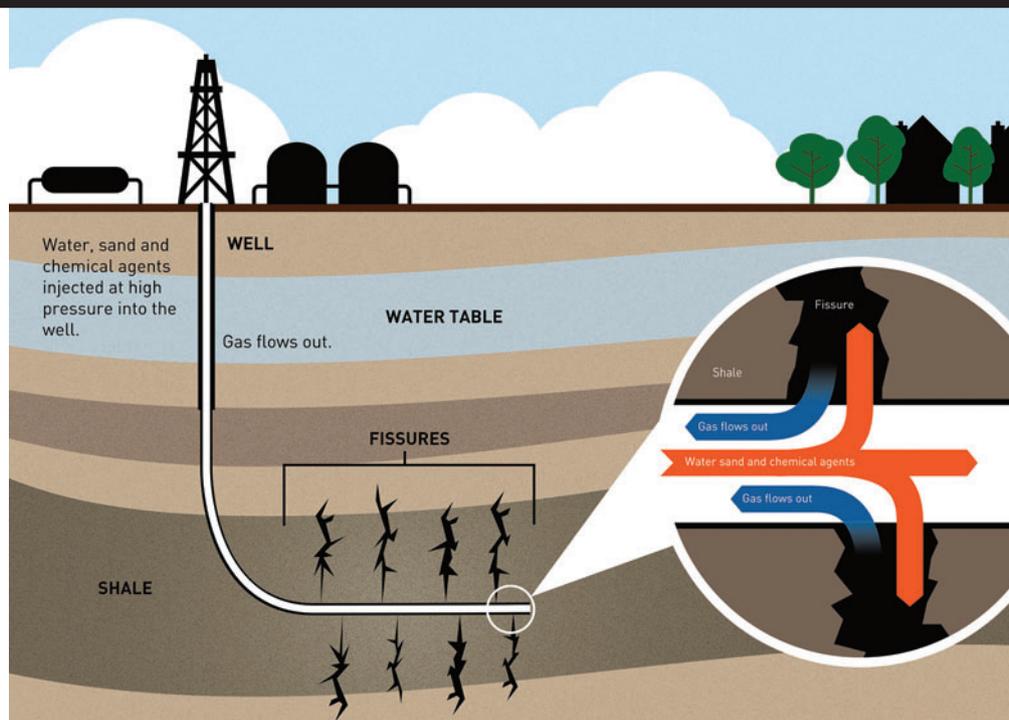
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Fracking Chemicals Tied to Reduced Sperm Count in Mice



Prenatal exposure to a mixture of chemicals used in hydraulic fracturing — fracking — at levels found in the environment lowered sperm counts in male mice when they reached adulthood, according to a new study published in *Endocrinology*.

Researchers led by Susan C. Nagel, PhD, of the University of Missouri in Columbia, tested 24 chemicals used in fracking and determined that 23 of them were endocrine-disrupting chemicals (EDCs). Among the 23 EDCs the scientists identified, more than 90% of the chemicals disrupted the functions of estrogens and androgens. In addition, more than 40% could interfere with progesterones. Another 30% of the chemicals disrupted thyroid hormone signaling. In addition, some chemical combinations exhibited greater than anticipated disruption based on single chemical analysis.

EDC exposure has been linked to health problems including birth defects, reproductive disorders, cancer, diabetes, obesity, and neurodevelopmental issues, according to the executive

summary of the Endocrine Society's second Scientific Statement on EDCs. An economic analysis published in *The Journal of Clinical Endocrinology & Metabolism* in March estimated that EDC exposure likely costs the European Union €157 billion (U.S. \$209 billion) a year in actual healthcare expenses and lost earning potential.

“
This study is the first to demonstrate that EDCs commonly used in fracking, at levels realistic for human and animal exposure in these regions, can have an adverse effect on the reproductive health of mice.”

“This study is the first to demonstrate that EDCs commonly used in fracking, at levels realistic for human and animal exposure in these regions, can have an adverse effect on the reproductive health of mice,” Nagel says. “In addition to reduced sperm counts, the male mice exposed to the mixture of chemicals had elevated levels of testosterone in their blood and larger testicles. These findings may have implications for the fertility of men living in regions with dense oil and/or natural gas production.”

Oil and gas companies are not required to disclose all of the chemicals in the mixtures they use for fracking. The scientists tested wastewater samples



Mechanism Connects Three Triggers of Metabolic Inflammation

Researchers have identified a link among the three main triggers of metabolic inflammation that accompany obesity, according to a recent paper published in *Endocrine Reviews*.

The investigators, led by Licio A.Velloso, DCM-FCM, of the University of Campinas, in Brazil, note that studies have shown “that obesity-associated insulin resistance results from the inflammatory targeting and inhibition of key proteins of the insulin-signaling pathway,” and that there are at least three distinct mechanisms that have been implicated in obesity-associated metabolic inflammation — endoplasmic reticulum stress, toll-like receptor (TLR) 4 activation, and changes in gut microbiota.

After reviewing more than half a century’s worth of data, TLR4 emerged as the link among these three mechanisms. The authors write that TLR4 is “the center of the events that connect the consumption of dietary fats with metabolic inflammation and insulin resistance.” TLR4 also activates systemic inflammation when changes in the gut microbial lead to reduced integrity of the intestinal barrier, which leads to increased leakage of lipopolysaccharides and fatty acids. “Fatty acids can also trigger endoplasmic reticulum stress,” the authors write, “which can be further stimulated by cross talk with active TLR4.”

Findings: The authors conclude that TLR4 is the mechanism that connects these three main triggers of metabolic inflammation. They go on to say that “efforts are being undertaken to develop pharmacological and nonpharmacological approaches that could target metabolic inflammation without interfering with immunosurveillance. If proven, successful new classes of drugs and other approaches targeting metabolic inflammation could contribute to more efficient treatment of obesity and its comorbidities.”

from drilling sites in Garfield County, Colo., and identified 16 of the fracking chemicals they had previously tested in these samples. The scientists used this information, along with existing literature on fracking chemical concentrations, to create a mixture of 23 chemicals that spanned the likely range of human exposure from levels found in wastewater to those likely to be found in drinking water contaminated with fracturing fluids.

Researchers added four different concentrations of the chemical mixture to the drinking water given to pregnant mice in the laboratory. The mice were exposed to the mixtures from day 11 of pregnancy until they gave birth. Their male offspring were assessed for effects of EDC exposure. The male offspring were compared to male mice born to mothers in the control group that was not exposed to the chemical mixture.

Findings: The scientists found mice that were exposed to the chemical mixtures prenatally had decreased sperm counts, increased testis weights, and increased testosterone levels compared to the control group. In addition to exhibiting reproductive changes, the mice that were exposed to the highest concentration of the chemical mixture tended to weigh more and showed persistent effects on the structure of the heart compared to the mice in the control group.

“It is clear EDCs used in fracking can act alone or in combination with other chemicals to interfere with the body’s hormone function,” Nagel says. “These mixture interactions are complex and challenging to predict. More research is needed to assess the many other chemicals used for fracking and to determine how they may be contributing to health outcomes.”

Medical technology is entering a brand-new, super-advanced era. To prepare these technologies — and themselves — for “real world” implementation, physicians and scientists need to be proactive.



Technology RISING

Big Data, Robots, and the
Digital Health Era

BY MELISSA MAPES

HEALTHCARE TECHNOLOGY HAS NEVER BEEN HOTTER.

Collaborations among entrepreneurs, engineers, and providers have resulted in an explosion of innovative tools that are reshaping medicine as we know it.

And this new technology could not be arriving at a better time — rates of obesity, diabetes, cancer, and other diseases are out of control. Combine that with the shortage of endocrinologists, and the situation is clear: We need faster, better ways to meet the demand for care.

Some technologies are attempting to increase the efficiency and effectiveness of healthcare delivery. Others are making it easier for individuals to manage their own wellness. Each tool tackles a different challenge from a different angle, and endocrinologists are often leading the medical community as early adopters.

“For the first time, the healthcare system is becoming ‘wired’ in the ways we have come to expect in other industries,” says Aaron Neinstein, MD, assistant professor and medical director of informatics, University of California, San Francisco.

During the year after his residency, Neinstein helped lead the rollout of the electronic health record (EHR) system Epic at the University of California, San Francisco. This formative experience launched his career in clinical informatics but also indicated the major shift to digital that would eventually spread across the country.

Now that nearly all health systems use EHRs, the implementation of other digital initiatives is getting easier. From “big data” analysis to artificial intelligence (AI), the inevitable collision of technology and healthcare has finally reached a tipping point — showing great promise for applications in a large variety of arenas.



SILICON VALLEY RX

The startup world is playing a critical role in this evolution, and entrepreneurs are winning big in the new healthcare economy.

Take Elizabeth Holmes for example. At just 31 years old, she is now the youngest self-made female billionaire in the world. Her company, Theranos, makes lab tests faster and much cheaper than normal. She invented “lab-on-a-chip” technology that can run hundreds of common tests with just a finger prick. Theranos is set to become available in drug stores in the near future — allowing consumers to buy lab tests directly and for a fraction of the cost.

Holmes may be the Steve Jobs of healthcare technology, but she is not alone in her success. Healthcare is among the fastest-growing industries in the country. Companies that create “wearables” — watch-like devices that gather individual health data — have seen an incredible surge in business, with FitBit alone growing its revenue by over 5,000% in just three years. Telehealth companies have also experienced a particular rise in popularity.

“There is a lot of excitement in healthcare about technology that allows providers to monitor patient data remotely,” Neinstein says. However, he does not expect endocrinologists to find the success of telehealth surprising. “This has been done for decades in diabetes,” he explains.



“ I am careful not to push new technologies onto patients unless there is a clear or likely benefit. If a patient wants to try a particular new app or device, I will work with them to review the data if I don't see any potential for harm. And I only recommend something like this when I really think the technology is a good fit for their situation.”

— AARON NEINSTEIN, MD, ASSISTANT PROFESSOR AND MEDICAL DIRECTOR OF INFORMATICS, UNIVERSITY OF CALIFORNIA, SAN FRANCISCO.

The life sciences division of Google Inc. has a few projects in the works that would further enhance telehealth for diabetes management. In partnership with the French pharmaceutical company Sanofi SA, they are developing contact lenses that monitor blood glucose levels and may also improve the eye's ability to focus.

Google is also working with DexCom, Inc., on a continuous glucose-monitoring (CGM) device about the size of a Band-Aid, which would be worn directly on the skin.

Some of the top minds in science, business, and engineering are converging in Silicon Valley to bring such space-age notions to life. If these companies attain their ambitions, physicians will have better tools, patients will experience improved care, and companies in the healthcare economy will see great profits.

But, there is an ongoing conversation about reimbursement that still needs to be addressed. Insurance companies and health systems have not quite figured out the problem of billing for time spent on telehealth. Until this issue is resolved, it will remain a roadblock for further expansion.

MICROMANAGING

Much of the boom in health technology comes from an influx of apps and devices for individual use. From calories burned to blood oxygen levels, more and more people are collecting personal health data on a daily basis.

Again, this trend started many years ago for diabetes care but only became mainstream in the past few years. The advent of the FitBit and the Apple Watch has taken the volume and quantity of self-tracking to a whole new level. Some individuals now sync every moment of their day with software applications that analyze their well-being, including sleep patterns, physical activity, average heart rate, and more.

Researchers are working to specialize such technology to improve the quality of life of people with chronic illnesses. In the meantime, the artificial pancreas has made incredible advances in the realm of medical devices, a product category that requires far more rigorous testing than consumer wearables.

“A closed loop ‘artificial pancreas’ technology for type 1 diabetes is the big game changer that we are all looking forward to,” says Neinstein.

There are multiple models of the artificial pancreas in the works, and the first iterations are expected to be on the market within a few years. Some of the prototypes currently in clinical trials rely on an iPhone or other smartphone to operate. As research continues, future versions are likely to get smaller and offer more individualized features, like a custom glucose control algorithm.



The convenience of wearables and apps empowers individuals to take greater control of their day-to-day health, while also providing a wealth of data that may improve individual treatment plans. However, the actual medical impact of such gadgets remains to be seen. The artificial pancreas, on the other hand, offers mobile technology with vast and proven health impact.

ANALYZE THIS

Naturally, there are privacy concerns when it comes to collecting health data through any digital platform. But the information gleaned from tracking large swaths of the population can also be an extremely valuable resource for medical research. Big data are getting bigger, and most scientists seem excited about its prospects.

When medical researchers hear the term “predictive analytics,” their ears perk up. The single greatest source of buzz around big data and healthcare comes from this concept. Just as the name indicates, predictive analytics make it possible for providers to stop adverse medical events before they occur.

New algorithms can identify at-risk patients based on environmental factors, medical records, genetics, lab tests, and the personal health data gathered from mobile devices. Once streamlined, these combined sources of information can contribute to efficient diagnoses and faster, more effective interventions — helping to ensure that health issues are identified and treated before they become irreversible.

Big data are also changing the way scientists conduct research. Traditionally, a scientist would form a hypothesis, devise an experiment to test it, and form a conclusion based on the results. Now, massive cloud databases are making it possible to test hypotheses without ever conducting a physical experiment.

Scientists can reach conclusions almost instantaneously by analyzing existing health data. There’s so much information already available that collecting new data is often unnecessary.



AT A GLANCE

- ▶ **The proliferation of EHRs has prepared the healthcare system for a new wave of technology including “wearables,” apps, artificial intelligence, and big data.**
- ▶ **Startups and industry leaders alike are competing to create the next great medical innovation.**
- ▶ **The benefits of all these digital inventions could be vast, but patient privacy remains a major concern.**



Some physicians are even using big data to make tough treatment decisions on the spot. By running the numbers on similar patients in their EHR system, a provider may be able to quickly evaluate the risks and success rates of different courses of treatment.

Ultimately, a universal database of health data on the entire population (or close to it) may become a reality, speeding up the pace of discovery and forever changing the way that healthcare works.

iROBOT

The next logical step after big data is artificial intelligence (AI).

Robots have been helping physicians complete operations and other tasks for some time but always under human control. AI might make it possible for robots to help treat patients with little to no physician involvement.

“Some of the most common and simple issues could be handled with artificial intelligence,” says Neinstein. “This would allow us to leverage ourselves and our time better, rather than having everything be one-on-one care.”

Neinstein believes that personal interaction between provider and patients is important but recognizes that healthcare would be faster and more affordable if in-person appointments could be reserved for more complex cases.

“We could still see many patients in our offices but shift some of our time to doing population management,” Neinstein continues.

AI can take many forms and perform a variety of functions. Perhaps the most notable example is IBM’s Watson — the cognitive computing system that won *Jeopardy!* back in 2011. Named for the famous sidekick from the Sherlock Holmes stories, Watson can make medical recommendations in addition to providing legal analysis and Internet retail advice.

Consumer surveys have shown that people are happy to have robot helpers in certain scenarios. However, people still prefer a real human for deeply personal situations. No one seems to want a robot taking care of their children, and they are unsure about relying on AI to diagnose an ailment.

But the tides are nonetheless shifting in favor of machines. With Siri proving to be a helpful companion for anyone with an iPhone, consumers are warming up to the idea of AI medical providers.

Once computing systems like Watson pass some essential tests, they can start taking some of the pressure off overextended physicians.

TOMORROW’S MEDICINE

Neinstein, like many providers, has taken a conservative approach to actually implementing most of these new digital tools.

“I am careful not to push new technologies onto patients unless there is a clear or likely benefit,” he explains. “If a patient wants to try a particular new app or device, I will work with them to review the data if I don’t see any

“ For the first time, **the healthcare system is becoming ‘wired’** in the ways we have come to expect in other industries.”

— AARON NEINSTEIN, MD, ASSISTANT PROFESSOR AND MEDICAL DIRECTOR OF INFORMATICS, UNIVERSITY OF CALIFORNIA, SAN FRANCISCO.

potential for harm. And I only recommend something like this when I really think the technology is a good fit for their situation.”

The question of protecting patient confidentiality is still lingering over all these new technological advances. Additionally, some technologies and apps have not undergone the rigorous approval process that is involved for traditional medical devices. Many physicians are holding off on incorporating such tools until they are empirically proven to be safe, private, and effective.

But that’s not to say that progress is not being made on these fronts.

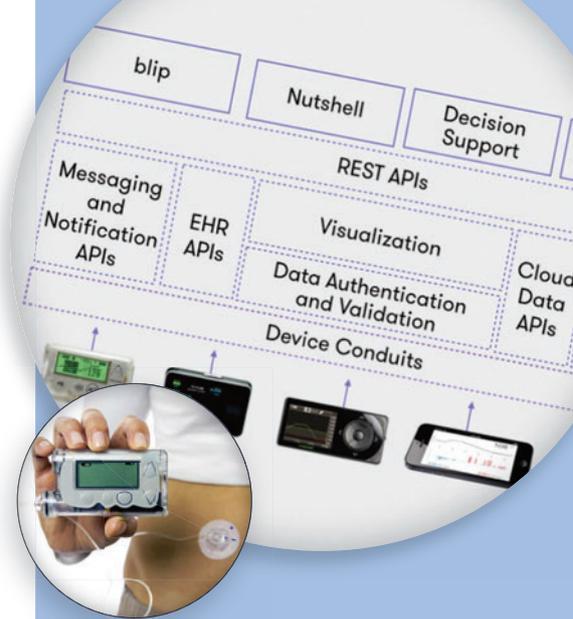
“All healthcare systems have health IT leaders who are thinking about the future and how to map out the road ahead,” says Neinstein.

He encourages providers to participate in this process. “Join committees. Speak up. Sign up for a pilot study of a technology. Be a part of the change,” he says.

Each new technology generally requires another username and password, and another interface to learn how to use it. The goal is to seamlessly integrate these tools together to create better and more efficient healthcare.

“We want to use technology to make care more personalized and more personal, not less so,” Neinstein continues.

And the expectation for these tools to make their way into healthcare is unavoidable. In most other industries, individuals can now get exactly what they need in a matter of clicks. Medicine might take a while to catch up, but digital health is clearly entering its golden age. 



TIDEPPOOL

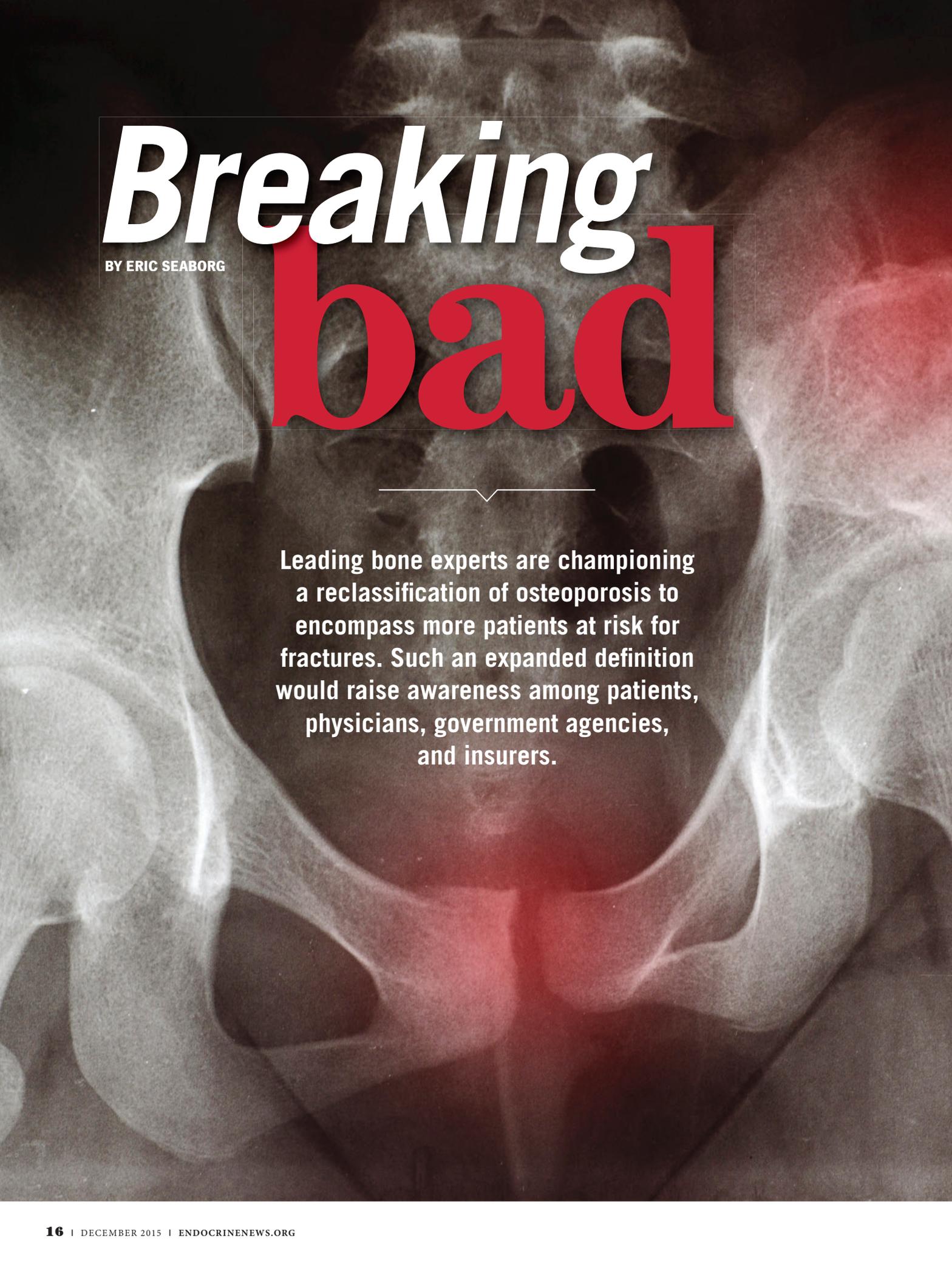
For-profit corporations are not the only entities making great efforts to improve digital health technologies. Neinstein was part of a team that established the nonprofit Tidepool to develop software tools to make diabetes management easier.

Neinstein has been testing out Tidepool software in a clinic with patients who are willing and interested. “We use this software to review their diabetes device data together. I like being able to talk with my patients not just about their data but about their feedback regarding the technology’s role in their lives,” he says.

The nonprofit makes all of its products open source to facilitate the advancement of digital tools for people with diabetes. It aims to provide actionable insights from health data and encourages others to build upon its code.

Learn more at Tidepool.org.

MAPES IS A WASHINGTON, D.C.-BASED FREELANCE WRITER AND A REGULAR CONTRIBUTOR TO *ENDOCRINE NEWS*. SHE WROTE ABOUT TRANSGENDER HORMONE THERAPY IN THE OCTOBER ISSUE.



Breaking

BY ERIC SEABORG

bad

Leading bone experts are championing a reclassification of osteoporosis to encompass more patients at risk for fractures. Such an expanded definition would raise awareness among patients, physicians, government agencies, and insurers.



Most hip fractures occur in patients who do not have osteoporosis — at least according to the currently accepted definition of the condition.

But that limited definition is leading to patients at risk for fracture being undertreated — and is a key reason the National Bone Health Alliance Working Group is proposing that the diagnosis of osteoporosis be expanded to include patients who clearly have an elevated fracture risk based on three additional criteria.

“Osteoporosis remains grossly misunderstood by most people, including perhaps some physicians, but certainly the public,” says Ethel S. Siris, MD, professor of medicine at Columbia University Medical Center, in New York City, and lead author of the working group’s position paper published last year in *Osteoporosis International*.

The position paper has been endorsed by the Endocrine Society and more than a dozen other professional organizations, including the American Society for Bone and Mineral Research and the American Academy of Orthopaedic Surgeons. It is expected to be incorporated into the next revision of the most important guideline on the condition — the National Osteoporosis Foundation’s Clinician’s Guide — in December.

CURRENT VERSUS PROPOSED CRITERIA

In the U.S., the current criterion for the diagnosis of osteoporosis in postmenopausal women and men over the age of 50 is a bone mineral density (BMD) test score that is 2.5 or more standard deviations less than that of the average healthy 30-year-old at the lumbar spine, femur neck, or total hip — that is, a T-score of minus 2.5 or lower. But BMD measures only bone quantity and not other important risk factors such as bone quality, so relying on this single measure alone misses a lot of patients who could be potentially helped by treatment, according to Siris.

Therefore, in addition to the T-score, the group proposes that physicians should consider an osteoporosis diagnosis in an older adult in three additional situations:

1. Those who experience a hip fracture regardless of their bone mineral density T-score;
2. Those with osteopenia by BMD who sustain a vertebral, proximal humeral, pelvic, or (in some cases) distal forearm fracture; and
3. Those who have a 10-year risk based on the World Health Organization Fracture Risk Algorithm (FRAX) of 3% for hip fracture or 20% for a major fracture.



“ We need a broader definition of osteoporosis, mainly to convince insurance companies that this is a patient worthy of receiving prescription drug therapy, **but also to educate providers and patients that there is more to fracture risk than just bone density.** ”

— NELSON WATTS, MD, DIRECTOR, MERCY HEALTH OSTEOPOROSIS AND BONE HEALTH SERVICES, CINCINNATI, OHIO

RESISTING BAD NEWS

Even when patients break a bone, both patients and physicians seem to resist the diagnosis of osteoporosis, according to working group member Nelson Watts, MD, director of Mercy Health Osteoporosis and Bone Health Services, in Cincinnati, Ohio, and lead author of an Endocrine Society guideline on osteoporosis in men. This resistance is so great that only about 20% of Medicare-age women who sustain a fracture are evaluated for osteoporosis.

The working group hopes to raise awareness that treatment should be considered in these cases, Watts says, and several groups make up the target audience: patients, physicians, insurance companies, and government agencies.

Siris uses the example of a postmenopausal woman who presents with a fractured hip and a T-score of minus 2.4 at the spine or the hip. Under the current definition, the diagnosis would be “osteopenia and hip fracture, which is crazy. The patient has osteoporosis and should be treated,” she says. “These are diagnostic criteria. We’re not saying everybody who meets the diagnosis needs drug X. We are saying, you have to be identified as having a disease that puts you at risk for future fractures, and something has to be done.”

The position statement has already been useful in getting the right treatment for patients, according to Joseph M. Lane, MD, professor of orthopedic surgery at Weill Cornell Medical College, in New York City: “Some 55% of hip fractures occur in patients with osteopenia rather than osteoporosis; however, the insurance companies will not let you prescribe certain drugs unless the diagnosis of osteoporosis is made.” Lane has used the position paper’s expanded definition to convince insurance companies to pay for more appropriate treatment for these patients, for example, the anabolic bone-forming agent Forteo (teriparatide). The drug is more expensive but more effective for some patients than drugs such as bisphosphonates.

HAVE THEY PROVED THEIR CASE?

Of course, the proposal has its critics who say that the working group has not met the standard of proving that the benefits of expanding the definition outweigh potential harms. “Broadening the definition of a disease can have adverse consequences, including labeling a substantial proportion of the population with a problem that might not benefit from treatment and placing higher demands on the healthcare system to identify and treat the great number of patients meeting the expanded criteria. If treatments are not effective, healthcare resources are wasted and there is diversion of those resources away from other disorders for which treatment benefits are better established,” John T. Schousboe, MD, and Kristine E. Ensrud of the University of Minnesota write in *The Lancet Diabetes & Endocrinology*.

These and other critics have questioned the evidence base for giving drugs to patients whose T-scores are better than 2.5. “Higher estimated fracture probabilities are not yet known to identify a subgroup of patients who benefit from treatment,” Schousboe and Ensrud write.

The proposal’s supporters respond that high fracture and refracture rates among patients with osteopenia demonstrate that osteoporosis is currently underdiagnosed and undermanaged and these patients warrant more attention. And although the clinical trials for the drugs currently used were designed to test their effectiveness primarily among patients with lower T-scores, there are many examples of evidence that some drugs can help in others as well.

RAISING AWARENESS, REDUCING RISKS

Siris notes that the position paper makes no specific treatment recommendations but is aimed at diagnosis: “It is a way of raising awareness, making people understand that there are risks that you want to reduce.” In that example of a woman with a hip fracture and a BMD of minus 2.4, “you have to be thinking about a management strategy.” That strategy could start with a conversation focusing on what she calls “the big three”: adequacy of calcium and vitamin D to avoid a deficiency state; addressing the issue of fall risk reduction; and the potential benefit of a drug. Siris recommends looking at the literature to decide “which drug should you use for which patient and when should you not use a drug to address, for example, whether a drug works in somebody whose high risk of fracture is based solely on FRAX.”

The criteria for diagnosing osteoporosis have changed over time as knowledge and treatment have changed, and supporters maintain that this is the next logical step. Like any change, it has critics, but with the backing of so many experts and organizations, this position paper is on a track to be incorporated into guidelines, and the supporters will be working to make it a part of ICD codes.

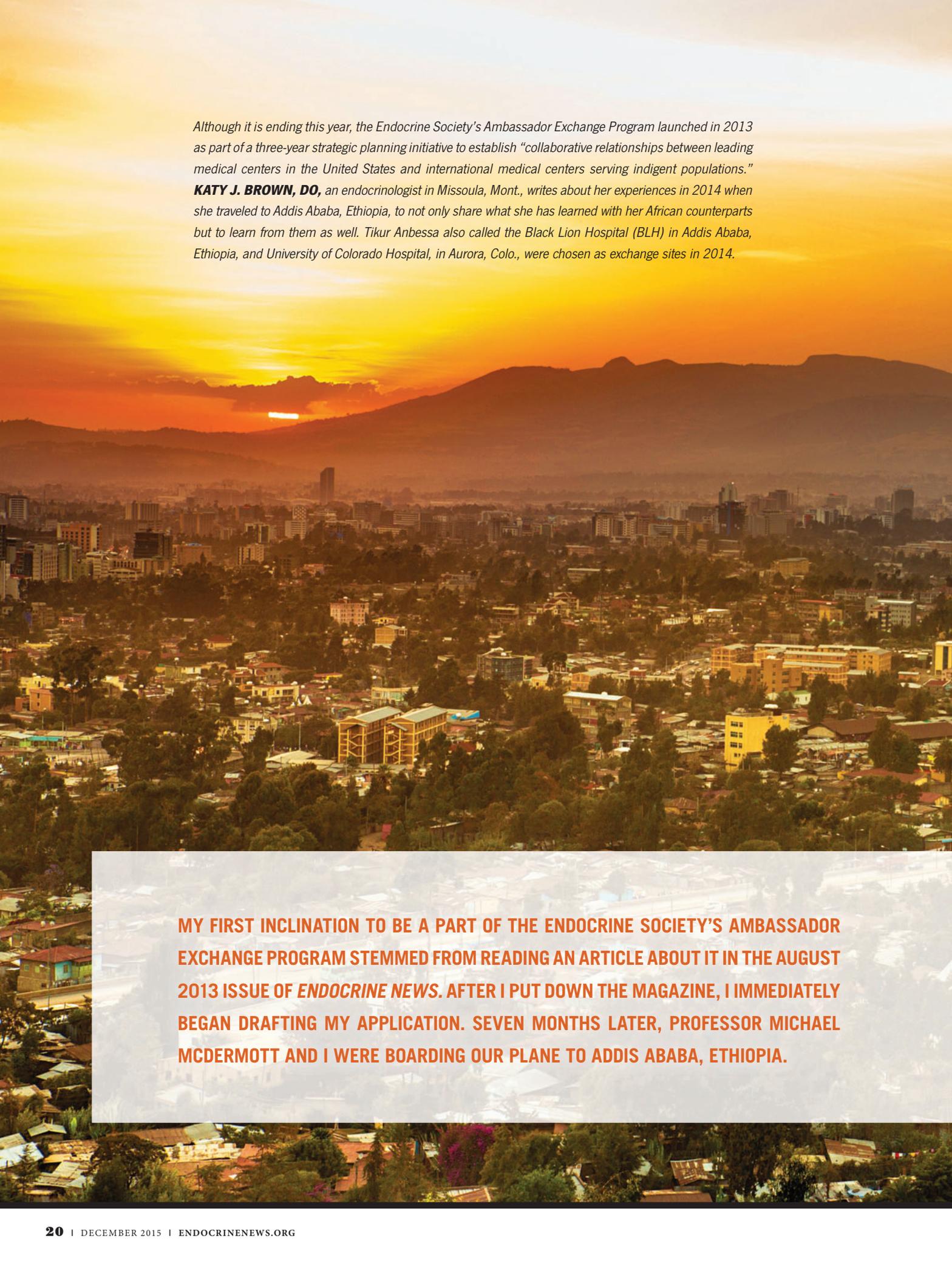
“We need a broader definition of osteoporosis, mainly to convince insurance companies that this is a patient worthy of receiving prescription drug therapy but also to educate providers and patients that there is more to fracture risk than just bone density,” Watts concludes. 



AT A GLANCE

- ▶ **Because most fractures in older adults occur in patients whose bone mass puts them in the category of osteopenia rather than osteoporosis, bone experts propose expanding the diagnostic criteria for osteoporosis.**
- ▶ **The reliance on bone mineral density scores exclusively leaves out many patients with a high fracture risk who could benefit from a treatment plan.**
- ▶ **By expanding the definition of osteoporosis, experts hope to raise awareness among patients, physicians, insurers, and government agencies.**

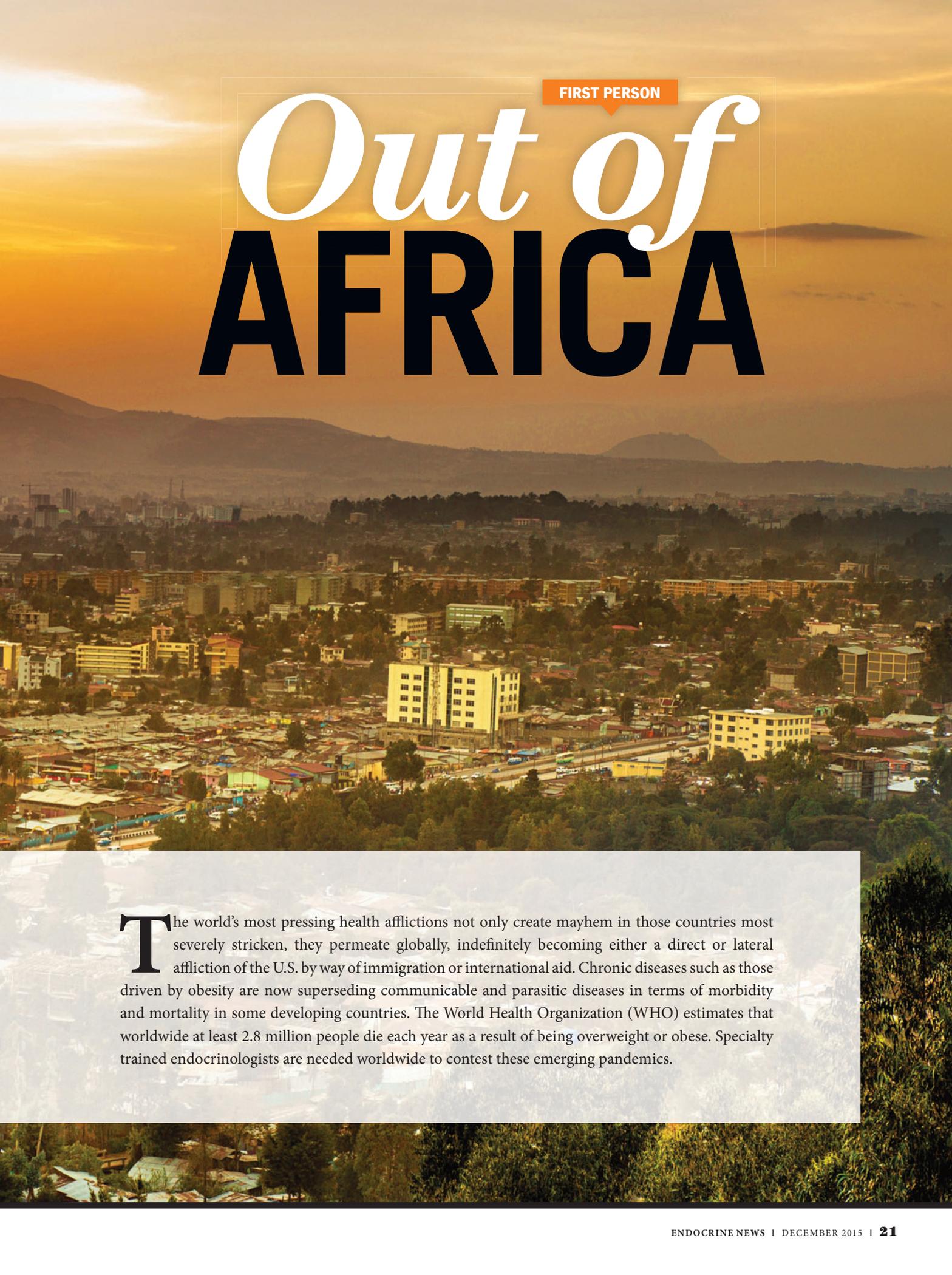
SEABORG IS A FREELANCE WRITER BASED IN CHARLOTTESVILLE, VA. HE WROTE ABOUT ESTROGEN THERAPY IN THE NOVEMBER ISSUE.

An aerial photograph of Addis Ababa, Ethiopia, taken during a vibrant sunset. The sky is a mix of orange, yellow, and red, with the sun low on the horizon behind a range of mountains. The city below is densely packed with buildings, including several prominent high-rise structures. The foreground shows a mix of residential and commercial buildings, with some greenery interspersed.

Although it is ending this year, the Endocrine Society's Ambassador Exchange Program launched in 2013 as part of a three-year strategic planning initiative to establish "collaborative relationships between leading medical centers in the United States and international medical centers serving indigent populations."

KATY J. BROWN, DO, an endocrinologist in Missoula, Mont., writes about her experiences in 2014 when she traveled to Addis Ababa, Ethiopia, to not only share what she has learned with her African counterparts but to learn from them as well. Tikur Anbessa also called the Black Lion Hospital (BLH) in Addis Ababa, Ethiopia, and University of Colorado Hospital, in Aurora, Colo., were chosen as exchange sites in 2014.

MY FIRST INCLINATION TO BE A PART OF THE ENDOCRINE SOCIETY'S AMBASSADOR EXCHANGE PROGRAM STEMMED FROM READING AN ARTICLE ABOUT IT IN THE AUGUST 2013 ISSUE OF *ENDOCRINE NEWS*. AFTER I PUT DOWN THE MAGAZINE, I IMMEDIATELY BEGAN DRAFTING MY APPLICATION. SEVEN MONTHS LATER, PROFESSOR MICHAEL MCDERMOTT AND I WERE BOARDING OUR PLANE TO ADDIS ABABA, ETHIOPIA.

An aerial photograph of a city, likely in Africa, taken during sunset. The sky is a mix of orange, yellow, and light blue. The city below is densely packed with buildings of various colors and heights, interspersed with green trees. In the background, there are rolling hills or mountains under the hazy sky. The overall mood is serene yet somber due to the late hour.

FIRST PERSON

Out of **AFRICA**

The world's most pressing health afflictions not only create mayhem in those countries most severely stricken, they permeate globally, indefinitely becoming either a direct or lateral affliction of the U.S. by way of immigration or international aid. Chronic diseases such as those driven by obesity are now superseding communicable and parasitic diseases in terms of morbidity and mortality in some developing countries. The World Health Organization (WHO) estimates that worldwide at least 2.8 million people die each year as a result of being overweight or obese. Specialty trained endocrinologists are needed worldwide to contest these emerging pandemics.

ETHIOPIA BOUND

Over the past 20 years, Ethiopia's economic growth has led to urbanization and increasing need for subspecialty trained physicians. Such growth generally leads to greater urbanization allowing for major shifts in subsistence; for those who benefit fiscally, it can become a catalyst promoting sedentary behavior and changes in dietary patterns. Increasing body mass index (BMI) and waist circumference (WC) combined with an ethnic predisposition of developing greater insulin resistance independent of adiposity has contributed to increasing rates of diabetes in Ethiopia. The International Diabetes Federation estimated in 2013 that the prevalence of pre-diabetes and diabetes in Ethiopia was 6.9% and 4.4%, respectively, among those ages 20-79 years old. The overwhelming majority are unaware that they have the disease.

In the last 20 years, Ethiopian leadership has prioritized training future doctors to improve access to healthcare. The number of medical schools has increased from three to 20 in the last decade. In 2014, 1,000 medical students graduated with a medical doctorate degree, and this year the number of graduates is expected to more than double that number. Despite this progress, there remains a critical shortage of subspecialty trained physicians in all medical fields. Medical school and training in Ethiopia is free with mandatory reciprocation of time and service. After training, if they remain in academic medicine, their responsibilities are multi-faceted. As endocrine specialists, they run endocrine clinics and see inpatient endocrine consults but also serve as general practitioners, making rounds on adult and pediatric hospital patients, teaching house staff, writing exam questions, serving on administrative committees, and participating in research protocols and grant writing. Academic employment alone is not enough compensation to support themselves or their families, and this discrepancy has led most to open evening and weekend private practice clinics in which they see patients that can afford to pay out of pocket. No surprise then that the end result for many can be burnout. Herein lies the problem: recruiting, training, and retaining physicians within Ethiopia's borders.

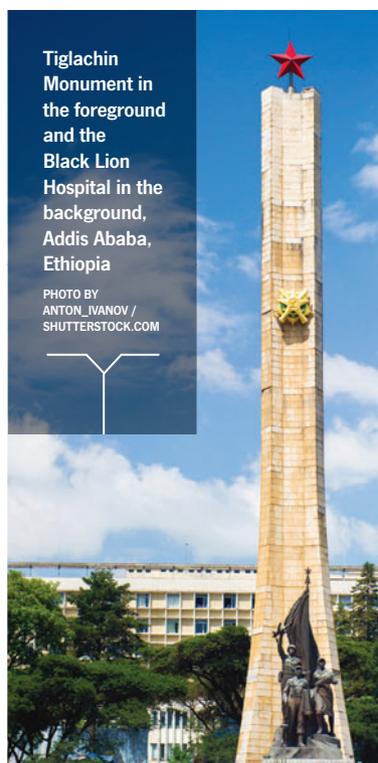
WELCOME TO THE BLACK LION HOSPITAL

Tikur Anbessa or the Black Lion Hospital (TA/BLH) is the largest public university hospital built more than 50 years ago in Addis Ababa. Until March 2012, there were only three endocrinologists serving 90 million people. An official endocrinology fellowship training program launched in 2012, and the first two fellows graduated in May 2014, Helen Yifter Betew and Abdurazak Ahmed Abdela. They trained under Ahmed Reja and Tedla Kebede.

Outpatients at TA/BLH have either a morning or afternoon appointment. Prior to the appointment, the patient checks in well ahead of time, his or her chart is pulled from a separate building and carried back to clinic. Patient exam rooms are shared by three to four physicians seated at desks. Each patient is then called one-by-one — the order is determined by how the charts were stacked by the nurses. There is no such governing entity such as the Health Insurance Portability and Accountability Act (HIPAA) in Ethiopia as this would require single patient rooms, locked and secured charts, numbering systems for identification, etc. If a resident had a question about management of a patient, he or she would openly discuss the circumstances of the case in front of all present in the room. No one seemed uncomfortable by this arrangement, and throughout our stay there was a

reemerging theme of community, openness, and disclosure. Time spent on medical documentation in the U.S. has increasingly become a source of contention with practitioners. Such a frustration is not known in Ethiopia — each physician documents as much or as little as they deem appropriate.

Medical advances in the developed world have, in many ways, negated the need for rigorous and meticulous physical examination skills. What was once a vital skillset for physicians has now been replaced by sophisticated and expensive medical diagnostic tests. Ethiopia is in the midst of this transition — at times still relying entirely on the history of present illness and physical examination; this approach is especially difficult in the management of diabetes. Most patients at TA/BLH cannot



Tigrachin Monument in the foreground and the Black Lion Hospital in the background, Addis Ababa, Ethiopia

PHOTO BY
ANTON IVANOV /
SHUTTERSTOCK.COM



ETHIOPIA is nestled in the Horn of Africa, bordered by Sudan, Eritrea, Somalia, and Kenya. It is the tenth largest country in Africa and home to approximately 90 million people. The climate is described as temperate in the highlands and hot in the lowland desert. The economy is based primarily upon subsistence agriculture; major players being coffee and khat. Mining and tourism are also important economical drivers. The official language of Ethiopia is Amharic, but secondary and higher education is taught in English. Religious affiliations include Orthodox Christian, Islam, and Protestant Christianity.

TOP PHOTO BY MARTCHAN / SHUTTERSTOCK.COM, BOTTOM PHOTO BY TREVOR KITTELTY / SHUTTERSTOCK.COM



About **KATY J. BROWN**

Katy Brown, DO, is currently a practicing endocrinologist in Missoula, Mont. She completed her fellowship in endocrinology, diabetes, and metabolism at the University of Colorado, in Aurora, Colo. She is a dedicated athlete and outdoor enthusiast with a background in nutrition/dietetics, rendering her especially passionate about educating patients regarding lifestyle changes in the prevention and treatment of chronic metabolic diseases. She is committed to cultivating global collaboration so that, together, endocrinologists can combat increasingly problematic diseases often driven by obesity.



afford the tools needed to self-monitor their blood glucose (SMBG). Additionally, there is not a reliable assay to measure hemoglobin A1c. By default, medical decisions are made based off of a single fasting blood sugar on the morning of the patient's clinic appointment, and signs/symptoms suggestive of hyperglycemia or hypoglycemia are then addressed. The diabetes medications available are metformin, glibenclamide, NPH insulin, Regular insulin, and 70/30 NPH/Regular Mix.

Thyroid pathology is the second most common endocrine disorder in Ethiopia. The medications available include Thyroxine, Propylthiouracil (PTU), and Propranolol. For hyperthyroidism, an uptake and scan is not readily available, making many cases difficult to diagnose as either high or low uptake. Radioactive iodine for the treatment of Graves' disease and differentiated thyroid cancer is also generally not available due to isotope availability. In 2013, the population of Ethiopia was rated as having moderate iodine deficiency classified by a median urinary iodine concentration (UIC) of 20–40 mcg/L. Only 19.9% of Ethiopians consume iodized salt, a drastic decrease as a result of the previous war conflict with Eritrea, where iodized salt was once imported. The proportion of the population with mild to severe iodine deficiency is 83%, and the estimated incidence of goiter associated with iodine deficiency is 40%. The problems associated with goiter, maternal hypothyroidism, and infant morbidity related to iodine deficiency and hypothyroidism remain a great concern, and the government has taken steps to sanction the production of iodized salt within Ethiopia, although the timeline of clinically relevant implications is uncertain.

Regarding other topics within the umbrella of endocrinology: Hormonal assays for vitamin D, PTH, testosterone, and pituitary hormones are either not available or inconsistently available. Cosyntropin is not available for the diagnosis of adrenal insufficiency, and biochemical tests for the diagnosis of

pheochromocytoma are lacking entirely. Magnetic resonance imaging (MRI) is available for pituitary imaging, and ultrasound is available for thyroid imaging although this is done in the radiology department and thyroid cancer cases are sent to oncology.



MY CULTURAL EMERSION

Our first morning at TA/BLH we ascended eight flights of stairs to the house staff quarters for morning report. The seating arrangements clearly demonstrated the hierarchy: Attendings in the front rows, followed by the senior residents, interns, then medical students. The chief resident was seated at the front, a single empty chair placed intimidatingly next to him. He called out various house staff to come to the front and present their patients cases. Not one presentation was spoken at a decibel louder than what was *just* enough to be *mostly* heard, this was a recurring theme throughout our two-week visit. After presentations, Professor McDermott and I were warmly introduced then we were off to the diabetes clinic.

We saw several women with diabetes presenting for regular checkups and questions about fecundity. I sat with Helen Yifer as she gathered the history of present illness, interacting with the patients in Amharic, then translating the conversation to me in English. One young woman with uncontrolled type 1 diabetes and nephropathy had seen Helen a number of times. The young woman was newly married and anxious to bear children despite repeated counseling regarding the risks to mother and fetus with uncontrolled diabetes. The young woman shared her news, she was 12 weeks pregnant. Helen nodded; her repeated counsel had not altered the inevitable. Later she told me, “The husband decides how many children he wants. It is changing in some circles, but there are still many that believe that the greater number of children reared, the greater their wealth. It’s a status symbol. If there is difficulty with pregnancy, for any reason, the women fear their husbands will divorce them.”

Shortly thereafter, we saw an obese woman with uncontrolled type 2 diabetes and advanced maternal age status post recent delivery of a fetus with anencephaly. She inquired about her fertility as her husband wanted more children. I watched as Helen patiently and empathetically counseled her about the risks of pregnancy with her comorbid conditions. Helen suggested that the woman’s husband attend her next appointment so he could hear the message firsthand. The patient shyly smiled and informed Helen that her husband would not be interested in hearing this unfortunate news from anyone.

I noted earlier the statistics for undiagnosed type 2 diabetes and pre-diabetes. We know that lifestyle modification with weight



A seller of spices waits for customers in Merkato market in Addis Ababa, Ethiopia. Only 19.9% of Ethiopians consume iodized salt, a drastic decrease as a result of the previous war conflict with Eritrea, where iodized salt was once imported. The proportion of the population with mild to severe iodine deficiency is 83%, and the estimated incidence of goiter associated with iodine deficiency is 40%. PHOTO BY ALEKSANDR HUNTA / SHUTTERSTOCK.COM

MAKING THE ROUNDS.

Michael McDermott, MD, (left) and the author make their rounds with a team of residents at the Black Lion Hospital in Addis Ababa. Physicians in Ethiopia spend little time on paperwork and there is an overriding theme of community, openness, and disclosure.



loss through diet and exercise is superior to pharmacotherapy for the prevention and the reversal of pre-diabetes and type 2 diabetes. We have found that successful and sustained weight loss and weight loss maintenance is inherently difficult to achieve, even with an abundance of resources available to us in the U.S. I asked Helen if she had any success in counseling her diabetic patients about lifestyle change with diet and exercise. She had not a single patient return to her with clinically significant intentional weight loss. Not only is the plight difficult enough with meager resources available to her patients, there is fear regarding the social stigmatization of weight loss and its association with HIV/AIDS infection.

My experience with the Ambassador Exchange Program was fruitful and enlightening. There remains much to be done to support this new endocrine fellowship program and to improve the resources available to endocrinologists and indigent patients in Ethiopia. It is only through ongoing support and repeated interactions with the same institutions that we intimately learn the landscape and can then thereby develop innovative solutions to difficult problems. It is my hope that we can procure continued support from the Endocrine Society, University of Colorado, and my new employer, Providence Saint Patrick's Hospital, in Missoula, Mont., in order to continue collaborations for the betterment of endocrine care world-wide one program at a time. **EN**

THE TEAM

Of all that has transpired from this experience, I am most grateful to have been given the opportunity to work closely with these outstanding professionals.

MICHAEL MCDERMOTT, MD I first met and worked with Professor McDermott as a visiting fourth-year medical student at the University of Colorado Hospital. He has the uncanny ability to give the house staff *just* enough autonomy so that we learn from our own decisions and *just* enough guidance so as to feel reassured and buoyed. He remains my closest mentor, and I am forever indebted for the guidance he has imparted in my career and life.

AHMED REJA, MD, aside from clinical duties, also serves as the chief executive director of the College of Health Sciences at Addis Ababa University. We immediately felt at ease when he picked us up from the airport as he commanded a welcoming, assertive presence. What struck me most about Reja is his deep abiding love and respect for his country and his people. He is wholly invested in improving the welfare of Ethiopian people through service of healthcare.

HELEN YIFTER BETEW, MD and **ABDURAZAK AHMED ABDELA, MD** are the two endocrine fellows we spent nearly every working hour of every working day. Despite their astronomical responsibilities between academic and private practice, I found not one hint of perspiration, not one sigh, not one outburst of frustration, not an iota of hurriedness.

DRUM ROLL

ANNOUNCING THE 2016 ELECTION RESULTS

The Endocrine Society's Nominating Committee is pleased to announce the results of the 2016 Election that concluded on October 12, 2015. Congratulations to the following Society leaders who will assume their new positions at the Society's Annual Business Meeting on April 4, 2016 during ENDO 2016 in Boston, Massachusetts.

President-Elect (Clinical Science)

Lynnette K. Nieman, MD

Vice President (Physician-in-Practice)

Howard B. A. Baum, MD

Council (Basic Science Seat)

Daniel J. Bernard, PhD

Council (At Large Seats)

Carol H. Wysham, MD

Guillermo E. Umpierrez, MD



endocrine.org/electionresults

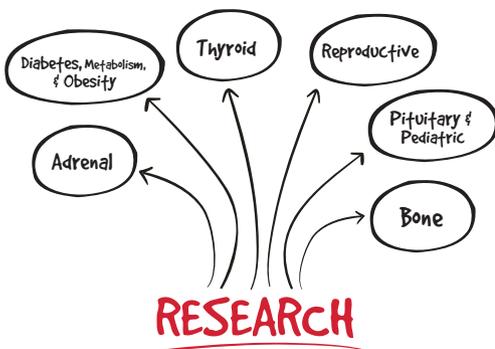
ENDOCRINE
SOCIETY

Eureka!

BY MELISSA MAPES

TOP ENDOCRINOLOGY DISCOVERIES OF 2015: A YEAR IN REVIEW

Endocrine News has compiled the leading breakthroughs in endocrine research over the course of the past year with the help from 11 editors from *Endocrine Reviews*. From genetic research to new thyroid cancer drugs, amazing progress is being made in the field of endocrinology.



Each year brings us a little closer to solving complex endocrine puzzles. In 2015, global research efforts led to an impressive crop of scientific publications in endocrinology, ranging from the inner workings of circadian metabolism to the relationship between sex hormones and bone. Eleven editors of *Endocrine Reviews* shared their input on the most significant findings published over the past year or so — highlighting a few of the exciting developments in several specialties.

DIABETES, METABOLISM, AND OBESITY

For David Clemmons, MD, professor of medicine at the University of North Carolina at Chapel Hill, three major discoveries rise to the top in this arena — but one especially stands out. “From my perspective, the biggest finding was that metabolic reprogramming is directly linked to cellular differentiation,” he says.

The secrets of cell differentiation have mystified the field of medicine for ages, but such progress takes science closer to a clear understanding of the complexities of these processes — and could lay forth a path to a wealth of new therapies.

The second major discovery from Clemmons’ point of view is that the assembly of discrete signaling complexes within cells containing NADPH oxidases can result in discrete protein oxidation changes, completely altering metabolic signaling. “This provides a seminal understanding as to why the generalized anti-oxidative approach, like vitamin C ingestion, has failed to correct tissue damage due to oxidative stress,” he explains. “It opens up the possibility that targeting strategies for the specific complexes may be much more successful.”

The third big finding he points to involves weight-loss surgery. In 2015, studies were able to characterize the vast metabolomic changes that occur following various types of obesity procedures.

REPRODUCTIVE

As an andrologist, David Handelsman, PhD, professor at the University of Sydney, in Australia, focuses on an area of reproductive endocrinology that has encountered some important recent discoveries.

One of the most significant advances involves cryopreservation of spermatogonial stem cells to preserve the future fertility of boys and men. Previously, males who lost fertility due to disease or

toxic exposure had very limited hope of producing biological offspring. That may be about to change. A significant amount of research is supporting adjustments to the timing of cryopreservation of spermatogonial stem cells for future transplantation or culture. “This would be revolutionary in several areas. Achieving these milestones is tantalizingly close,” Handelsman says.

Both Handelsman and Bradley Anawalt, MD, professor and vice chair at the University of Washington Department of Medicine, Seattle, Wash., think that recent studies are underlining another important change in their field: the abatement of testosterone therapy.

“We have ‘discovered’ that we know very little about the benefits and adverse effects of testosterone therapy in men,” Anawalt explains. “The literature in the past year has been replete with conflicting epidemiological studies about the effects of testosterone on cardiovascular events and prostate disease, but we have an extremely small amount of data on potentially beneficial effects.”

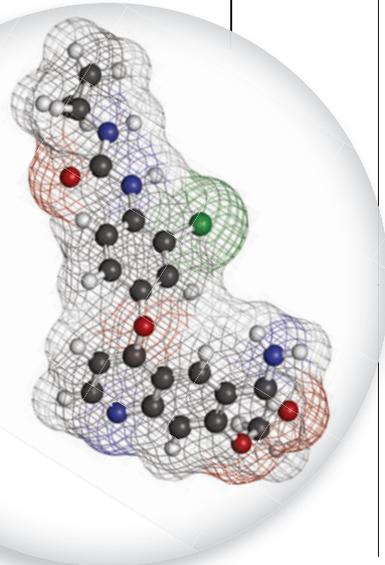
Handelsman believes there is widespread misinformation about testosterone therapy, which has led to overuse. The clashing data imply that physicians should exercise great caution in prescribing testosterone.

Female reproductive endocrinology has also seen progress in certain research areas. George Mastorakos, scientific consultant at the University of Athens, Athens, Greece, thinks two categories of findings have stood out: the roles of endocrine disruptors in feminizing and counter fertility and the effects of stress events during pregnancy on offspring through epigenetics.

Mastorakos believes that the ongoing endocrine discoveries related to pregnancy may result in a new specialty — obstetric endocrinology. “This would encompass maternal endocrine problems and also fetal endocrine problems as a prelude to pedoendocrinology,” he says.



Recently *The New England Journal of Medicine* published a study showing that lenvatinib could be very effective against radioiodine-refractory thyroid cancer.



“ Genetic discoveries continue to shape how we view adrenal disease. This will help us to take a stratified approach to diagnosis and therapy.”

— WIEBKE ARLT, MD, DSC, HEAD, CENTRE FOR ENDOCRINOLOGY, DIABETES AND METABOLISM, UNIVERSITY OF BIRMINGHAM, BIRMINGHAM, U.K.



ADRENAL

In the world of adrenal research, Wiebke Arlt, MD, DSc, head of the Centre for Endocrinology, Diabetes and Metabolism at the University of Birmingham, Birmingham, U.K., believes genetic studies to be the most exciting right now.

“Genetic discoveries continue to shape how we view adrenal disease,” she says. “This will help us to take a stratified approach to diagnosis and therapy.”

A hot topic among scientists in this specialty is the PRKACA gene. Adrenal cortisol-producing adenomas often originate in activations of mutations in this gene. Researchers gained more insight this year into the mechanisms that catalyze these harmful mutations.

On top of genetic discoveries, new therapies have been emerging for congenital adrenal hyperplasia. Drugs like abiraterone acetate and Chronocort are making their way through tests and demonstrating promise.

THYROID

Big progress has occurred in the realm of thyroid cancer as well.

Ronald J. Koenig, MD, PhD, professor at the University of Michigan Medical Center, Ann Arbor, Mich., is particularly excited about research surrounding the drug lenvatinib. Recently, *The New England Journal of Medicine* published a study showing that lenvatinib could be very effective against radioiodine-refractory thyroid cancer.

“This study is a major advance for the treatment of patients with this disease,” Koenig says. “First of all, the fact that it is a randomized double blind trial in the thyroid world itself is remarkable. Second, the study showed that this tyrosine kinase inhibitor to have very impressive activity, albeit with toxicity.”

In the area of genetics, a paper in *The New England Journal of Medicine* titled “Germline HAP2 Mutation Causing Familial Nonmedullary Thyroid Cancer” provided insight into the inherited mutations that can cause this cancer.

“This is the first identified gene and mutation that appear to underlie familial nonmedullary thyroid cancer,” Koenig explains.

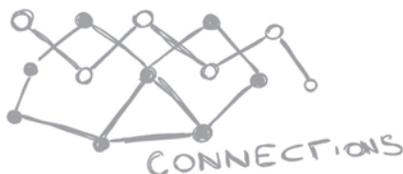
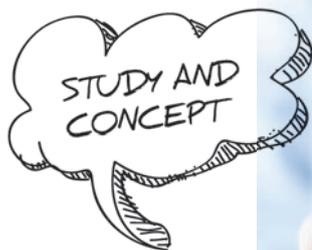
Familial nonmedullary thyroid cancer is reasonably common, but until now the genetic causes have remained unknown (except in rare families with cancer syndromes such as Cowden syndrome). Mutations on the HAP2 gene have been found to correlate with both familial nonmedullary and sporadic thyroid cancer.

“This will change the way we practice because patients and their families can now be screened for mutations in this gene,” says Koenig.

Rossella Elisei, MD, professor at the University of Pisa, in Italy, thinks that the most important recent advance is the integrated genomic characterization of papillary thyroid cancer.

“The morphological diagnosis will be derived from cytology, and pathology will be substituted by molecular profile diagnosis,” she explains.

Elisei anticipates that targeted cancer therapies will eventually follow these improved diagnostic capabilities. In thyroid and beyond, this is likely to be a hot area of research for years to come.



BONE

The field of bone has experienced numerous discoveries throughout 2015. According to Clifford J. Rosen, MD, professor at Tufts University, Medford, Mass., some of the top papers relate to the affiliation of pubertal onset, bone mass, and fracture risk.

He pointed to an article in *Endocrine Reviews* by Jean-Philippe Bonjour and Thierry Chevalley as an example. The piece dissects the critical elements that define peak bone mass and how it may affect fracture risk.

“The reason this is so important is that longitudinal studies are very difficult and time consuming, so the summation of data is critical,” Rosen says.

He is equally excited about the accumulating evidence that bone regulates glucose homeostasis. “More and more data are supporting the complex interactions of bone with fat and the beta cell,” Rosen continues. As a result, fractures are being recognized as a major complication of type 2 diabetes.

New therapy approaches for osteoporosis have also increased in the past year. Richard Eastell, MD, professor at the University of Sheffield, in the U.K., was impressed by the results of clinical trials that tested combinations of existing osteoporosis drugs, particularly one that showed a sequence of teriparatide followed by denosumab may be quite effective at upping bone density.

“In dealing with our most severe cases of osteoporosis, I think the lessons learned from these combination studies will have great value,” says Eastell.

He is also eager for further study of free vitamin D as a possible new testing standard but thinks that this milestone will take time to achieve.

PITUITARY & PEDIATRIC

Roberto Salvatori, MD, professor at Johns Hopkins University, Baltimore, Md., identifies two genetic discoveries as his favorite pituitary findings over the past year.

The first relates to Cushing’s disease. Scientists found that mutations in the gene *USP8* can be an underlying cause of ACTH-secreting adenomas. Like other editors mentioned, this discovery will assist in diagnosis and possibly allow physicians to find the disease sooner and prevent the progression of symptoms.

Along the same lines, new genetic causes of gigantism and acromegaly were uncovered. Mutations on *GPR101* and microduplications on *Xq26* are now known indicators of these conditions.

Ana Claudia Latronico, MD, PhD, professor at São Paulo Medical School, Sao Paulo, Brazil, pointed out the exact same study on gigantism as Salvatori: “Gigantism and Acromegaly Due to *Xq26* Microduplications and *GPR101* Mutation” by Trivellin, et al.

EMERGING RESEARCH TRENDS

“ We have ‘discovered’ that we know very little about the benefits and adverse effects of testosterone therapy in men. The literature in the past year has been replete with conflicting epidemiological studies about the effects of testosterone on cardiovascular events and prostate disease, but we have an extremely small amount of data on potentially beneficial effects.”

— BRADLEY ANAWALT, MD, PROFESSOR AND VICE CHAIR, DEPARTMENT OF MEDICINE, UNIVERSITY OF WASHINGTON DEPARTMENT OF MEDICINE, SEATTLE, WASH.

Latronico, who specializes in pediatric endocrinology, took interest in this paper due to its description of a new disorder, X-linked acrogigantism (X-LAG). This condition is characterized by early-onset gigantism resulting from an excess of growth hormone.

“In my opinion, the biggest recent discoveries in my specialty involve the elucidation of the etiologic mechanisms of rare and common diseases that were previously considered idiopathic,” she says. Gigantism and central precocious puberty are her primary examples.

Armed with new information in these areas, Latronico expects an evolution in genetic testing, more precocious diagnosis in a familial context, and development of targeted treatments.



These research highlights — although just a small and subjective sampling — bring to light the incredible work accomplished by endocrinologists in 2015. Such findings continue to underscore the great importance of endocrine science and discovery. With so much momentum, the coming year is sure to offer even more progress. 

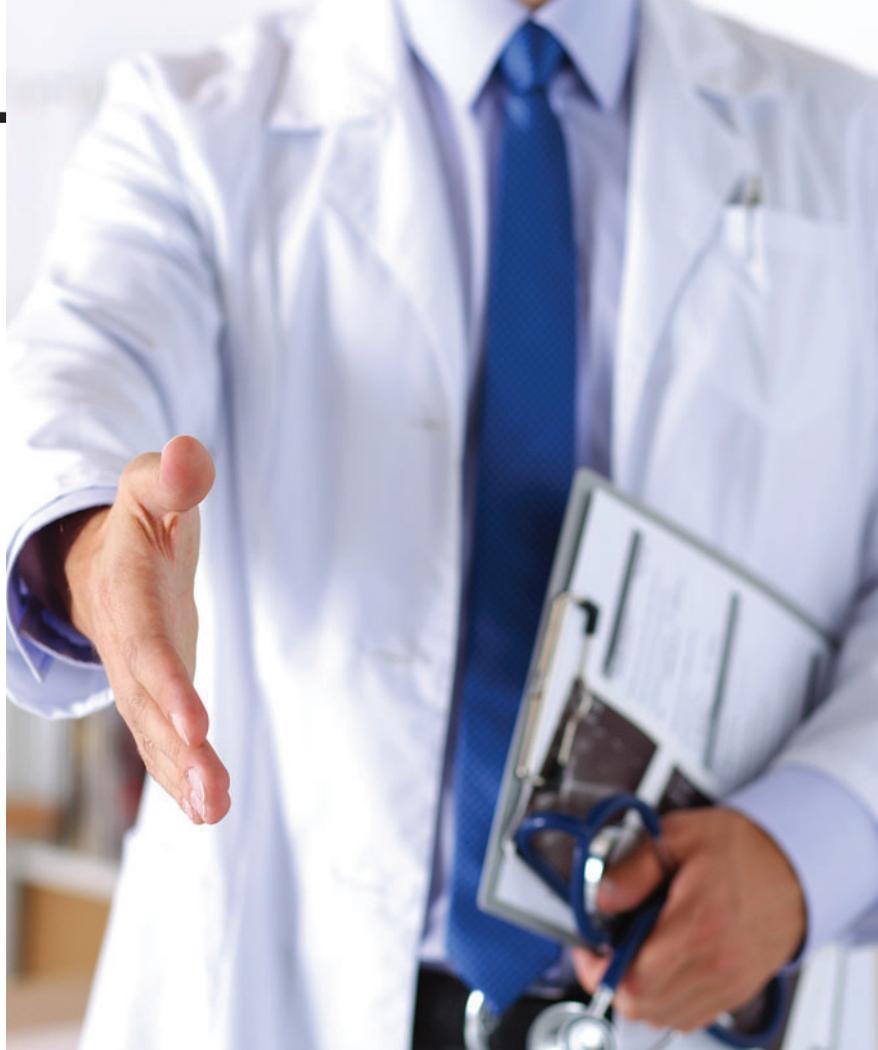
MAPES IS A WASHINGTON, D.C.-BASED FREELANCE WRITER AND A REGULAR CONTRIBUTOR TO *ENDOCRINE NEWS*. SHE WROTE ABOUT TRANSGENDER HORMONE THERAPY IN THE OCTOBER ISSUE.

- ▶ Metabolic reprogramming and its importance for understanding hormone action
- ▶ Stress hormones in regulating cardiovascular function
- ▶ Sex differences in metabolic homeostasis, diabetes, and obesity
- ▶ Genotype-phenotype correlation and inherited predisposition for developing pituitary adenomas
- ▶ Epigenetic influences during pregnancy and in offspring
- ▶ Importance of local control of thyroid hormone levels by the types 2 and 3 deiodinases
- ▶ Mutations that underlie thyroid cancer and development of targeted therapies
- ▶ Bone's role in the homeostatic mechanisms of the whole body
- ▶ Chronic exercise and the recently discovered protein, irisin, on skeletal turnover
- ▶ Free vitamin D rather than total vitamin D evaluations
- ▶ Treatments for hypophosphatasia
- ▶ X-linked hypophosphatemia and hypoparathyroidism
- ▶ Crescent application of new methods for genetic diagnosis, such as gene panel and whole genomic/exomic sequencing
- ▶ Tools for investigating epigenetic factors, such as DNA methylation and microRNA
- ▶ Effects of testosterone (and its metabolites) on bone, muscle, brain, prostate, and the cardiovascular system
- ▶ Male hormonal contraceptives
- ▶ Relationship between body weight and male gonadal function

Peer Review

Without referrals, many endocrinology practices simply would not exist. Knowing the ins and outs of navigating the referral landscape is vital to ensuring your own practice's successful future.

BY KURT ULLMAN



Referred from other physicians play an important part in the successful endocrinology practice. From patient recruitment through quality control, and even as a measure of prestige, they have a vital role to play.

A report in the *Archives of Internal Medicine* noted that between 1999 and 2009, the rate of physicians referring patients to another provider, usually a specialist, almost doubled. During the decade, that figure rose from 4.8% in 1999 to 9.3% by the end of the decade.

Because of this, endocrine clinics are very busy places. Having a primary care physician (PCP) send a patient to them is an issue of efficiency and best use of both a provider's and a patient's time.

REFERRAL AS TRIAGE

"In this context, referral serves as a kind of triage," says Debra Bartel, FACMPE, clinic administrator at Portland Diabetes & Endocrinology Center, in Oregon. "Since the Affordable Care Act, we have been inundated in new patient referrals; some waiting as long as five months to be seen by us. We're getting 30 to 50 requests for new patient visits."

Many are already upset because of the wait. With the initial assessment completed by a PCP or internal medicine physician, you can avoid intensifying these feelings since you lessen the risk of them being at the wrong place for treatment.

This also means that at the first visit most of the needed tests have been completed. There is a fuller picture of the patient's status when the specialist initially sees them.

MORE EFFICIENT

"It is really an efficiency issue and most patients appreciate that we don't have to reinvent the wheel and waste time and money," says Tiffany Reichle, practice administrator at Texas Diabetes & Endocrinology, P.A., in Austin. "We make that first visit much more productive."



More payers are also changing their reimbursement rules to reflect the need for patients to be worked up before being seen by a specialist. Referrals are often required for payment.

INSURERS REQUIREMENT

“Insurers want the primary care folks to be the main managers of patient care,” Bartel says. “As a specialist, we will need a referral, and if we don’t have it, we are treating the patient for free. Obviously, a practice can’t long survive under those circumstances so getting the required paperwork from their home doctor is vital.”

QUALITY MEASUREMENT

The volume of patients being sent to a practice can also be used as a quality barometer.

“No provider will choose to send you patients for long if [the patients] don’t like coming here and don’t feel as if they are getting good medical care,” Bartel says. “If they send patients to an outside provider, they want to be 100% sure they will be helped by them. As a specialty office, if our daily referral counts decline suddenly, I know that something is wrong.”

This is becoming more important as payment changes from fee-for-service to quality-driven measures.

“Referrals are now based less on personality as in the past, and more on performance,” Reichle says. “It isn’t so much do I like the other doctor as it is how well do they take care of my patient.”

MEASURE OF PRESTIGE

Having a full practice census can be an indicator of how the practice is seen among its peers in the medical community.

“There is also a prestige factor involved with getting and maintaining a robust referral rate,” Bartel says. “We are the biggest endocrine practice in Portland and have been in business for nearly 60 years. But more importantly, we have the reputation of being able to help endocrinology patients.” ^{EN}

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”

ULLMAN IS AN INDIANA-BASED FREELANCE WRITER WITH NEARLY 30 YEARS OF EXPERIENCE. HE WROTE ABOUT DISASTER PLANNING IN THE OCTOBER ISSUE.



Clock Ticks Down on U.S. Budget & Spending Bill Deadlines

As this issue of *Endocrine News* goes to print, the fate of the fiscal year (FY) 2016 budget for the National Institutes of Health (NIH) remains uncertain. While Congress was able to reach a budget agreement in September that raises the amount of spending allowed and opens the door for an increase for NIH and other programs, Congress is still required to pass spending bills by December 11 to avoid a government shut-down.

Congress planned to have draft spending bills ready by Thanksgiving so that House and Senate committees could hash out remaining details and compile what is known as an “omnibus” spending package, which means one piece of legislation that includes all 12 spending bills that fund all discretionary programs in the federal budget. By the first week in December, the omnibus package would come to the House and Senate floors for consideration so that the Congress could pass the package before the existing short-term funding bill expires December 11.

The major obstacle to passing the omnibus funding package is not opposition over the amount of funding, but rather the concern that Republicans may add controversial policy riders, such as a measure to de-fund Planned Parenthood. This would cause gridlock on the funding bill and either lead to a shut-down or another continuing resolution that would keep the government open, but fund NIH and other programs at last year’s levels.

The Society has advocated that NIH should receive at least \$32 billion in FY 2016. For the most up-to-date information NIH funding, please visit the Advocacy Page on www.endocrine.org.

ADVOCACY



Edward Damiano, PhD, touts the “bionic pancreas” to congressional staffers.

Ann Albright, PhD, RD, discusses the cost burden of diabetes and other issues at the Clinician Hill Day.



Society Holds Briefing and Clinician Hill Day to Call for Policy Changes for Diabetes Care

On November 4, in conjunction with Diabetes Awareness Month, the Society held a Congressional briefing to highlight what policymakers can do to improve diabetes care in the U.S. The briefing featured Ann Albright, PhD, RD, director of the Division of Diabetes Translation at the Centers for Disease Control and Prevention (CDC), who detailed the scope of the diabetes problem, including its cost burden and future trends. Linda Siminerio, PhD, RN, chair of the National Diabetes Education Program, a joint initiative of the National Institutes of Health and CDC, discussed clinical barriers including access to diabetes self-management training, physician shortages, and the need for improved reimbursement and resources to improve care. Following these talks, Edward Damiano, PhD, principal investigator of the bionic pancreas discussed his research and the first commercial prototype of the fully integrated device known as iLet. Nicole Johnson, PhD, MPH, MA, diabetes patient advocate and Miss America 1999, also spoke at the briefing to provide policymakers with the patient’s perspective and to detail what they can do to help affect change.

Society members met with their congressional delegations during a Clinician Hill Day prior to the briefing to garner additional support for the Medicare CGM Access Act of 2015 and the Medicare Diabetes Prevention Act. The Medicare CGM Access Act of 2015 would provide Medicare coverage of continuous glucose monitors for insulin-dependent patients with diabetes. Currently, the devices are covered by nearly 95% of all private payers. The Medicare Diabetes Prevention Act would provide coverage for the National Diabetes Prevention Program for those beneficiaries at risk of developing type 2 diabetes. Society members also cited the need to hold a diabetes hearing to highlight legislative activities that could help improve diabetes care. 

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.

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

Five Members Elected to Society Governing Council



Members of the Endocrine Society have elected five new officers and council members to lead the world's oldest, largest, and most active organization devoted to research on hormones and the clinical practice of endocrinology.

The new officers and council members are:

- **Lynnette K. Nieman, MD:** President-Elect
- **Howard B. A. Baum, MD:** Vice President, Physician-in-Practice
- **Daniel J. Bernard, PhD:** Council Member, Basic Scientist Seat
- **Guillermo E. Umpierrez, MD:** Council Member, At-Large Seat
- **Carol H. Wysham, MD:** Council Member, At-Large Seat

The new officers and council members will assume their new positions at **ENDO 2016**, in Boston, Mass., April 1 – 4, 2016.



NIEMAN will serve as President-Elect in 2016–2017 and then as President in 2017–2018. She is senior investigator at the National Institute of Health, in Bethesda, Md. An active Society volunteer for two decades, she has served as vice president, clinical science, and on a number of Society committees, including the Research Affairs

Core Committee and the Publications Core Committee. Nieman has been an editorial board member for *The Journal of Clinical Endocrinology & Metabolism*. She also served three times on the Annual Meeting Steering Committee, twice as chair.



BAUM will serve a three-year term as vice president, physician-in-practice (2016–2019). He is assistant professor of medicine at the Division of Diabetes, Endocrinology, and Metabolism at Vanderbilt University Medical Center, in Nashville, Tenn. An active Society member for nearly 20 years, he served in the physician in practice

designated seat on the Council and on the Clinical Affairs Core Committee and Scientific and Educational Programs Core Committee. He also served as Council liaison to the Advocacy and Public Outreach Core Committee and the Trainee and Career Development Core Committee.



BERNARD will serve a three-year term in the basic scientist-designated seat on the Council (2016–2019). He is director of the McGill Centre for the Study of Reproduction and a professor in the Departments of Pharmacology and Therapeutics, Anatomy and Cell Biology, Obstetrics and Gynecology, Physiology, and the Division of Endocrinology and Metabolism at McGill University, in Montreal, Quebec, Canada. An active Society member for 12 years, he served on the Research Affairs Core Committee and the Scientific and Educational Programs Core Committee. Bernard has been an editorial board member for the Society's journals *Endocrinology* and *Molecular Endocrinology*.



UMPIERREZ will serve a three-year term as an at-large member of the Council (2016–2019). He is professor of medicine and director of clinical research, Center for Diabetes and Metabolism at Emory University, in Atlanta, Ga. He is also section chief, Diabetes and Endocrinology Division at Grady Health Care System, in Atlanta. A Society member for nearly 20 years, he serves on the Special Programs Committee and has also served on the Hormone Health Network Committee and the Clinical Guideline Subcommittee. Umpierrez has been an editorial board member for *The Journal of Clinical Endocrinology & Metabolism*.



WYSHAM will serve a three-year term as an at-large member of the Council (2016–2019). She is clinical associate professor of medicine at the University of Washington and section head at the Rockwood Center for Diabetes and Endocrinology, in Spokane, Wash. A Society member for two decades, she chaired the Annual Meeting Steering Committee and served on the Scientific and Educational Programs Core Committee.

Q&A with Paul Robertson, MD, editor-in-chief of *JCEM*

The Endocrine Society's own *Journal of Clinical Endocrinology & Metabolism (JCEM)*, the most-cited journal in endocrinology, gets a new cover starting January 2016 under the stewardship of new editor-in-chief, Paul Robertson, MD, principal scientist at the Pacific Northwest Diabetes Research Institute, Seattle, Wash.

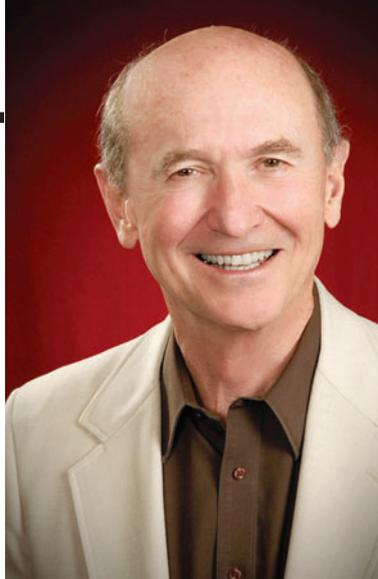
Endocrine News talks with Robertson about what readers can expect under his editorial leadership, starting with what a new look and feel means for the most prestigious journal in endocrinology.

Q: What attracted you to the role of editor-in-chief of *JCEM*?

A: I have been the editor-in-chief for several journals and enjoy the role immensely. In terms of *JCEM* specifically, I was attracted to the opportunity to perform this position for the world's most influential clinical endocrinology journal. I also saw the opportunity to make some changes in the journal's format that will make its content more attractive and accessible to our members.

Q: You talk about the notion of the "whole endocrinologist." Why, in your opinion, is there so much specialization in medicine, and what is the place of specialties in medicine if specializations bring about their own set of challenges?

A: Specialization in medicine has been progressively increasing over the past seven decades. This has happened because the basic fund of knowledge increases with each year, so there is more to learn and remember. At the same time, in more recent decades there has been immense pressure on clinicians to shorten their clinical visits with patients, which also has the effect of encouraging physicians to focus on fewer and fewer disciplines within



Q&A BY ANU PRAHABHALA



endocrinology as an efficiency measure. The challenge for *JCEM* is to encourage and facilitate broad accrual of new knowledge by clinical endocrinologists. This is important as invariably endocrine diseases affect more than one endocrine organ, hence, the need to remain a complete endocrinologist.

Q: One of your goals is to bring the impact-factor ranking of *JCEM* up to over 10. Can you share three initiatives you have planned to achieve this goal?

A: Impact factors are controversial, but they are a fact of life. We want our younger colleagues to send us their best material for publication. It is important to them to submit their work with the highest impact factors because where they publish is often used in their evaluations for promotion and in grant reviews. We as a Society have an obligation to help them develop their careers and want them to publish in *JCEM*. The ways we will increase the *JCEM* impact factor (defined as the number of citations it receives divided by the number of articles it publishes) are by accepting fewer articles and being certain the ones we do accept are of the highest possible equality.

JCEM was cited more than 72,000 times in 2014, more than any other journal in endocrinology and metabolism.

Read the complete interview online at: <http://endocrinenews.endocrine.org/qa-with-paul-robertson-editor-in-chief-jcem/>

Last Chance to Nominate for the 2017 Laureate Awards

The Laureate Awards Committee is still accepting nominations for the Society's 2017 Laureate Awards, but time is running out! Nominations will only be accepted until December 18, 2015.

These awards honor the outstanding achievements of endocrinologists, members and non-members alike. Current and past Laureates have left an indelible mark on the

advancement of medicine, science, and public health worldwide. Future award recipients will continue to advance the science of endocrinology through new discoveries and the practice of clinical endocrinology.

Over the years, the Laureate Awards Committee has simplified the nomination process and developed useful resources. An online nomination form is easy to complete,

and you can upload the nomination package with one click. Learn more by visiting www.endocrine.org/laureate.

Be sure to nominate one or more colleagues who have advanced the science or practice of endocrinology through their meritorious scientific research, clinical investigation, leadership, practice, or dedication to underserved populations.



EndoBridge® Celebrates Third Year

The third annual meeting of EndoBridge® — co-hosted by the Society of Endocrinology and Metabolism of Turkey, Endocrine Society, and European Society of Endocrinology — took place in Antalya, Turkey, October 15 – 18, 2015.

Attracting leading endocrinology experts from around the world including 440 colleagues from over 25 countries, the meeting was held in English with simultaneous translation into Russian, Arabic, and Turkish. The three-day program included 23 state-of-the-art lectures, 16 interactive case discussion sessions, and poster case presentations providing a comprehensive update across hormonal disorders.

“Endocrinology has become a large and rapidly growing field of medicine that has been instrumental in improving health and addressing pandemics of diabetes, obesity, and cancer,” says Bulent Yildiz, MD, a faculty member at Hacettepe University School of Medicine, in Ankara, Turkey, and the founder of EndoBridge®. “The search for contemporary solutions to endocrine disorders is now global in scope. As endocrinologists from different countries and cultures, we really need to learn from each other so that we could help our patients prevent, manage, and treat their diseases and achieve better outcomes.”

Yildiz says that when he first imagined bridging the world of endocrinology in 2011, he thought Turkey would be a wonderful venue since it has served as a bridge for hundreds of years between East and West, past and future, and tradition and contemporary. “After conceptualizing EndoBridge®, two years of planning and preparation with collective and rigorous team effort was required to bring it into reality,” he explains. “Since we first launched EndoBridge® in 2013, the initiative brought together more than 1,300 physicians and scientists with an interest in hormonal disorders from over 45 countries to share their experience and expertise, and participate in discussions with global leaders of endocrinology.”

“I am excited and pleased to see that we move forward together to continue building our bridge in the field of endocrinology while

we celebrate the third annual meeting of EndoBridge®,” Yildiz says. “I believe EndoBridge® is a uniquely positioned and highly influential model for advancement of collaboration and a real-world impact in endocrinology across national borders,” he adds.

The fourth annual meeting of EndoBridge® will take place in Antalya, Turkey, October 20 – 23, 2016. Further information can be found at www.endobridge.org.

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Make the Most of ENDO 2016

APRIL 1 – 4 (FRIDAY – MONDAY)



For clinical endocrinologists and basic scientists alike, ENDO presents the best opportunity to acquire new knowledge and make valuable connections. And this year's annual gathering offers new and enhanced programming designed to elevate your career and improve your practice.

Insight into Top Issues — Basic Science Pathways

Basic scientist attendees now benefit from comprehensive, concentrated coverage of three of the most in-demand areas in endocrinology: G protein-coupled receptors (GCPRS), neuroendocrinology, and nuclear receptors.

These Science Pathways feature coordinated session locations, complementary programming, and unique opportunities to network with like-minded peers:

- ▶ **GCPRS** — Explore this diverse class of receptors, and learn how novel therapeutics are being developed through the study of so-called orphan receptors, receptor structure, and downstream signaling.
- ▶ **NEUROENDOCRINOLOGY** — Discover the latest research on how a small number of hypothalamic neurons control critical body functions — and how patterned output of peripheral hormones can modify learning, memory, libido, and other brain functions.
- ▶ **NUCLEAR RECEPTORS** — Investigate the role of nuclear receptors in health and disease, including regulation at the genomic level, receptor crosstalk, transrepression, and signaling.

Kick Start Your ENDO Experience — Preconference Events and Early Career Forum

What's better than four full days of ENDO? An entire fifth day of the workshops, symposia, and sessions that make ENDO a can't-miss event.

Extend your time in Boston with a March 31 slate that features workshops on **Obesity Management and Diabetes Diagnosis and Management**. The popular Obesity Management workshop investigates advanced practice challenges and highlights emerging treatments, prevention, and diagnosis. In Diabetes Diagnosis and Management, expert faculty will discuss the latest in cardiometabolic comorbidities and treatment.

Postdoctoral fellows, clinical fellows, medical students, and graduate students will also gather a day early for networking and education during the **Early Career Forum**. The forum features career symposia, plenaries on translational research, two educational session tracks, clinical and basic career breakouts, and practical advice on publishing, CVs, and more. 

Learn more about registration and the scientific program at endo2016.org.

New! International Sessions and Teaching Workshop

- ▶ EndoCareers hosts the inaugural **INTERNATIONAL SEMINAR SERIES** education and networking sessions to help international clinical fellows navigate fellowships, salary, research, and other practical issues in the U.S.
- ▶ A half-day **CLINICAL TEACHING WORKSHOP**, offered in partnership with APDEM, will increase teaching versatility, improve on ability analysis, and provide a forum for educators to exchange ideas.

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A B C

43%

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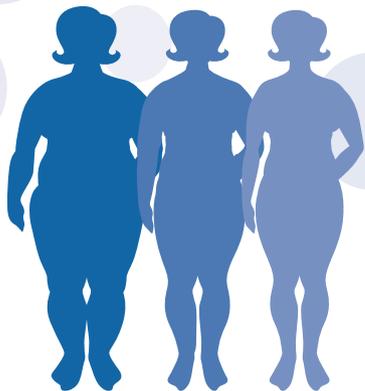
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- + Boost motivation
- + Track goals
- + Identify unhealthy habits
- + Medication adherence
- + Calculate caloric intake
- + Measure food portions
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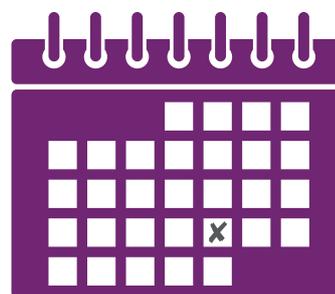
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UCSF Fresno and the Central California Faculty Medical Group (CCFMG) are recruiting for an Endocrinologist at the Assistant Clinical Professor level or higher. The successful candidate will provide Endocrine services in a teaching program, will teach residents and students in Endocrinology, and will see patients in a faculty practice. Applicants should be board certified in Internal Medicine and board certified or eligible in Endocrine, have completed their residency in Internal Medicine and fellowship in Endocrinology, be able to obtain a U.S. medical license, have clinical experience, be willing to actively participate in medical education, and have experience and interest in clinical research. The UCSF Fresno Medical Education Program sees patients in a Regional Medical Center and has very successful faculty practice sites.

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Send Curriculum Vitae and three (3) letters of recommendation to Kenneth Cusi, MD, Chair, UF Department of Medicine, Endocrinology, P.O. Box 100226, Gainesville, FL 32610; kcusi@ufl.edu.

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