HIGHLIGHTS FROM ENDOOnline2020

THE LEADING MAGAZINE FOR _ ENDOCRINOLOGISTS

news

Endocrine INTERNATIONAL

AUGUST 2020

N A heartbeat

Endocrine-Disrupting Chemicals and Cardiovascular Health

As heart disease continues to kill more Americans than any other ailment each year, more endocrine research is linking endocrine disruptors to cardiovascular health. Despite a lack of significant action to reduce EDCs, patients can take steps to avoid exposure to these compounds.

CEU 2020 PREVIEW:

An investigation into "thyroid imposters"

SPECIAL INTEREST GROUPS: Introducing the Endocrine Society's Transgender SIG



Hormone Science to Health

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THE LEADING MAGAZINE FOR ENDOCRINOLOGISTS

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BY DEREK BAGLEY

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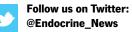
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More Connected, United, and Inclusive Than Ever

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We're a resilient group of change-makers and game-changers who are committed to advancing the science of endocrinology and improving the health and well-being of those we serve. his year has dealt us many challenges. During times like these, we lean on our professional communities for strength, encouragement, and guidance. Despite our inability to gather, socialize, and learn in person, I'm immeasurably proud that our global endocrine community is now all the more connected, united, and inclusive.

This is no coincidence — we're a resilient group of change-makers and gamechangers who are committed to advancing the science of endocrinology and improving the health and well-being of those we serve. In that spirit, our diverse community has embraced digital learning as one alternative form of connecting, and in doing so, obviated traditional barriers such as time and distance. This new normal has propelled us forward and already demonstrated meaningful benefits for our expanding community.

ENDO Online 2020 by the Numbers

ENDO Online 2020, our inaugural online conference, attracted more than 27,500 registrants, the largest event in our longstanding history! Here are a few stats that will surely pique your interest: 19 international societies endorsed the event; upwards of 3,000 learners tuned-in for ancillary symposia sessions; 2,381 individuals actively participated in Basic Science Day; 171% increase in memberships processed during an **ENDO** conference; and, 30 exhibit booths, seven product theaters, and generous support from five sponsors.

United, we hosted an Anti-Racism Vigil to acknowledge those who have suffered from racial injustice and reaffirm our commitment to a more just and equitable society — 600 individuals reflected together in solidarity on June 16 at 10:00 a.m. Thanks to our member leaders, organizers, faculty, attendees, sponsors, and staff for rapidly transforming the bold concept of **ENDO Online 2020** into a recordbreaking reality! If you want to view and/or re-watch any sessions, all content will remain accessible to members at no cost.

CEU/EBR

Mark your calendars for Clinical Endocrinology Update (endocrine.org/ ceu2020) and Endocrine Board Review (endocrine.org/ebr2020), September 10 – 12 and September 16 – 18, respectively.

These programs feature content curated by experts and led by world-class faculty, *in a convenient (and safe) online environment*. You'll enjoy a blend of virtual ondemand and live programming designed to maximize your learning experience and accommodate your busy schedule. Plus, you'll have access to the recordings for a minimum of 12 months. I hope you'll take advantage of this year's exclusive discounted rates and join us at CEU and/or EBR!

Continued Investment in Digital Learning

In time, we will once again be able to gather in person for meetings, conferences, and networking events. Nothing can replace those essential human-to-human interactions. That said, we have witnessed the undeniable value of digital learning within our community. Albeit a different format,

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Our diverse community has embraced digital learning as one alternative form of connecting, and in doing so, obviated traditional barriers such as time and distance. This new normal has propelled us forward and already demonstrated meaningful benefits for our expanding community.

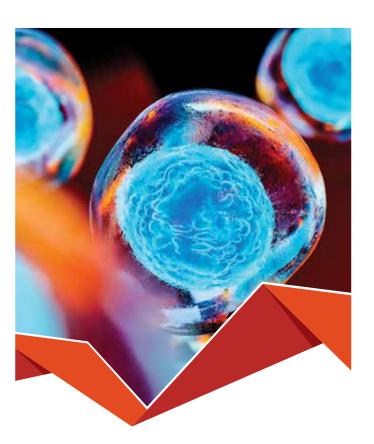


we continue to lead the way with promulgating the latest endocrine science and clinical education for our learners, with the advantage of bypassing physical and travel barriers. To this end, the Endocrine Society will continue investing in digital learning, as well as in-person programs, to expand and amplify our reach in this beautifully diverse, global community.

Until we can see each other in person, I look forward to giving you a virtual elbow bump at one of our upcoming online programs.

Thank you, each of you, for all you do to serve the Endocrine Society, and society. The world is a better place because of your service, talent, and contributions.

Gary D. Hammer, MD, PhD President, Endocrine Society



END©2020 ABSTRACTS

Although ENDO 2020 was canceled because of the COVID-19 pandemic, more than 2,300 accepted abstracts are now available online in a special supplemental issue of the *Journal of the Endocrine Society* (JES).

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FROM THE EDITOR



A Look Back and a Look Forward at ENDO Online 2020

he Endocrine Society has been one of the strongest rallying voices in the world regarding the dangers of endocrinedisrupting chemicals (EDCs). The Society not only continuously publishes cutting-edge research on the effects of these substances on human health in its journals, but it is also one of the most forceful voices when it comes to advocating policy makers both here in the U.S. and around the world regarding the importance of regulating the production and dissemination of these compounds in everyday products.

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The Society ... is also one of the most forceful voices when it comes to advocating policy makers both here in the U.S. and around the world regarding the importance of regulating the production and dissemination of these compounds in everyday products.

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This month's cover story by senior editor Derek Bagley examines the impacts EDCs have on cardiovascular health in "Veiled Threats" on page 28. Bagley looks at two studies from the *Journal of the Endocrine Society*: One paper looks at a rodent study that suggests how bisphenol A substitutes can affect the developing fetus and cause hypertension in later life. The other study is the first human study that links blood levels of "forever" chemicals known as PFAS in pregnant women with the risk of obesity in their granddaughters. Both of these studies were originally going to be featured at **ENDO 2020** in San Francisco but were instead presented as a virtual press conference.

Even though we all missed out on a trip to San Francisco in March, June saw the first ever, all virtual **ENDO Online 2020** that presented the

Endocrine news

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



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latest endocrine research to an audience of almost 18,000, easily the largest Endocrine Society meeting ever held. On page 44 is a look at just a portion of the research presented at this online expo. In "The Show Must Go On," Bagley discusses some of the studies that were presented either live or on-demand in June, in a format that was embraced by the attendees and participants alike. "All the presenters in the session were able to see each other before the start of the session and ask questions through the chat function as the session went on," says Lori Raetzman, PhD, associate professor of molecular and integrative physiology at the University of Illinois at Urbana-Champaign, who moderated one of the sessions. "I loved the accessibility of the ENDO online platform. It reached more people than a session at ENDO, and I could see questions coming into the speakers from all over the world."



Even if you missed **ENDO Online 2020**, you're in luck. *Highlights of ENDO Online 2020: Focus on Diabetes and Comorbidities* is now online at: **endohighlights2020.com**/ for free viewing worldwide.

Among the content you'll find:

- An introduction by Stephen R. Hammes, MD, PhD, University of Rochester Medical Center, co-chair, Endocrine Society Annual Meeting Steering Committee;
- ENDO Editor's Overview: An overview of the most important sessions and data presented, providing personal opinions and perspectives, from Raghavendra G. Mirmira, MD, PhD, University of Chicago, deputy editor, *The Journal of Clinical Endocrinology & Metabolism*;
- Virtual meeting presentations: Six sessions, from the ENDO Online 2020 presentations;

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The Endocrine Society has been one of the strongest rallying voices in the world regarding the dangers of endocrine-disrupting chemicals.



- ENDO Online 2020 Conference Summaries: 15 summaries from selected oral presentations on clinical topics of interest, including a downloadable slide kit containing key points;
- 11 podcasts from posters that were scheduled to be presented at ENDO 2020, in San Francisco, March 2020, prior to that meeting's cancellation due to COVID-19; and
- Coming Soon to the Highlights website: Translations of select content into Spanish, Portuguese (Brazil), and German.

Sponsored by Novo Nordisk - Denmark.

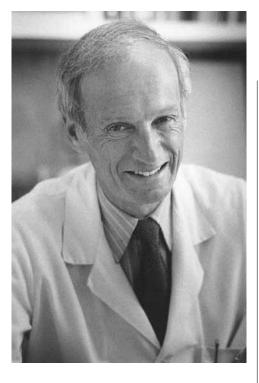
Next month, we plan to continue our coverage of **ENDO Online 2020** with a roundtable of attendees from around the world and see what they thought of this "new normal" method of attending scientific conferences.

Until next month, stay safe, and as usual, if you have any comments or story ideas, please feel free to reach out to me at: mnewman@endocrine.org.

- Mark A. Newman, Editor, Endocrine News

CORRECTION

In the April issue's Dashboard (p. 25), it should have been stated that diabetic eye disease DECREASED by 50% in Native American populations through the Special Diabetes Program as per the Centers for Disease Control and Prevention. **INTOUCH**



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For those of us who had the privilege to serve under his leadership as a role model, his remarkable scientific accomplishments and love of teaching instilled in us the importance of humility with the pursuit of free thinking and excellence.



A Man for the Ages: Remembering Robert B. Jaffe, MD, 1933 – 2020

obert B. Jaffe, MD, who passed away June 22, 2020, was an international icon in the field of reproductive endocrinology and infertility who advanced our scientific understanding of reproductive disorders, cared for patients with complex female reproductive endocrine diseases, and mentored countless medical students and postdoctoral fellows.

A recipient of the Endocrine Society's Sidney H. Ingbar Laureate Award for Distinguished Service, Jaffe also served on the editorial board of the Society's *Journal of Clinical Endocrinology & Metabolism.* His remarkable career of outstanding achievements includes research contributions in fetal/placental endocrinology and oncology, a landmark textbook of reproductive endocrinology, and an innovative Reproductive Scientist Development Program (RSDP) to train obstetriciangynecologists in basic molecular and cell biologic techniques in leading U.S. laboratories.

As a pioneer in the field of fetal/placental endocrinology, Jaffe's studies regarding growth of the primate fetus and its adrenal gland led the path toward our current concepts of developmental programming of adult disease. His studies regarding peptide regulation of the pituitary and the role of angiogenesis in reproductive tissues and ovarian cancer are equally innovative.

Jaffe trained more than 150 postdoctoral fellows and RSDP Scholars. For those of us who had the privilege to serve under his leadership as a role model, his remarkable scientific accomplishments and love of teaching instilled in us the importance of humility with the pursuit of free thinking and excellence. Many of his students have become leaders at medical institutions throughout the world. In his own words, "My greatest joy is to see some of my more than 70 postdoctoral fellows and 82 Reproductive Scientist Development Program Scholars having such productive careers and this fills me with great satisfaction."

Jaffe will be missed, but he will never be forgotten: He was a man for the ages.

To read a more in-depth article on Jaffe's life and career, go to: www.endocrine.org/ remembering_Robert_B_Jaffe.

Dumesic is professor and division chief of Reproductive Endocrinology and Infertility at University of California – Los Angeles.

Endocrine Society Urges Congress to Increase NIH Funding *Funding needed by start of new fiscal year to advance public health during the pandemic*

The Endocrine Society is calling on Congress to pass the House Labor-HHS spending bill to ensure health agencies are funded before the start of Fiscal Year (FY) 2021 and to avoid the tumult and disruption of a continuing resolution and potential government shutdowns.

The Society appreciates the commitment of Labor-HHS Appropriations Subcommittee Chair Rosa DeLauro (D-CT) and Ranking Member Tom Cole (R-OK) to prioritize biomedical research so the country can tackle the significant health challenges before us and address the COVID-19 pandemic as well as future outbreaks.

The House bill provides many critical investments in public health priorities shared by the Society, including:

- A 13.3% increase for the National Institutes of Health (NIH);
- A 2.98% increase over FY 2020 levels for the Centers for Disease Control and Prevention (CDC); and



Support for public health infrastructure, emergency preparedness, women's and children's health, health professions training, expanded access to care, and more at a time when they are needed to meet the challenges posed by COVID-19.

The Society's membership includes thousands of basic and clinical scientists who receive federal support from the NIH to fund endocrine-related research on topics including diabetes, cancer, fertility, aging, obesity, and osteoporosis. Federal funding for biomedical research has dramatically advanced the health of Americans. Continued support is needed to protect public health from COVID-19 and future outbreaks.

Since the pandemic's start, endocrine scientists have played a key role in determining how endocrine systems and conditions intersect with virus and infection pathways. Research has shown that people with diabetes who become infected are more likely to experience severe cases of COVID-19 and have higher mortality rates. Ongoing research is examining exactly how and why the two conditions impact each other.

Basic research is fundamental for understanding what makes the virus that causes COVID-19 — SARS-CoV-2 — so contagious. SARS-CoV-2 binds to the ACE2 receptor, a protein expressed in many tissues. This allows the virus to enter endocrine cells and interfere with the endocrine system.

As we learn more about the virus and implications for patients with endocrine disease, funding for public health agencies is more important than ever. Consequently, we note the importance of funding not only one-time emergency funding to respond to the virus but of increasing funding for the base appropriations levels.

The Society urges swift bipartisan action in both the House and Senate on this appropriations bill to ensure that the critical work of health agencies is not disrupted going into FY 2021.



BY DEREK BAGLEY Senior Editor



Over the last 30 years, treating physicians have come to trust octreotide in the treatment of acromegalv. and an oral alternative allows patients to avoid many of the documented treatment burdens associated with injections.

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FDA Approves First Oral Somatostatin Analog for Acromegaly

he Food and Drug Administration (FDA) in late June approved octreotide capsules for long-term maintenance treatment in acromegaly patients who have responded to and tolerated treatment with octreotide or lanreotide. Chiasma, Inc., is marketing this new formulation as MYCAPSSA.

MYCAPSSA is the only oral somatostatin analog (SSA) approved by the FDA. Acromegaly, a rare chronic disease often caused by a benign pituitary tumor and characterized by excess production of growth hormone and insulin-like growth factor-1 hormone, is frequently treated with chronic burdensome injections. If left untreated, acromegaly can lead to serious and sometimes life-threatening medical conditions. The company estimates that approximately 8,000 patients are on injectable SSAs in the U.S.

"For patients living with acromegaly and for their physicians and nurses, the FDA approval of oral octreotide capsules ushers in a new era of treatment," says Shlomo Melmed, MB, ChB, MACP, executive vice president of Academic Affairs and dean of the medical faculty at Cedars-Sinai. "Over the last 30 years, treating physicians have come to trust octreotide in the treatment of acromegaly, and an oral alternative allows patients to avoid many of the documented treatment burdens associated with injections."

"People living with acromegaly experience many challenges associated with injectable therapies and are in need of new treatment options," says Jill Sisco, president of the Acromegaly Community, Inc. "The entire acromegaly community has long awaited oral therapeutic options, and it is gratifying to see that the FDA has now approved the first oral SSA therapy with the potential to make a significant impact in the lives of people with acromegaly and their caregivers."

The FDA approval of MYCAPSSA was based on the positive results of the randomized, doubleblind, placebo-controlled, nine-month Phase 3 CHIASMA OPTIMAL clinical trial of octreotide capsules, which met the primary endpoint and all four secondary endpoints, as well as safety data from all of Chiasma's Phase 3 clinical trials of MYCAPSSA.

"Results from the pivotal Phase 3 CHIASMA OPTIMAL clinical trial are encouraging for patients with acromegaly," says Susan Samson, MD, PhD, FRCPC, FACE, principal investigator of the CHIASMA OPTIMAL clinical trial. "Based on data from the CHIASMA OPTIMAL trial showing patients on therapy being able to maintain mean IGF-1 levels within the normal range at the end of treatment, I believe oral octreotide capsules hold meaningful promise for patients with this disease and will address a longstanding unmet treatment need."

The company expects MYCAPSSA to be commercially available in the fourth quarter of 2020 subject to the FDA's timely approval of a planned manufacturing supplement to the approved NDA. The following important adverse reactions are described in the MYCAPSSA prescribing information: cholelithiasis and complications of cholelithiasis; hyperglycemia and hypoglycemia; thyroid function abnormalities; cardiac function abnormalities; and decreased vitamin B12 levels and abnormal Schilling's tests.

TRENDS & INSIGHTS

Long-Term Culture of Human Pancreatic Slices Reveals the Regeneration of Insulin-Producing Cells in Real Time

S cientists from the Diabetes Research Institute (DRI) at the University of Miami Miller School of Medicine have developed a method allowing for the long-term culture of "pancreatic slices" to study the regeneration of the human pancreas in real time. The results, published recently in *Nature Communications*, demonstrate that extended cultures of nearintact human pancreatic tissue retain the ability of the live organ to replenish insulinproducing beta cells. The use of this system as a model to study pancreatic regeneration could have important therapeutic implications for the treatment of diabetes.

Pancreatic slices are very thin live sections of the organ that preserve the cellular architecture and cell-to-cell interactions of the native organ. The generation of slices from human donors was first accomplished at the DRI in the context of an initiative sponsored by the Network for Pancreatic Donors with Diabetes (nPOD). However, slices are fragile and usually disintegrate in culture very quickly due to selfdigestion and lack of sufficient oxygenation. Such rapid deterioration was incompatible with the study of the regeneration of insulinproducing beta cells, which are destroyed by autoimmunity in type 1 diabetes. However, DRI scientists circumvented this problem by placing the slices on a culture device that enhances the oxygenation of the tissue. This led to the extended survival and biological function of the slices for many days.

"The ability to keep human pancreatic slices alive for nearly two weeks is a technical breakthrough that allows us to witness the regeneration of beta cells in a human model that strongly resembles the real pancreas," says Juan Domínguez-Bendala, PhD, director of Stem Cell Development for Translational Research and research associate professor of surgery at the Diabetes Research Institute, University of Miami Miller School of Medicine, and principal investigator of this work. "We now have a window into the native human organ that simply wasn't possible prior to this study."

The DRI's research on regeneration focused on a population of stem-like "progenitor" cells that had been previously characterized by this team in the human pancreas — a pool of cells that remains intact even in patients with long-standing type 1 diabetes. These cells were shown to respond to a natural growth factor, BMP-7, by proliferating and subsequently giving rise to insulin-producing beta cells.

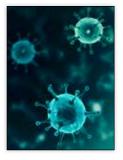
"Extending the life of these slices in culture was key to observe beta cell regeneration in real time following the addition of BMP-7, even in slices obtained from diabetic donors. This gives us hope that we may be able to apply this approach to living patients one day," says Ricardo Pastori, PhD, research professor of medicine, immunology, and microbiology and the director of the Molecular Biology Laboratory at the Diabetes Research Institute, University of Miami Miller School of Medicine and coprincipal investigator of this study.

The findings and system utilized here will continue to impact future studies of the human pancreas. Considering that preclinical work in animals often translates poorly to humans, this *in vitro* model of the human pancreas could be used to screen for additional regenerative agents that could lead to a faster and more certain path to clinical trials for type 1 and type 2 diabetes.



The ability to keep human pancreatic slices alive for nearly two weeks is a technical breakthrough that allows us to witness the regeneration of beta cells in a human model that strongly resembles the real pancreas.





This study the first to report what happens when individuals with type 1 diabetes are diagnosed with COVID-19 is a critical step that will set the stage for the future of care.



Multi-Center Study Addresses Impact of COVID-19 on People with Type 1 Diabetes

study recently published in *Diabetes Care* focuses on individuals with type 1 diabetes who are suspected or confirmed to have contracted COVID-19 — the first U.S. based, multi-center study to examine patient characteristics and adverse outcomes among individuals with confirmed or suspected COVID-19.

"While diabetes has been identified as a risk factor for severe illness with COVID-19, there is very little information about type 1 diabetes specifically," says Mary Pat Gallagher, MD, director of the Pediatric Diabetes Center at NYU Langone Health's Hassenfeld Children's Hospital. "We know that with type 1 diabetes, infections of all types can lead to high blood sugar levels and potentially to diabetic ketoacidosis (DKA), which can be deadly. This study — the first to report what happens when individuals with type 1 diabetes are diagnosed with COVID-19 — is a critical step that will set the stage for the future of care."

The T1D Exchange Quality Improvement Collaborative (QIC) is conducting the study in collaboration with its 15 clinic members and an additional 49 endocrinology clinics, for a total of 64 U.S. sites. Initial results from 33 COVID-19-confirmed positive cases and 31 COVID-19presumptive cases found that the most prevalent presenting symptom reported was high blood sugar, followed by fever, cough, nausea, and fatigue. In addition, results showed:

- More than 50% of cases reported hyperglycemia;
- Nearly one-third of cases experienced DKA and required hospitalization;

- More than 50% of cases had no adverse COVID-19 or diabetic outcomes; and
- There were two reported deaths among adult patients with other underlying comorbidities.

"During these unprecedented times, there are a plethora of unanswered questions on the impact of COVID-19 on the type 1 diabetes community, and we realized that a population health surveillance study is imperative to better understand potential outcomes and inform intelligent quality improvement initiatives," says Osagie Ebekozien, MD, MPH, vice president of Population Health and Quality Improvement at T1D Exchange. "We are buoyed by the initial interest and participation of clinicians and patients in this study and expect to announce additional risk factors, insights and outcomes in pediatric and adult patients in the coming months as more data is collected and analyzed."

The multi-clinic, first-of-its-kind population health surveillance, with currently more than 200 confirmed and presumptive cases, was made possible by the support of the industry and research community. The five Presenting Sponsors — Abbott Diabetes, Dexcom, JDRF, Lilly, and Medtronic — and the two Contributing Sponsors, Insulet Corporation and Tandem Diabetes Care, supported this critical initiative.

"The research that T1D Exchange is leading around COVID-19 will yield vital information about the prevalence, presentation, and outcomes of COVID-19 on those living with type 1 diabetes," says Robert Vigersky, MD, chief medical officer for Diabetes Group at Medtronic. "We are proud to support this important research and look forward to rapidly learning from realworld experiences."

DASHBOARD

66 It turns out that patients being labeled hypothyroid tend to complain of symptoms consistent with the presence of hypothyroidism, perhaps because they read things on websites that are not Endocrine Society-supported about how they should feel. In a broad epidemiological study, labeling patients hypothyroid by giving them hypothyroid medication automatically led to a decrement in the way they felt. In comparing those who are actually hypothyroid with those labeled as such, it was better to be actually hypothyroid but unaware of it than to have normal thyroid function but be treated as hypothyroid."

> - JAMES V. HENNESSEY, MD, FACP, ECNU, associate professor of medicine at Harvard Medical School, who discusses his CEU 2020 session called "When It's Not Your Thyroid" in "Investigating Thyroid Imposters" on page 34.

MEMBER SPOTLIGHT



Advancing Science and Advocating for the Next Generation - FLARE Fellows Rashaun Akeem Williams, BS, and Kayla Titialii-Torres, BS

The Future Leaders Advancing Research in Endocrinology (FLARE) program is for basic science, clinical research trainees, and junior faculty from underrepresented minority communities who have demonstrated achievement in endocrine research. FLARE program components provide structured leadership development and in-depth, hands-on training in topics ranging from grantsmanship to lab management. This program is sponsored by a grant from the National Institute of Diabetes and Digestive and Kidney Diseases.

Two of those FLARE fellows are Rashaun Williams and Kayla Titialii-Torres. Williams serves on the Advocacy and Public Outreach Core Committee, and Titialii-Torres is part of the Research Affairs Core Committee. Both have participated in two advocacy Hill Days during which they have urged Congress to provide funding for biomedical research.

As FLARE fellows beginning their career, their involvement and representation on the Endocrine Society's advocacy and research committees are important - as representatives of the next generation of endocrinologists, they provide the committees with the fresh perspectives of earlycareer researchers while receiving advice and best practices from experienced doctors in the field.

To learn more about some of the Endocrine Society's outstanding members, go to: www.endocrine.org/member-spotlight

The estimated amount

U.S. hospitals are losing per month during the coronavirus pandemic as patients delay necessary treatment to avoid hospital settings.

- SOURCE: AMERICAN HOSPITAL ASSOCIATION





The amount of funding needed over the next 12 months for the Access to COVID-19 Tools Accelerator (ACT-Accelerator) to develop the tools needed to save lives and reduce severe COVID-19 disease.

- SOURCE: WORLD HEALTH ORGANIZATION



The amount of funding given by the FCC to boost rural healthcare. By carrying forward unused funds from previous years, the commission is aiming to help meet the need for virtual care in these areas.

- SOURCE: HEALTHCARE IT NEWS

Disparities in Type 2 **Diabetes** In the U.S., type 2

Racial-Ethnic 16% of Native Americans and Alaska Natives Nearly **13**[%] of African Americans Almost **12%** of Hispanics More than 8% of Asian-Americans diabetes affects: This contrasts with **7**% of whites who have a diabetes diagnosis.

- SOURCE: CENTERS FOR DISEASE CONTROL AND PREVENTION





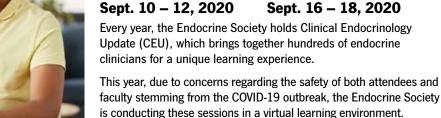
Women of Jewish descent are nearly two times more likely than other

women to have thyroid disease caused by an overactive immune system.

- SOURCE: HORMONE HEALTH NETWORK

ENDOCRINE ITINERARY





CEU 2020

CEU 2020 offers an opportunity to stay up to date on the newest breakthroughs in clinical endocrinology. Expert faculty deliver a comprehensive three-day program covering a range of clinical practice areas using interactive, case-based learning.

Virtual 2020 Clinical Endocrinology Update/Endocrine Review Board

EBR 2020

Endocrine Board Review (EBR) is an essential course for endocrinologists preparing to take the boards or practicing physicians seeking an intensive knowledge assessment. The virtual program is designed as a mock exam, with rapid-fire, case-based questions emulating the format and subject matter of the ABIM's Endocrinology, Diabetes, and Metabolism Certification Examination. Attendees will have early access to topical on-demand presentations with detailed answer rationale (available in late August).

www.endocrine.org/ceu2020 • www.endocrine.org/ebr2020



ATA invites you to participate in the American Thyroid Association 2020 Webinar Summer Series. Content from the ATA Personalized Approach to Thyroid Disorders and Controversies in Thyroidology cancelled in-person events due to COVID-19 are now available virtually. Learn from leading experts, and earn CME and MOC credits all from the comfort of your home or office. Select courses will be offered live. All are available on-demand once released. Sign up now for our summer series of thyroid education.

www.thyroid.org/professionals/ meetings/

ASBMR 2020 Annual Meeting

September 11 – 14, 2020 The ASBMR Virtual Annual Meeting (September 11 – 15) will be free to ASBMR members (Full/In-Training/APDEM/ Emerging Country/Emeritus). There will be a registration fee for non-members. All attendees will be required to register for the meeting. Registration will include access to the full ASBMR 2020 Annual Meeting Program, the ASBMR Symposium: "The Seed and Soil: Therapeutic Targets for Cancer and Bone," and a Meet-the-Professor program scheduled to occur throughout the fall and winter of 2020. This will include all live sessions and on-demand presentations.

www.asbmr.org

CMHC Live Online October 21 – 24, 2020

For the first time in its 15-year history, the Cardiometabolic Health Conference (CMHC) will deliver a historic cardiometabolic educational event entirely online as the 2020 Annual CMHC Live Online: Evolving Paradigms in Cardiometabolic Care: Disparities & Advancements. Led by leading clinical experts, this conference will present the latest information and updates across the cardiometabolic healthcare industry as well as provide a deep dive into the intersection of social determinants of health and cardiometabolic care. Through an advanced learning structure, this offering will help you build a practical strategy through which to both keep your practice up to date and effectively navigate the challenges of inequity in healthcare. www.cardiometabolichealth.org

Obesity Week 2020 November 3 – 6, 2020

ObesityWeek[®] is home to the latest developments related to obesity from cutting-edge basic and clinical research to state-of-the-art treatment and prevention to the latest efforts in advocacy and public policy. Present your latest work and stay up to date on the latest advances

ENDOCRINE **ITINERARY**

in the field by attending the interactive, all virtual ObesityWeek 2020. The overarching theme for ObesityWeek 2020 will be Pathways to Precision Obesity Care. A key component in the development of precision care for obesity is recognizing and understanding the inherent heterogeneity in both the patterns of development and expression of obesity, and ObesityWeek 2020 programming will draw particular attention to these topics.

Before you make any travel plans, check with the sponsoring organization to make sure the events are taking place as scheduled.



Bridging the World of Endocrinology

EndoBridge 2020

Antalya, Turkey October 22 – 25, 2020

EndoBridge[®] is a unique initiative with the vision of bridging the world of endocrinology. EndoBridge[®] is co-hosted by the Endocrine Society and the European Society of Endocrinology in collaboration with the Society of Endocrinology and Metabolism of Turkey. The meetings are held in English with simultaneous translation into Russian, Arabic, and Turkish. Accredited by the European Accreditation Council for Continuing Medical Education (EACCME), this three-day scientific program includes state-of-the-art lectures delivered by world-renowned faculty and interactive sessions covering all aspects of endocrinology. EndoBridge[®] provides a great opportunity for physicians and scientists from around the world to interact with each other, share their experience and perspectives, and participate in discussions with global leaders of endocrinology.

www.endobridge.org

INTERNATIONAL ITINERARY

e-ECE 2020

September 5 – 9, 2020

The European Society of Endocrinology is taking its annual conference virtual for 2020 with e-ECE 2020, a fully digital Congress bringing the latest innovations in endocrine research and patient care. Running live September 5 – 9, e-ECE 2020 will provide attendees with an extremely comprehensive, informative, and engaging experience. All attendees will be able to listen to world-renowned experts, visit e-poster area containing the latest hot topic research, discover new scientific approaches, attend Meet the Expert sessions and explore the virtual exhibition including the e-ECE Hub.

ICE 2020: 19th International Congress of Endocrinology

Buenos Aires, Argentina October 4 – 7, 2020

19th International Congress of Endocrinology (ICE 2020), 4th Latin American Congress of Endocrinology (CONLAEN), and 13th Congress of the Argentine Federation of Endocrinology Societies (FASEN) is organized by MCI Group — Argentina. Topics to be discussed include: big data and its impact in health, human diseases, artificial intelligence, and big-data mining; thyroid cancer diagnosis and treatment; advances in pheochromocytomas and paragangliomas; the tsunami of diabetes in lower- and middleincome countries; preserving reproduction in cancer patients; and so much, much more.

www.ice-2020.com

AOCE-SICEM 2020

Seoul, Korea October 28 – 31, 2020

The 17th Asia – Oceania Congress of Endocrinology and the 8th Seoul International Congress of Endocrinology and Metabolism will take place in Seoul, Korea. AOCE – SICEM 2020 will provide a platform to network with colleagues, exchange ideas, discover novel opportunities, and increase professional knowledge. It will be held at the Swiss Grand Hotel in Seoul. http://sicem.kr/main.asp

VEILED THE BAGLEY



As heart disease continues to kill more Americans than any other ailment annually, more endocrine research is linking endocrine disruptors to cardiovascular health. Despite a lack of significant action to reduce EDCs, patients can reduce their own exposure to these compounds.



Cardiovascular disease (CVD) is the leading cause of mortality in the U.S., responsible for a quarter of all deaths, with someone succumbing to CVD every 37 seconds.

The causes are wildly varied and mostly well known; processed, high fat diets and a sedentary lifestyle are the most infamous culprits, but research is increasingly finding associations between cardiovascular disease and a relatively new player on the scene endocrine-disrupting chemicals (EDCs), even at low doses and even "safe" chemicals meant to replace the ones proven to cause harm.

The best way to treat CVD remains preventing the disease from developing in the first place by eating a healthy diet and leading an active lifestyle, but EDCs are so ubiquitous and still so poorly understood, that an ounce of prevention can feel like it weighs a ton.

Take phthalates, a group of chemicals used in plastics to make them more durable. Phthalates are found in toys, vinyl flooring and wall covering, detergents, lubricating oils, food packaging, pharmaceuticals, blood bags and tubing, and personal care products, such as nail polish, hair sprays, aftershave lotions, soaps, shampoos, perfumes, and other fragrance preparations. New research has linked phthalates to an increased risk for CVD, especially in patients with type 2 diabetes.

Or consider bisphenol S (BPS) and bisphenol F (BPF), two chemicals meant to substitute for bisphenol A (BPA), after the

U.S. Food and Drug Administration banned the use of BPA in baby bottles and formula packaging in 2012. Products that use BPS or BPF are able to display cute stickers that proclaim that product is "BPA free" (and therefore safe). New research has linked these two chemicals to hypertension.

Here, we'll look at two new studies and what they mean for our understanding of these EDCs.

Dangerous Alternatives

According to the new guidelines put out by the American Heart Association, almost half of the people in the U.S. have hypertension. And again, there are many reasons and causes for this staggering number, but Puliyur S. MohanKumar, BVSc, PhD, and his team at the University of Georgia say that the effects of emerging contaminants are overlooked and understudied. BPA is already associated with high blood pressure, but its analogs BPS and BPF haven't been investigated as much, so it's worth finding out whether a similar association exists.

"BPA has been banned, and there are compounds that are alternatives for BPA and we started looking at whether anyone has investigated the effects of all the endocrinedisrupting effects of BPS and BPF, which are supposed to be alternatives to BPA," MohanKumar says. CVD has become a crucial socioeconomic burden for diabetic patients, and potential modifiable risk factors are critical for CVD prevention in these patients."

> YINGLI LU, MD, PHD, CHIEF, DEPARTMENT OF ENDOCRINOLOGY AND METABOLISM, SHANGHAI NINTH PEOPLE'S HOSPITAL, SHANGHAI, CHINA

MohanKumar explains that no one had studied whether BPS or BPF affects cardiovascular function, even though BPA has been implicated in as much. And "BPA free" does not mean "EDC free."

Meanwhile, in Shanghai, researchers have been looking at what effects the seemingly omnipresent phthalates have on cardiovascular health. Phthalates have been found to increase CVD risk factors such as obesity and diabetes. However, as Yingli Lu, MD, PhD, chief of the Department of Endocrinology and Metabolism at Shanghai Ninth People's Hospital tells *Endocrine News*, few studies have investigated the association between phthalate exposure and CVD in type 2 diabetes. "Currently, phthalates are widespread in our daily life," Lu says. "Phthalates have been found to deteriorate cardiometabolic risk factors such as obesity and diabetes. We aim to evaluate the associations of urinary concentrations of phthalate metabolites with CVD and vascular measurements in diabetic patients and explore whether CVD risk factors mediate or interact with these associations."

"We Were Not Surprised at All"

Lu and her team recruited study participants from the outpatient clinics of seven communities in Huangpu District and Pudong District in Shanghai. Using a simple random sampling method, they invited half of the patients with type 2 diabetes from the registration platform in each community healthcare clinic. The participants were 18 or older and had lived in their current area for longer than six months. A total of 675 participants were involved in the final analyses.

The researchers measured 10 metabolites of phthalate exposure in participants' urine and found an association between two of the metabolites — monoethyl phthalate (MEP) and monoisobutyl phthalate (MiBP) — and CVD. Interestingly, CVD risk parameters, including obesity indices, insulin resistance, blood pressure, LDL, and HbA1c, did not mediate the relationship between exposure to phthalates and CVD. "Our results identified that the relationship between phthalates and CVD was mediated by none of the cardiometabolic risk factors tested, which included HbA1c, BMI, waist circumference, lipid profile, and blood pressure," Lu says. "We could say [exposure to] phthalates is probably or may be an independent risk factor. A definite conclusion should be further supported by future larger prospective studies."

For MohanKumar and his team, their work involved exposing pregnant rats to low levels of saline, BPA, BPS, or BPF and then following the rats' offspring, which were implanted with devices to measure their blood pressure. The readings are automatically recorded, so it reduces the variability of the animals' constant changes in blood pressure.

The researchers measured blood pressure once a week for 11 weeks over a 24-hour period. They found that both the systolic and diastolic blood pressure were significantly increased in animals exposed to BPA, BPS, and BPF, compared with those exposed to saline.

"I have to be honest with you," MohanKumar says. "We were not surprised at all."

However, MohanKumar is careful here to remind that correlation does not equal causation, and that the next step would be a mechanistic study. "I would say that it is a caveat, so people can understand that it's more of a correlative study than a causative study and we need to come up with a mechanism," he says.

Inconvenient Truths

From 2014 to 2015, cardiovascular disease cost the U.S. \$219 billion each year. For a patient with type 2 diabetes, developing CVD can be devastating, not only physically but financially as well. Lu says that studies have shown no benefit from intensive glucose-lowering therapy on the prevention of CVD. "Therefore, CVD has become a crucial socioeconomic burden for diabetic patients, and potential modifiable risk factors are critical for CVD prevention in these patients," she says.

Phthalates are incredibly pervasive in 2020. Any type of decisive action on reducing human exposure to these harmful chemicals can take years. The industry stakeholders creating these chemicals or using them in their products cry foul any time a study like these two appear. (And they have deep pockets and friends in high places.)

At some point another chemical will eventually be banned but replaced with another, and then other studies like these will appear, and on and on — which is why Leonardo Trasande, MD, MPP, a professor in the Department of Pediatrics at New York University, said last year at a briefing on EDCs on Capitol Hill in Washington, D.C.: "Unfortunately, this chemical Whack-a-Mole problem isn't going away."

Until then, Lu recommends reducing phthalate exposure as much as possible, especially in patients with type 2 diabetes. She says that effective prevention strategies include handwashing, avoiding using plastic containers, not microwaving food with plastic containers, and eating organic produce, meat, and dairy.

And a label like "BPA free" can lull people into to a false sense of security, but we're learning that BPS and BPF are toxic, but again, it could be a very long time before either is banned, and even then, another bisphenol could appear.

In that case, MohanKumar recommends avoiding keeping food in plastic. Pregnant women should especially avoid foods that come in plastic-coated containers like cans. "And it's not that difficult to do to

AT A GLANCE

Cardiovascular disease is the leading cause of mortality in the U.S., and more research is linking endocrine-disrupting chemicals to cardiovascular health.

 Recent studies looked at phthalates and the substitutes for BPA, all of which humans are exposed to daily.

 It may be a while before any meaningful action addresses EDCs. In the meantime, there are things patients can do to avoid or minimize exposure. [EDCs] can have both organizational and activational effects. They could interfere with the development of various organs, including our brain and heart when they are exposed during development. That predisposes them for the development of various diseases later on."

> PULIYUR S. MOHANKUMAR, BVSC, PHD, PROFESSOR, REGENERATIVE BIOSCIENCE CENTER, UNIVERSITY OF GEORGIA, ATHENS, GEORGIA

> > be honest with you," he says. "I know there is a movement already, people are not using that much plastic, and they are moving on to stainless steel and things like that."

The bottom line is that these researchers are asking the questions that should be asked, even if the answers are inconvenient for some. These EDCs are dangerous, period, and should be avoided when possible, even if that means in the development stage of a new plastic cup.

"[EDCs] can have both organizational and activational effects," MohanKumar says. "They could interfere with the development of various organs, including our brain and heart when they are exposed during development. That predisposes them for the development of various diseases later on."

– BAGLEY IS THE SENIOR EDITOR OF *ENDOCRINE NEWS*. HE WROTE THE JULY COVER STORY ON THE RISE OF TELEMEDICINE AND TELEHEALTH IN THE WAKE OF THE COVID-19 PANDEMIC.



REGISTER TODAY

September 10-12, 2020

This online meeting features a mixture of live and on-demand programming, allowing you to receive the latest advances and critical issues in endocrinology from the comfort of your home or office.

ENDOCRINE.ORG/CEU2020





In a preview of his CEU 2020 session, "When It's Not Your Thyroid," James V. Hennessey, MD, presents a series of questions about thyroid patients, what their symptoms mean,

as well as what they *don't* mean.

BY KELLY HORVATH

Investigati

Imposter

For the provided t

The Endocrine Society's 2020 Clinical Endocrinology Update (CEU) meeting being delivered virtually September 10 – 12, 2020, will feature a presentation by James V. Hennessey, MD, FACP, ECNU, associate professor of medicine at Harvard Medical School and director of clinical endocrinology at Beth Israel Deaconess Medical Center in Boston, Mass. His session, called "When It's Not Your Thyroid," will be livestreamed (his on-demand program "Drug Effects on the Thyroid" was written about in the special CEU issue of *Endocrine News*). Hennessey is a master of presenting in a patient case format, dropping clues as the case unfolds and weaving in evidence and supporting data from relevant papers as he goes.

The effect is Holmesian, with Hennessey playing lead detective and the audience his de facto Watson.

"When It's Not Your Thyroid" will be an exercise in what Hennessey calls "endocriminology," or solving the mystery of one condition masquerading as another. Attendees will be asked to engage with the case, as Hennessey will stop along the way to ask pointed questions and get them thinking. This Meet the Detective session is going to be a lot of fun!

Labeling Effect

Three objectives provide the backbone of this talk: to contemplate the evidence underlying the association of symptoms consistent with the presence of hypothyroidism and our ability to biochemically confirm that diagnosis; to understand what is happening in primary care offices when it comes to ordering thyroid function tests (TFTs); and to realize who is being started on thyroid hormone by their primary care physician before seeing an endocrinologist.

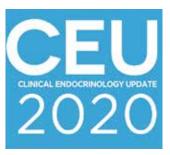
Regarding the first objective, "all guidelines, including those of the Endocrine Society," Hennessey explains, "say don't treat symptoms, only treat biochemically confirmed hypothyroidism. That's where sometimes that first step is skipped, and we're off to the races." This can happen, he explains, because laboratory results can be misunderstood. A thyroidstimulating hormone (TSH) value can appear suspicious to a primary care physician simply because the lab tech deemed it high and marked it conspicuously. Or some holistic practitioners have been known to simply talk to patients rather than relying on biochemical confirmation before

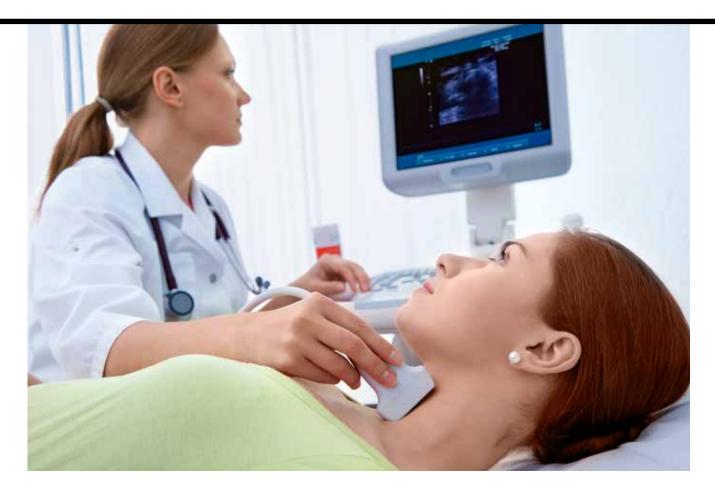


James V. Hennessey, MD

The 45-minute session, "When It's Not Your Thyroid," will be presented live, Saturday Sept. 12, 2020, as part of the Meet the Professor series, which begins at 1:35 p.m. (EST).

For more information, go to: www.endocrine.org/ceu2020.





We have to make sure the diagnosis is correct even if it takes some time. Then maybe we're doing something good for our patients. At every turn in this case, the diagnosis of hypothyroidism could be made — should it be?"

 JAMES V. HENNESSEY, MD, FACP, ECNU, ASSOCIATE PROFESSOR OF MEDICINE, HARVARD MEDICAL SCHOOL; DIRECTOR, CLINICAL ENDOCRINOLOGY, BETH ISRAEL DEACONESS MEDICAL CENTER, BOSTON, MASS. treating. In either scenario, the problem then compounds — the patient gets labeled as "hypothyroid" and instantly feels worse.

"It turns out that patients being labeled hypothyroid tend to complain of symptoms consistent with the presence of hypothyroidism, perhaps because they read things on websites that are not Endocrine Society-supported about how they should feel," Hennessey says. Their quality of life deteriorates from there because being aware of the diagnosis means that they focus on their symptoms — the labeling effect. "In a broad epidemiological study, labeling patients hypothyroid by giving them hypothyroid medication automatically led to a decrement in the way they felt," he says. "In comparing those who are actually hypothyroid with those labeled as such, it was better to be actually hypothyroid but unaware of it than to have normal thyroid function but be treated as hypothyroid."

Beyond the effect of labeling, the elephant in the room here is that treatment for hypothyroidism in a euthyroid patient is not going to make the patient better. "That," says Hennessey, "is the basic principle of 'nonthyroidal hypothyroidism' — if a patient was not hypothyroid to begin with, why would a thyroid remedy provide symptom relief? Even an endocrinologist can't make those go away if the diagnosis was incorrect."

The Case of Nonthyroidal Hypothyroidism

Hennessey will then get to the case, that of a 71-year-old woman who sees her primary care doctor for a three-month history of being tired and feeling depressed. "Everyone in the audience will recognize tiredness and depression as being symptoms that will lead a primary care physician to do TFTs," he says.

Question #1. "The first question is, how likely is it that she's actually hypothyroid?" The answer to this question, supported by data from three pivotal studies, is, basically, unknowable without checking TFTs.

In the Colorado Thyroid Disease Prevalence Study (Canaris GJ, et al. *Arch Intern Med.* 2000;160[4]:526–534), 26% of euthyroid patients reported symptoms like drier skin, poorer memory, slower thinking, weaker muscles or muscle cramps, fatigue, feeling cold, puffy eyes, a deeper or hoarse voice, and constipation as compared to 28% of patients with elevated TSH levels. Although the difference in values was statistically significant, the rates of complaints are proportionally quite similar.

In another study by the same group (Canaris GJ, et al. *J Gen Intern Med.* 1997;12:544–550), 60% of patients with normal thyroid function had symptoms consistent with the presence of hypothyroidism, 63% with subclinical hypothyroidism had such symptoms, and 73% with overt hypothyroidism had them. "The symptoms don't tell you the difference if they're absent," Hennessey says.

In the third study cited, "Hypothyroid Symptoms Fail to Predict Thyroid Insufficiency in Old People: A Population-Based Case-Control Study" (Carle A, et al. *Am J Med.*





AT A GLANCE

- Despite the low to no correlation of symptoms with TFTs, patients with nonspecific symptoms tend to get testing done and wind up taking levothyroxine, which labels them as hypothyroid even if they have normal thyroid function and may have a negative impact on their self-perceived and reported quality of life.
- TSH increases with aging; therefore, age-adjusted TSH ranges are essential to identifying truly elevated TSH values.
- Circadian rhythms affect TSH levels, so knowing at what time of day a level was drawn is also critical; moreover, a single TSH elevation does not diagnose hypothyroidism.



2016;129[10]:1082–1092), even as many as eight or more symptoms consistent with the presence of hypothyroidism did not predict that patients older than age 60 were actually hypothyroid because aging people tend to have such symptoms.

"Symptoms don't reliably predict the presence of hypothyroidism, so don't treat your patients with thyroid medications unless they are biochemically confirmed," Hennessey says. (Or, to put a spin on Conan Doyle's quote: "It is a capital mistake to treat before one has biochemical data.")

Question #2. "After I've convinced the audience that symptoms need to be confirmed, I will ask, how likely is it that she's going to have TFTs ordered?" Although this one seems like an obvious one based on the fact that her symptoms alone are inconclusive, Hennessey cites a British study (Bould H, et al. *Family Practice.* 2012;29:163–167) that looked at the frequency with which patients presenting with depressive symptoms were referred for TFTs and found that those referred for TFTs had high rates of psychological distress, but there was no correlation of symptoms with TFTs.

Furthermore, mild TSH elevations sometimes resulted in levothyroxine treatment assuming that the patient's symptoms were due to hypothyroidism.

"The problem with this is, if it's not hypothyroidism, the search for alternative explanations immediately stops," Hennessey says. "If a patient is depressed or has lupus or something else that is causing these symptoms, they will not be evaluated further. The diagnostic search ends, and maybe the patients are being shortchanged."

Back to the case, the patient is tested one afternoon and is found to have a TSH of 4.6, which is considered mildly elevated over the presumed upper limit of normal (4.12).

Question #3. "How likely is it that she'll get treated with thyroid hormone based on one mildly elevated TSH?" According to Hennessey, "the underlying admonition is, who's going to label their patientashypothyroidandgetthemstarted on the hypothyroidtrail?"

"Falling Threshold for Treatment of Borderline Elevated Thyrotropin Levels—Balancing Benefits and Risks Evidence from a Large Community-Based Study" (Taylor PN, et al. *JAMA*. 2014;174[1]:32–39) revealed that the vast majority of patients receiving treatment had TSH levels 4–10 (subclinical hypothyroidism). "This raises the questions of whether it's appropriate to treat them at all and whether they respond," Hennessey says. Moreover, some being treated were biochemically euthyroid and were treated based on symptoms, thus labeling them as hypothyroid.

One downside to this inappropriate treatment is the mounting cost for the patient and the healthcare system. "That is unacceptable if the treatment is for the wrong diagnosis, and if the patient wasn't likely to respond in the first place," Hennessey says. "Going back to evidence-based medicine, I like to prescribe things for my patients that I'm convinced are in their best interest, and they'll feel better."

Question #4. "Should the patient be treated now to relieve her symptoms or for inevitable overt hypothyroidism?" Here, Hennessey cites some prospective studies of subclinical hypothyroidism and what happens when it's untreated (Vanderpump, MPJ. *Clin Endocrinol.* 1995;43:55–68; Huber, et al. JCEM. 2002;87:3221–3226; and Somwaru LL, et al. JCEM. 2012; 97[6]:1962–1969).

In effect, the presence of subclinical hypothyroidism had no impact on longevity in patients older than age 65 years, and 33% normalized without treatment, while most remained subclinically

In a broad epidemiological study, labeling patients hypothyroid by giving them hypothyroid medication automatically led to a decrement in the way they felt. In comparing those who are actually hypothyroid with those labeled as such, it was better to be actually hypothyroid but unaware of it than to have normal thyroid function but be treated as hypothyroid."

> — JAMES V. HENNESSEY, MD, FACP, ECNU, ASSOCIATE PROFESSOR OF MEDICINE, HARVARD MEDICAL SCHOOL; DIRECTOR, CLINICAL ENDOCRINOLOGY, BETH ISRAEL DEACONESS MEDICAL CENTER, BOSTON, MASS.

hypothyroid. "The worry is of thyroid failure to come," Hennessey says, "but, it turns out, if you don't treat people with thyroid hormone nothing really much happens, and you can always repeat the TFT and start treatment then if it's abnormal. It's not a highrisk situation." Interestingly, one of the biggest risk factors for developing overt hypothyroidism was having been treated with levothyroxine, thus being labeled hypothyroid.

TSH values higher than 10 did increase the risk of persistent subclinical hypothyroidism and levothyroxine administration and slightly increased the risk to progress to overt hypothyroidism. Also of note is that using a single TSH value led to a 40% misdiagnosis rate. These findings gave rise to guidelines that establish that at least two TFTs must be done before intervention is warranted (Gencer B, et al. *Am J Med.* 2020, doi.org/10.1016/j. amjmed.2020/01.018).

Accordingly, a second TFT is done on the case patient about a year later at 8:00 a.m. and comes back with a TSH of 5.6.

Question #5. "Are these TSH values actually abnormal in a 71-year-old woman?" The studies Hennessey cites here make clear that TSH ranges must be stratified by age bracket (Surks MI and Hollowell JG. JCEM. 2007;92:4575–4582; Bremmer AP, et al. JCEM. 2012;97[5]:1554–1562; and Samuels MH, et al. *Thyroid*. 2017;26[9]:1185–1194). Among those age 20 – 29 years, the upper limit of normal is about 3.56, whereas in those older than age 80 years, it's 7.5 — a nearly four-unit difference!

Pertinent to the case, the patient's two TSH levels are actually normal because in the 70 – 79-year age bracket, 5.9 is the upper limit of normal. (The "presumed" upper limit of normal, 4.12, was an average of all subjects from the NHANES study who had TFT levels taken.) "Stratification makes it clear that you have to take age into account, and you have to develop an age-adjusted TSH," Hennessey says. **Question #6.** "Is there good indication of deterioration of function here?" Probably not, says Hennessey: "Morning TSH is a unit and a half higher than in late afternoon, so this is just sampling variation and a good example of diurnal rhythm. So, if you thought this patient who went from 4.6 to 5.6 was just circling the drain and about to overtly fail, take a look and see when the TFTs were drawn," (according to Ehrenkranz J, et al. *Thyroid*. 2015;25(8):954–961).

Mystery Solved!

So, when it's not your thyroid, what else could it be? Rather than give away any big reveals from Hennessey's presentation here, guidelines put out by the British Thyroid Association Executive Committee offer clues in their "Management of primary hypothyroidism" statement. Possible causes of persistent symptoms in euthyroid patients range from lifestyle and nutritional factors to drugs to other diseases and conditions.

Finally, when is it actually your thyroid? Hennessey has a solution for that problem. He proposes a "hypothyroidism triad" to establish a diagnosis that bears similarities to the Whipple triad for hypoglycemia: 1. Symptoms consistent with the presence of hypothyroidism (many of which are also on the list in the Whipple triad); 2. Symptoms in the presence of unequivocal evidence of biochemical hypothyroidism; and 3. Resolution of those symptoms with the administration of levothyroxine. "If we skip one of those steps, maybe the diagnosis is wrong," Hennessey says. "We have to make sure the diagnosis is correct even if it takes some time. Then maybe we're doing something good for our patients. At every turn in this case, the diagnosis of hypothyroidism could be made — should it be?"

- HORVATH IS A FREELANCE WRITER BASED IN BALTIMORE, MD. IN THE JULY ISSUE, SHE WROTE ABOUT A PODCAST BY TWO NEUROENDOCRINOLOGISTS THAT DETAILED TREATING COVID-19 PATIENTS WHO ALSO HAVE UNDERLYING PITUITARY CONDITIONS.



BY JENNA SARVAIDEO. DO

These newly established. member-led communities will foster both online interaction and in-person collaboration on specific topics.

Introducing the Endocrine Society's Transgender **Special**

Interest

Group

he Endocrine Society launched Special Interest Groups (SIGs) in 2019 to allow members with a similar interest to come together and collaborate both within and outside the SIG.

As transgender medicine is a rapidly evolving and growing field in endocrinology, our Transgender Research and Medicine SIG Steering Committee (cochairs: Caroline Davidge-Pitts, MBBCH, and Sean Iwamoto, MD) has several important missions to accomplish in 2020 - 2021:

- Engage members in the online platform to create year-round networking and learning opportunities;
- Increase visibility and presence of transgender medicine and research topics at ENDO and in other Endocrine Society programming; and

Build resources, discussions, and webinars that will assist members in navigating transgender research and medicine topics.

Being part of the SIG as a Steering Committee Member has introduced me to the online platform Community Connect. It is here that we can post, read, and discuss relevant articles and videos. I enjoy engaging with my colleagues on the community dashboard, including watching quarterly webinars on clinically interesting transgender topics. In a world overwhelmed by information overload, this community dashboard simplifies the search for important transgender medicine and research knowledge.

Last April, our SIG launched three modules for Endocrine Society members: (1) Introduction to Transgender Health, (2) Non-Guideline Therapies for Gender-Incongruent Patients, and (3) Transgender Medicine: New Evidence Since Endocrine Society Guidelines.

For someone just venturing into this field, Iwamoto acknowledges in the introduction that only 19% of practicing endocrinologists had dedicated training in trans care. Therefore, he covers some important foundational terminology and statistics.

For those interested in more cutting-edge research, Siham Accacha, MD, discusses the use of bicalutamide, 5-alpha reductase inhibitors, and progesterone in transgender women amongst other topics that need more research in module 2.

In module 3, Karyne Vinales, MD, presents recent studies including data suggesting that estrogen therapy may not need to be held in the perioperative period,



SIGs: Just the Facts

The Endocrine Society's new Special Interest Groups (SIGs) are member-led communities

that facilitate online interactions and in-person networking opportunities at Society meetings.

Aside from the Transgender Research and Medicine SIG, the Endocrine Society also has groups for Adrenal and Pituitary, Early Career, and Entrepreneurship.

SIGs have formal Steering Groups composed of three or more members who are responsible for ensuring the online community is active by encouraging post discussions, scheduling quarterly webinars or live chats, and planning in-person networking opportunities at **ENDO** and/or CEU. Through annual workplans, steering groups are tasked with engaging the SIG membership to create a workplan that ensures the SIG's activities are relevant to the community.

Any Endocrine Society member can get involved in a SIG by attending upcoming webinars and engaging with SIG communities on Community Connect. www.endocrine. org/our-community/special-interest-groups

I am excited to continue identifying top issues in transgender medicine and creating resources to discuss what we know and don't yet know about these issues."



It is a personal goal of mine to be an informed physician to provide high-quality care to my patients and to improve care for all our transgender patients through clinical research studies." a common request from surgeons, as it can cause transgender women psychological distress. I invite readers to go to: www.endocrine.org/transgender_ module and watch these 30-minute modules.

Another triumph of our SIG is the update of the Transgender Health section on **Hormone.org**. It is here that we have information on feminizing and masculinizing hormone therapy along with gender affirming surgery and sexual health information. This is a great resource for clinicians to share with their patients!

Being part of the Transgender Research and Medicine SIG will instill more confidence and competence in my ability to be an endocrinologist with expertise in transgender care. It is a personal goal of mine to be an informed physician to provide high-quality care to my patients and to improve care for all our transgender patients through clinical research studies. Our SIG allows for a way to build clinical consensus and research ideas. It also serves as a stage to present work to a group invested in the field. I am excited to continue identifying top issues in transgender medicine and creating resources to discuss what we know and don't yet know about these issues.

For more information about the Transgender Research and Medicine SIG and other inaugural SIGs, please go to: https://www.endocrine.org/our-community/ special-interest-groups

Sarvaideo is an assistant professor of medicine and the endocrine fellowship associate program director, in the Division of Endocrinology, at the Medical College of Wisconsin in Milwaukee.



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When the world was thrown into disarray earlier this year due to the COVID-19 pandemic, **ENDO 2020** in San Francisco was one of the many casualties. All was not lost, however, as the Endocrine Society quickly regrouped and rebounded and hosted the completely virtual **ENDO Online 2020** taking place over two weeks in June and reached thousands of endocrine scientists and clinicians around the world.

> The Show Must Go On:

Highlights From

BY DEREK BAGLEY

he morning of Game 5 of the 1997 NBA Finals, Michael Jordan called his personal trainer to his hotel room, complaining of stomach pains and fatigue so severe he couldn't get out of bed, and he was diagnosed with the flu. Game 5 was crucial — Jordan's Chicago Bulls were tied with the Utah Jazz at two games each. Jordan had already established himself as one of the all-time greats; he had led his team this far, and now the Bulls' championship run was in jeopardy because of a virus.

TOT U

When the Endocrine Society made the difficult decision to cancel its annual conference **ENDO 2020** — the first time that's happened since World War II — as COVID-19 began to jeopardize much of modern life, it definitely threw things into disarray for a time. Hotel reservations and plane tickets had to be canceled, concrete plans now shattered into dust.

ENDOOnline2020





The all-virtual **ENDO Online 2020** allowed a larger-than-usual number of participants from around the world. This contribution by the Endocrine Society to global education resulted in endorsements of **ENDO Online 2020** from 19 international endocrine societies.

The ENDO Online 2020 Basic Science Day is an excellent example of the Endocrine Society's commitment to basic science. It allowed trainees to present their cutting-edge work that just couldn't wait to be shared until the next ENDO."

> — LORI RAETZMAN, PHD, ASSOCIATE PROFESSOR, MOLECULAR AND INTEGRATIVE PHYSIOLOGY, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN, CHAMPAIGN, ILL.

"We have been clear all along that the health and safety of **ENDO** attendees, staff, exhibitors, and the San Francisco community are our highest priority," Society then-president E. Dale Abel, MD, PhD, of the University of Iowa, Carver College of Medicine, Iowa City, Iowa, said at the time. "By holding the meeting at this time, we might not only put attendees at risk, but could displace healthcare workers during a public health crisis, by forcing them into self-quarantine upon their return or potentially contributing to further spreading the virus to our attendees' hometowns."

Indeed, the first action was ensuring the safety of everyone who would step into San Francisco's Moscone Center from March 28 to 31. Next was anyone's guess. Should the Society just stay in its proverbial hotel room or on the bench and sit this one out? Try again next year? Or take risks, take shots, and see it through, one way or the other.

One thing that the novel coronavirus shed light on was a relatively novel way of working, of staying in contact with loved ones, of even treating patients — over a webcam. Zoom suddenly became a household name. So, Society leadership made the bold move to hold a new scientific conference in a similar fashion.

"Completely suspending **ENDO 2020** was never an option for us," says Christopher Urena, MBA, CAE, the Society's chief learning officer. "As the leading endocrine-focused organization, the world looks to us for continuity, guidance, and direction. We're uniquely empowered with the human talent, resources, and resilience that made it possible to quickly pivot and mobilize forward with alternative plans or a new, virtual conference. What's more, we didn't want there to be a significant education gap for our members, which could negatively impact the individuals they serve, and that was not something we were willing to accept."

Then came the really difficult questions, the tough choices. Ultimately, leadership decided the best step forward was to make this program free, with the goal of creating as few obstacles for attendees as possible. Bringing something like this to fruition is not inexpensive nor is it an easy task for any team to pull off, but the Society puts its mission in front of money.

"When we made the necessary but difficult decision to cancel our in-person **ENDO 2020** in light of the coronavirus pandemic, our annual meeting steering committee and Society staff rapidly pivoted to shift some of our **ENDO 2020** content online and create a virtual conference," Abel says. "We made the strategic decision to share this with the world free of cost as our contribution to the global endocrine community during these challenging times."

One of the challenges with a virtual platform is that the speakers cannot interact directly with the participants. **Despite this challenge, we had more people listen to the virtual platform than we typically have in the room at in-person meetings. This makes me think the virtual platform reached more people.**"

- SALLY CAMPER, PHD, MARGERY SHAW DISTINGUISHED UNIVERSITY PROFESSOR OF HUMAN GENETICS; PROFESSOR, INTERNAL MEDICINE, UNIVERSITY OF MICHIGAN, ANN ARBOR, MICH.



Sally Camper, PhD, (bottom right), Margery Shaw Distinguished University Professor of Human Genetics and professor of internal medicine at the University of Michigan in Ann Arbor, discusses focusing on inclusivity in the classroom, especially when it comes to non-native English speakers, during a Q&A session.



Even if you missed **ENDO Online 2020**, you're in luck. *Highlights of* **ENDO Online 2020**: Focus on Diabetes and Comorbidities is now online at: **endohighlights2020.com/** for free viewing worldwide.

Among the content you'll find:

- An introduction by Stephen R. Hammes, MD, PhD, University of Rochester Medical Center, co-chair, Endocrine Society Annual Meeting Steering Committee;
- ENDO Editor's Overview: An overview of the most important sessions and data presented, providing personal opinions and perspectives, from Raghavendra G. Mirmira, MD, PhD, University of Chicago, deputy editor, *The Journal of Clinical Endocrinology & Metabolism*;
- Virtual meeting presentations: Six sessions, from the ENDO Online 2020 presentations;
- ENDO Online 2020 Conference Summaries: 15 summaries from selected oral presentations on clinical topics of interest, including a downloadable slide kit containing key points;
- 11 podcasts from posters that were scheduled to be presented at ENDO 2020, in San Francisco, March 2020, prior to that meeting's cancellation due to COVID-19; and
- Coming Soon to the Highlights website: Translations of select content into Spanish, Portuguese (Brazil), and German.

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Reaching More Attendees

To bring something like this to life, Society members and staff had to not only unpack and deconstruct everything that had been carefully and meticulously planned for the in-person meeting but quickly find a platform and environment that would be an attractive experience for the (then) 25,000 people who had registered. "There were real-world constraints," Urena says. "Time, money, and the fact that our faculty and attendees were being called to the front lines to combat COVID-19."

"We curated to the extent that we could, a good representation of endocrinology and really compressed that into a digestible, but still robust enough, curriculum for our learners," he continues. "We did not want any barriers to access."

Society leadership stretched the meeting to two weeks — since no one wants to sit in front of a computer listening to sessions for eight hours a day, and to give attendees much more flexibility. "Having a blend of on-demand, but also live experiences peppered throughout over two weeks, we thought it was an appropriate way to move this forward," Urena says.

Then there's the question of whether attendees can communicate and collaborate virtually, at least simulating an in-person meeting. "One of the challenges with a virtual platform is that the speakers cannot interact directly with the participants," says Sally Camper, PhD, Margery Shaw Distinguished University Professor of Human Genetics and professor of internal medicine at the University of Michigan in Ann Arbor. "In a classroom or conference room setting, speakers can take cues from the participants' body language and facial expressions to gauge where more explanation may be helpful. Despite this challenge, we had more people listen to the virtual platform than we typically have in the room at in-person meetings. This makes me think the virtual platform reached more people."

And, with anything like this, there are bound to be some technical difficulties. No technological platform is immune — TV streaming services, social media, they are simply unavailable

from time to time. Zoom and FaceTime have their glitches. How would this platform perform when thousands of people from all over the world logged on to see a session at once?

Turns out, pretty smoothly. "The ENDO 2020 Online virtual platform was so easy to use!" says Lori Raetzman, PhD, associate professor of molecular and integrative physiology at the University of Illinois at Urbana-Champaign. "All the presenters in the session were able to see each other before the start of the session and ask questions through the chat function as the session went on."

"I loved the accessibility of the **ENDO** online platform," she continues. "It reached more people than a session at **ENDO**, and I could see questions coming into the speakers from all over the world."

In Case You Missed It

The main theme of last year's **ENDO** annual meeting in New Orleans was collaboration — sharing science with as many as possible, so that new therapies can be developed, studies further investigated, with the hope of curing or at least managing all disease by the year 2100. But when COVID-19 spread across the world, the virus threatened to move that timetable back quite a bit, as groundbreaking research, work that may have taken years, was suddenly in danger of being postponed and even abandoned.

And it can be difficult to share science that's ready for others to build upon when most of the world is practicing physical distancing or under stay-at-home orders. Again, the Society recognized this potential gap and acted quickly to remedy it, but that took changing some mindsets. "One of the things that's been great to see is people's excitement and eagerness to share information," Urena says. "During Basic Science Day, we were still able to expose new science. Traditionally, there has been some reluctance to showcase new and/or unpublished science in digital environments. But, if you think about it, you could take an iPhone and go into a poster gallery, record everything and share it online, too. It's all about modernizing and socializing 666 You have a heart attack, your risk of severe hypoglycemia is greater in the next year. [We need to help clinicians] recognize that these people are vulnerable, and we need to recognize that hypoglycemia is such a common adverse event. Clinicians don't think about it. Patients don't take it seriously."

— ELIZABETH SEAQUIST, MD, PROFESSOR OF MEDICINE, PENNOCK FAMILY CHAIR IN DIABETES RESEARCH, DIVISION OF DIABETES, ENDOCRINOLOGY AND METABOLISM, UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINN.



Frequent hypoglycemia often results in blunting of the symptoms that warn you of hypoglycemia. **That makes it dangerous because they don't have the warning symptoms.**"

- MICHAEL T. MCDERMOTT, MD, DIRECTOR, ENDOCRINOLOGY AND DIABETES PRACTICE, UNIVERSITY OF COLORADO HOSPITAL, AURORA, COLORADO



new codes of conduct that are contemporary and compatible with our new environment. I was elated to see our community's enthusiastic commitment to sharing late-breaking information and knowledge at **ENDO Online 2020**."

The second day of ENDO Online 2020 was Basic Science Day, a day of live programming dedicated to all those working at the bench — five 60-minute sessions covering everything from reproduction or nuclear receptor biology. "The ENDO Online 2020 Basic Science Day is an excellent example of the Endocrine Society's commitment to basic science," says Raetzman, who moderated the session, "From the Brain to the Belly — Insights into Pituitary and Adrenal Physiology." "It allowed trainees to present their cutting-edge work that just couldn't wait to be shared until the next ENDO."

"The Basic Science Day at ENDO Online 2020 was an amazing showcase of trainee research and a great 'from the start of the field to the future' keynote talk by Dr. Donald McDonell," Raetzman continues. "Attendees saw the best and brightest talk about their groundbreaking research and hopefully got excited to submit an abstract for the next ENDO meeting."

And the theme of collaboration continued this year. During a live session titled "What Else You Should Know About Resiliency, Communications, Collaborations, and Teaching Strategies: A Live Question and Answer Session with Faculty," speakers presented their pro tips and best practices for facilitating conversations in classrooms, for using social media, and even for virtual etiquette. "One of the most important things about communication is paying attention to your body language — even on Zoom," said Cecilia Low Wang, MD, professor of internal medicine at the University of Colorado Anschutz Medical Campus School of Medicine in Aurora, during her talk.

Camper also spoke during this session, focusing on inclusivity in the classroom, especially when it comes to non-native English speakers and how they may approach things like essay questions. "I believe that writing short essays is an excellent way for trainees to consolidate information and gain experience in scientific writing," she says. "Often teachers avoid this approach because the grading is more difficult than other formats. Trainees may find it difficult to write the best essay that they are capable of during a timed testing format. Non-native English speakers may be at a particular disadvantage. I would encourage teachers to consider assigning essays as take-home assignments because of the educational value of writing for consolidating learning and to allow time to produce a strong document."

Another important mission of the Endocrine Society is its Hypoglycemia Prevention Initiative (HPI), and **ENDO Online 2020** reflected that. A live session held on June 17 featured informative talks on different aspects of diabetes technology, followed by a case workshop. For her contribution to this session, Elizabeth Seaquist, MD, professor of medicine and Pennock Family Chair in Diabetes Research, Division of Diabetes, Endocrinology and Metabolism at the University of Minnesota in Minneapolis, reviewed studies on hypoglycemia and heart disease risk. She explains that these studies point to how hypoglycemia can strain the heart. And vice versa.

"There's been two different studies from two different populations looking at younger people, some with type 1, where we see that you have an episode of severe hypoglycemia, your risk for heart disease is greater in the next year," Seaquist tells *Endocrine News*. "You have a heart attack, your risk of severe hypoglycemia is greater in the next year. [We need to help clinicians] recognize that these people are vulnerable, and we need to recognize that hypoglycemia is such a common adverse event. Clinicians don't think about it. Patients don't take it seriously."

Michael T. McDermott, MD, director of endocrinology and diabetes practice at the University of Colorado Hospital in Aurora, pointed out that patients don't take it seriously because they might not be aware of just how much low blood sugar can impact their lives. In fact, 20% of adults with type 1 diabetes have impaired awareness of hypoglycemia. "What we find is that frequent hypoglycemia often results in blunting of the symptoms that warn you of hypoglycemia," he says. "That makes it dangerous because they don't have the warning symptoms."

HPI is such a high priority for the Society because, according to McDermott, hypoglycemia is the leading cause of reduced quality of life in these patients. But things are looking up, as technology rises to meet these patients' needs. "Anything that reduces hypoglycemia [correlates with quality of life]



ENDOOnline2020

Don't Miss Out!

Unlike past in-person ENDO meetings, if you missed ENDO Online 2020 — and you're an Endocrine Society member you have access to the full program. Both the live and on-demand sessions are available at: www.endocrine.org/endoonline2020_session_recordings.

Sessions will be available until **July 2023**.

It was a heavy lift and I congratulate the entire Endocrine Society team for such a successful outcome. We learned a lot from this experiment, and we are well-positioned to offer future educational and conference programming in a virtual format, which may represent the new normal for the foreseeable feature."

> - E. DALE ABEL, MD, PHD, UNIVERSITY OF IOWA, CARVER COLLEGE OF MEDICINE, IOWA CITY, IOWA; IMMEDIATE PAST-PRESIDENT, ENDOCRINE SOCIETY



— especially something like continuous glucose monitoring which really reduces it dramatically because of the alarms it gives you — and when it's combined with a pump, it'll reduce the basal rate or shut it off completely," he says. "We're seeing remarkable reductions in hypoglycemia with the technology that's developed over the last two years."

Indeed, this ENDO Online 2020 wrap-up piece could fill the rest of these pages with coverage of the conference. Instead, in case you missed it, you can access recordings of the live and ondemand sessions any time in the Society's Center for Learning, at: www.endocrine.org/endo_online_2020_session_recordings.

Most Valuable Player

When Michael Jordan stepped on the court for Game 5 of the 1997 NBA Finals, he was at first uncharacteristically slow, visibly sick with the flu. But he began to take more risks, more shots, and he finished the game with 38 points, more than any other individual player in that game, including the three-point shot that put the Bulls ahead 88 to 85 with 25 seconds left. The Bulls held onto their lead and went on to win the NBA Championship the next game. Jordan was named NBA Finals Most Valuable Player.

ENDO Online 2020 was an incredible success by any metric. More than 27,000 people registered to attend, and attendance for the meeting topped 17,000, a new record in the Society's 100-year history. More than 2,300 abstracts were published in a supplemental issue of the *Journal of the Endocrine Society*. In recognition of the Society's contribution to global education, **ENDO Online 2020** was endorsed by 19 international endocrine societies.

"The Endocrine Society is committed to being a global leader in endocrine research, clinical care, and education. **ENDO Online 2020** took that commitment to a new level, attracting an audience of more than 17,000 people from more than 110 countries," says Rob Lash, MD, interim chief executive officer of the Endocrine Society. "The Society's staff was just days away from starting onsite preparations for **ENDO** in San Francisco. As we pivoted to an online meeting, we knew that colleagues around the world were dealing with COVID-19 and looking for the latest information to help them provide the best care for their patients during this challenging time." "In addition to our member-leaders and staff, I want to thank the international societies who endorsed **ENDO Online** and particularly our colleagues in the European Society of Endocrinology, who joined us in sessions on the endocrine manifestations of COVID and the use of telehealth during the pandemic," Lash continues.

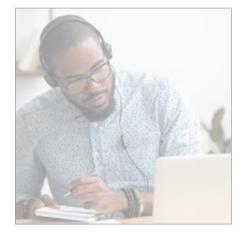
COVID-19 may have disrupted much about modern life, but it has provided some opportunity for innovation, and the Endocrine Society has proven that it was up to the task of being the most valuable player in the world of endocrinology, and that means virtual meetings could be here to stay, something that could be welcome in this brave new world.

"ENDO Online 2020 was a great introduction to online meetings," Raetzman says. "There is huge value in maintaining a portion of the ENDO meeting in the online space to be able to reach the broader endocrine community. Recorded talks with live question and answer sessions that worked so well for the Career Development Workshop talks [are] a model for the future."

"The feedback that I received was tremendous," Abel says. "It was a heavy lift, and I congratulate the entire Endocrine Society team for such a successful outcome. We learned a lot from this experiment, and we are well-positioned to offer future educational and conference programming in a virtual format, which may represent the new normal for the foreseeable feature."



- BAGLEY IS THE SENIOR EDITOR OF *ENDOCRINE NEWS*. HE WROTE THE COVER STORY ON THE METEORIC RISE OF TELEHEALTH AND TELEMEDICINE IN THE JULY ISSUE.



JSHING Joundries

Fresh from receiving his 2020 Laureate Award for Outstanding Innovation, Christopher B. Newgard, PhD, discusses how collaboration has shaped his research and why he focuses on metabolomics to unlock the mysteries of cardiometabolic diseases.

BY GLENDA FAUNTLEROY SHAW

hristopher B. Newgard, PhD, does not hesitate to give credit to the many mentors and colleagues who have inspired his devotion to metabolic research. As director of the Duke Molecular Physiology Institute and Sarah Stedman Nutrition and Metabolism Center, and professor in the departments of medicine and pharmacology & cancer biology at Duke University School of Medicine, he leads one of the most active metabolomics laboratories that seeks to better understand pandemic metabolic disorders such as obesity and diabetes.

This year, Newgard is the recipient of the Endocrine Society's 2020 Laureate Award for Outstanding Innovation — a recognition of demonstrated innovation and entrepreneurship to further endocrine research or practice in support of the field of endocrinology, patients, and society at large.

Endocrine News spoke with Newgard to learn more about what motivated his discoveries.

Endocrine News: What has winning the Laureate Award meant to you?

Christopher Newgard: It's humbling. I am particularly happy to be recognized for innovation. I think all scientists want to be viewed as innovative in what they do. So that's certainly quite pleasing. And, of course,

it's fine for me to receive the recognition as a longtime leader of a group but none of it would be possible without a lot of contributions from a lot of people. I'm honored and looking forward to representing a whole group of people who have helped along the way.

EN: How did metabolomics become your field of interest?

CN: I've been an independent investigator since I started at University of Texas Southwestern Medical Center in 1987, and I've had fantastic mentorship. A huge reason why I'm pushing boundaries in metabolic research is that I've had just absolutely fantastic mentors in metabolism. Perhaps, most prominently was the late Denis McGarry, who was British and knew metabolism backwards and forwards. He drilled it into me, and that was a great a start. Roger Unger was another mentor at UT Southwestern. So, it starts with them and shapes an approach to science.

I study metabolic regulatory mechanisms and how those go wrong in cardio-metabolic diseases, such as diabetes and

I am particularly happy to be recognized for innovation. I think all scientists want to be viewed as innovative in what they do. So that's certainly quite pleasing. And, of course, it's fine for me to receive the recognition as a longtime leader of a group but none of it would be possible without a lot of contributions from a lot of people."



Chris Newgard (third from left) with senior members of the Duke Molecular Physiology Institute/Sarah Stedman Center metabolomics core laboratory. Pictured (I to r): Paul Grimsrud, PhD; Guofang Zhang, PhD; Newgard, James Bain, PhD; Scott Crown, PhD; Olga Ilkayeva, PhD; Robert Stevens, PhD: and Michael Muehlbauer. PhD.

cardiovascular disease, which has included embrace of newer technologies and innovations. It started at UT Southwestern when a colleague, Dean Sherry, who was a professor at the medical school, came to me and said "I'd like to come to your lab and do a sabbatical because I know your research about metabolism as it relates to diabetes and I think I could bring some really exciting tools to the party to allow us to do some really interesting things together." That turned out to be true, and the tools he brought were the use of NMR (nuclear magnetic resonance) as a way of measuring metabolic flux using stable isotope-labeled substrates.

Having Dean on sabbatical in my lab brought home to me that there's an emerging horizon of new metabolic research technologies ... and this was more than 20 years ago. This was sort of the birth of my recognition of a new emergent field called metabolomics that was going to be very impactful and very promising. So, when I came to Duke in 2002 to head the Stedman Nutrition and Metabolism Center, which is now part of the Duke Molecular Physiology Institute that I also lead, one of the stated goals that I had in being recruited was to build a world-class metabolomics lab, and I think over time that's what we've done.

We were one of the first into the game of applying a broad array of metabolomics tools to study cardio-metabolic diseases, both in animal models and in humans. Over time, I think we've made a substantial impact, and that's perhaps why I'm being honored with this award.

EN: This year, the Society has awarded Laureate honors to two colleagues from the same institution. *Endocrine News* recently profiled your colleague Donald McDonnell, PhD, who was awarded the Outstanding Translational Research Award. What's it been like at Duke since you both learned about your awards?

CN: Donald is a really good friend, in addition to being a great colleague. He's chair of the Department of Pharmacology and Cancer Biology. I'm head of the Duke Molecular

We were one of the first into the game of applying a broad array of metabolomics tools to study cardio-metabolic diseases, both in animal models and in humans. Over time, I think we've made a substantial impact, and that's perhaps why I'm being honored with this award."

Physiology Institute, and we have collaborated productively over the years. We were both really tickled by the fact that we won the same year.

EN: How many scientists and students do you lead at Duke?

CN: Our metabolomics lab has about 10 people. Five or six PhDs and an equivalent number of technicians in the core lab, and any recognition of me needs recognition of others who have built a remarkable repertoire of technologies. In addition to that, I have my own basic science laboratory that works in cell and animal models, and has varied over the years from about 10 people where it is now, to as many as 16 to 18 senior scientists and students. I've worked with some incredibly talented people over the years — about 30 PhD students and 30 fellows. I have been very lucky in that regard.

- FAUNTLEROY SHAW IS A FREELANCE WRITER BASED IN CARMEL, IND. SHE IS A REGULAR CONTRIBUTOR TO *ENDOCRINE NEWS*.

END©2020 ABSTRACTS SHOWCASING THE LATEST SCIENTIFIC AND MEDICAL RESEARCH

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Sleepy Head

BY CHERYL ALKON

leep deprivation has long been a hallmark of medical residents and other early-career physicians.

The term "medical resident" originated from John Osler, MD, who developed the concept of the country's first medical residency program in the late 1800s at the Johns Hopkins Hospital in Baltimore, Md. There, trainees moved into an administration building affiliated with the teaching hospital where they learned for many hours a day, as much as possible, especially via bedside teaching.

Nowadays, while residents aren't officially living at the hospital, it can still feel that way. With current clinical and educational work hours for training set by the Accreditation Council for Graduate Medical Education (ACGME) at 80 hours per week, long hours and sleep deprivation are still a prominent concern for early-career physicians. Meanwhile, the American Academy of Sleep Medicine (AASM) recommends all adults, including those in the medical community, sleep seven or more hours on a regular basis for optimal health.

So how can residents and other early-career physicians get better rest while learning how to practice medicine?

Why Prioritize Sleep?

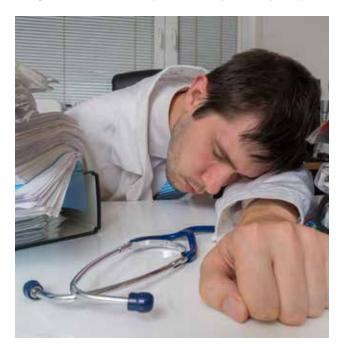
"It's important for healthcare providers to realize that your own health is just as important as your patients," says Fariha Abbasi-Feinberg, MD, FAASM, FAAN, board member of the American Academy of Sleep Medicine (AASM) and a practicing sleep medicine physician and medical director of Sleep Medicine with Millennium Physician Group, and board-certified in sleep medicine and neurology, in Fort Meyers, Fla. "It's especially important for physicians to prioritize sleep as part of a healthy lifestyle. Your ability to For residents and early-career clinicians, a lack of sleep is an ongoing health hazard. *Endocrine News* looks at ways to help you cope with sleep deprivation so you can give your patients the best care possible, as well as take care of your own health.

provide quality care for your patients is dependent on the vitality of your health and well-being."

Research supports the argument for well-rested doctors in many areas, including physical, emotional, social, and intellectual health, among other aspects.

"Healthy sleep can help drive a positive outlook and a heightened sense of professionalism," says Abbasi-Feinberg, citing research on sleep deprivation and increased anxiety and depression. Another study links better sleep to improved physical performance and stamina.

"A physician's social skills play an important role in providing patient-centered care," she says. "Insufficient sleep can hinder your patient-provider communication. For example, sleep deprivation can impair the accurate recognition of emotions, per one study. Healthy sleep can



enhance personal interactions and positively impact your conversations with patients."

The AAA Foundation for Traffic Safety suggests that an average of 328,000 car crashes in the U.S. involve a drowsy driver each year, including 6,400 fatal crashes. "These accidents are preventable with healthy sleep," Abbasi-Feinberg says.

The National Safety Council reports that 13% of workplace injuries can be attributed to fatigue. "Healthy sleep can improve quality of work and help reduce fatigue-related errors, which is crucial in the medical field," she says. "Sleep also helps individuals reach peak work performance."

For those learning to be physicians, sleep's influence on the intellect is crucial. "Sleep helps your brain function properly. As people sleep, the brain is forming new pathways to help them learn, process, and remember information. It is important to recognize that insufficient sleep can impair your concentration and academic performance," she says.

Additionally, a recent study of medical center nurses found a connection between insufficient sleep and symptoms of common sleep disorders. "According to the authors, nearly 100,000 deaths are estimated to occur each year in U.S. hospitals due to medical errors, and sleep deprivation and sleep disorders are significant contributors to this risk," Abbasi-Feinberg says.

What Doctors Can Do

The ACGME is aware of sleep's importance and urges medical schools to make rest a priority.

Medical education programs must educate all faculty members and residents to recognize the signs of fatigue,

66

Sleep deprivation can impair the accurate recognition of emotions, per one study. Healthy sleep can enhance personal interactions and positively impact your conversations with patients."

 — FARIHA ABBASI-FEINBERG, MD, FAASM, FAAN, BOARD MEMBER,
 AMERICAN ACADEMY OF SLEEP MEDICINE; MEDICAL DIRECTOR, SLEEP MEDICINE, MILLENNIUM PHYSICIAN GROUP, FORT MYERS, FLA. sleep deprivation, alertness management, and fatigue mitigation processes, and encourage residents to use those processes to manage the potential effects on fatigue on patient care and learning, notes Timothy P. Brigham, MDiv, PhD, the chief of staff and chief education and organizational development officer for the ACGME.

"Providing medical care to patients is physically and mentally demanding," Brigham says. "Night shifts, even for those who have had enough rest, cause fatigue. Experiencing fatigue in a supervised environment during training prepares residents for managing fatigue in practice. It is expected that programs adopt fatigue mitigation processes and ensure that there are no negative consequences and/or stigma for using fatigue mitigation strategies."

The ACGME guidelines emphasize the importance of adequate rest before and after clinical responsibilities, Brigham continued. Strategies include, but are not limited to:

- ► Strategic napping;
- ► The judicious use of caffeine;
- Availability of other caregivers;
- ► Time management to maximize sleep off-duty;
- Learning to recognize the signs of fatigue;
- ▶ Self-monitoring performance and/or asking others to monitor performance;
- Remaining active to promote alertness;
- Maintaining a healthy diet;
- ▶ Using relaxation techniques to fall asleep;
- Maintaining a consistent sleep routine;
- Exercising regularly;
- ▶ Increasing sleep time before and after call; and
- Ensuring sufficient sleep recovery periods.

Finding time to sleep when away from work is beneficial, research finds. One small study, published in *Academic Medicine* analyzed 29 first-year internal medicine residents. Researchers found that subjects who took a short midday nap of about 5 - 10 minutes showed better cognitive functioning and more alertness than a group who didn't nap during the same time period.

The American Academy of Sleep Medicine offers a Sleep Health and Wellness Resource, a free online tool designed for medical students, residents, and fellows. It gives information on how to evaluate the sleep you're getting and how to improve it.

Ultimately, it's important for residents and others to take sleep seriously.

"Sufficient sleep is one of the three pillars of a healthy lifestyle, along with good nutrition and regular exercise," Abbasi-Feinberg says. Insufficient sleep can be a symptom of "several of today's public health epidemics, including cardiovascular disease, diabetes, and obesity."

> – ALKON IS A MASSACHUSETTS-BASED FREELANCE WRITER WHO IS THE AUTHOR OF THE BOOK, BALANCING PREGNANCY WITH PRE-EXISTING DIABETES: HEALTHY MOM, HEALTHY BABY. SHE WROTE ABOUT HOW MASTERING THE CLINICAL JOB HUNT IN THE FEBRUARY ISSUE.

Endocrine Society Members Meet with EU Leaders to Discuss EDCs

This June and July, members of the Endocrine Society's European Union EDC Task Force held two meetings with high-ranking European Commission officials to discuss the health impacts of exposure to endocrine-disrupting chemicals (EDCs) and propose actions that the Commission should take to protect public health. On July 2, we met with Stella Kyriakides, European Commissioner for Health and Food Safety, and on July 8, we met with Camilla Bursi from the office of the EU Commissioner for the Environment.



During the meetings, we stressed the strong scientific consensus linking widespread EDC exposures to adverse health effects, including endocrine diseases such as diabetes, breast cancer, and thyroid disorders, justifying the need for rapid action by the Commission. Our members also identified opportunities to reduce human health harms by closing regulatory gaps and prioritize controls on known and suspected EDCs through a harmonized and consistent framework for EDC regulation across all sectors of the economy.

As Health Commissioner, Kyriakides has a leading role advancing EDC-related initiatives in

the EU, including the ongoing review of legislation related to EDCs and the development of the Chemicals Strategy for Sustainability. Bursi's portfolio, as a member of the Environment Commissioner's Cabinet, includes the European Green Deal and 8th Environmental Action Programme. Each meeting featured productive discussions with insightful questions posed to our members. We were encouraged to continue our outreach to other commission officials and share the latest scientific insights on EDCs.

Our meetings were particularly timely, as the Commission is now debating issues related to EDCs in the context of the forthcoming Chemicals Strategy for Sustainability. Our July 8 meeting was also attended by cabinet members from several other Commission offices, including representatives from the offices of the European Commission president and vice president. With several initiatives in progress that have regulatory implications for EDCs, including the Chemicals Strategy and the Beating Cancer Plan, the Society will continue to position our members to provide scientific evidence to support EU policies.

For more information about EDCs, links to the latest journal articles, and details about our work, please visit: **www.endocrine.org/edc.**

Endocrine Society EU EDC Task Force member Remy Slama from France presents scientific evidence on Zoom call with EU Commission health commissioner Stella Kyriakides about EDCs and harm to human health. The EU EDC Task Force met with EU policy makers in June and July by Zoom to share our recommendations as the EU government moves forward with a chemical strategy.

Advocacy Results in Rapid Reversal of Visa Restrictions

n July 14, the Trump administration abruptly withdrew a policy announced the prior week that would have stripped visas from foreign students whose current coursework is entirely online.

The proposal follows on an emergency policy implemented in March that exempted student visa holders from the requirement to attend in-person classes, given the widespread university closures and transitions to online classes due to the COVID-19 pandemic. On July 6, the administration proposed to withdraw this exemption, and this change was anticipated to result in the removal from the U.S. of many international students studying at universities and institutions unless they were able to transfer to an institution where they could take in-person classes.

While the potential impacts on visas for international graduate students was not immediately clear from the proposed policy, the Endocrine Society moved quickly with other scientific and educational societies in calling to preserve the emergency exemption for international student visas and withdraw the July 6 proposal. We promptly joined a letter to the White House, Department of Homeland Security, and Department of State highlighting the important contributions of international students to technical and scientific research programs in pursuit of their educational objectives. We and the collective organizations further called on the administration to maintain a robust visa program open to all nations to maintain our global leadership in science and technology. We worked with both the clinical community partnering with the American Medical Association and with the research community partnering with FASEB, AAS, and others to advocate our opposition.

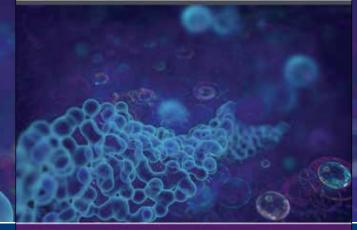
The Society is pleased that the administration withdrew its proposed policy, which could have had severe consequences for international graduate students in medical schools and research labs. We will continue to advocate for policies that preserve the ability of international students to study medicine and conduct endocrine research in the United States.

Take Action:

The Endocrine Society has several online advocacy campaigns you can join to help us influence policies under consideration now. Please visit our campaign site at: **www. endocrine.org/advocacy/take-action**. Joining these campaigns will only take a moment of your time but can make a real difference in educating policy makers about what you think is important. Current Endocrine Society online campaigns:

- Telehealth The Endocrine Society is asking Congress to support telehealth and provide funding in the next COVID-19 relief legislation for the Agency for Healthcare Research and Quality (AHRQ) to fund research to study the implementation and outcomes of telehealth expansion. Our intent is to provide evidence to Congress on the effectiveness of telehealth so we can educate policy makers about the need to make recent policy changes expanding use of telehealth permanent.
- COVID-19 Relief Legislation Congress is working on legislation it hopes to pass by mid-August to provide various forms of relief in response to COVID-19. The Endocrine Society is advocating for several items to be included in this legislation that will help our members, including funding to re-start research labs, supplemental funding for the NIDDK, access to PPE, support for telehealth, and extension of the Special Diabetes Program.
- Increased Funding for NIH The Endocrine Society is urging Congress to provide increased funding for the NIH in fiscal year 2021. While there is bipartisan support for increased funding, Congress needs to ensure that it is allocated not just as one-time emergency support. Congress needs to hear from YOU about why funding for biomedical research is so important.
- European Union Regulation of EDCs The European Commission has launched initial steps toward developing a comprehensive chemicals strategy, but additional pressure is needed to ensure that it follows through on this important effort. We have an opportunity to raise the profile of EDCs and ensure that the Parliament prioritizes EDCs and urges the Commission to take action.

ENDOCRINOLOGY





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HYPOPHOSPHATEMIA (XLH) UNDERSTANDING X-LINKED

1 in 20,000 people. XLH is usually diagnosed in childhood but some symptoms are too mild X-Linked Hypophosphatemia (XLH) is a rare and life-long genetic bone disease that affects and unnoticeable until adulthood. An early and accurate diagnosis is key to managing XLH

WHAT TO LOOK FOR

OTHER NAMES FOR XLH

Vitamin-D resistant rickets Hypophosphatemic rickets Phosphate diabetes X-linked rickets



with XLH may grow slowly and not grow very tall. hildhood, but because phosphorus is important ymptoms of XLH often first appear in early

- Bone and muscle pain Short stature
- Tooth problems or abnormal tooth development Deformities in the legs (bow or knock-knee)



until adulthood.

- Joint and muscle pain
 - Muscle weakness
- Stiff ligaments and tendons Chronic fractures
- Abnormal patterns of walking
- (disorder in tendons and ligaments)
 - Hearing loss

Bone pain, tender joints, or undiagnosed fractures Other signs are chronic fractures, tooth and bone found on X-rays are often the first signs of XLH. Over time, short stature may develop in adults. pain, as well as calcium in the tendons

WHAT YOU NEED TO KNOW

Phosphorus is a mineral found in bones and is responsible for building and repairing bones and teeth, making muscle contract, supplying the cells with energy and essential for normal growth and development. The PHEX gene is responsible for regulating phosphates in the body. When there is a mutation on the X chromosome from the PHEX gene it stops the kidneys from processing phosphorus correctly.

HORMONES AND XLH

urine. If too much phosphate leaves the body, it can Whatever the body doesn't need flows out through much phosphate and vitamin D the body absorbs. FGF 23 is made in bone cells and controls how The hormone Fibroblast Growth Factor 23 or lead to abnormally low phosphate levels.

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(Phosphate Wasting = Hypophosphatemia)

Low levels of phosphate can lead to poor bone health, bone pain, short stature.

XLH is most often passed on through families by the XLH AND GENETICS

mothers have a 50 percent chance of passing it down to any child. X chromosome. If a child inherits a PHEX mutation on the X chromosome, fathers can pass it to their daughters and



There is about a 20-30 percent chance of a person developing XLH without a family history.

A MULTIDISPLINARY APPROACH **DIAGNOSIS AND TREATMENT**

support. During an appointment, a specialist may analyze blood and urine Early and accurate diagnosis is key to managing XLH. A healthcare samples to measure phosphate levels and complete x-rays to evaluate the condition of the bones. A specialist may also use genetic testing and ask team experienced in managing XLH can provide personalized care and about family health history. Burosumab is an antibody that fights against FGF23 hormone and is the only FDA approved specific therapy to treat XLH in adults and children at least 6 months old.

Other treatments will depend on symptoms and severity, these may include:

- Phosphate supplements combined with high dose vitamin D (calcitriol)
- Surgery to help lower limb bowing
- Growth Hormone (for children)
- Dental Procedures

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HEALTH CARE TEAM TALKING TO YOUR

one may have XLH, it's important to play an active role during your doctor's allow the body to develop and function normally. If you or a loved The goal of treatment is to increase the level of phosphate to appointment

Other strategies to treat and manage symptoms:

• Physical therapy to support and prevent further bone and joint paint. Exercises such as yoga can help relieve symptoms

Good oral hygiene to prevent tooth pain and infections.

Annual x-rays to monitor bones, joints and calcium levels.

• For children, school support is needed. Try to have an open discussion with school counselors, staff, and teachers to educate them about XLH and its challenges.

For adults, genetic counseling or

Try to cultivate positive relationships with family, friends, and other people emotional support may be needed who may be able to offer support.



Hormone Health hormone.org

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Editors:

Fady Hannah-Shmouni, MD

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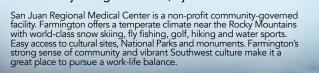
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