

NOVEMBER 2017

THE LEADING MAGAZINE FOR ENDOCRINOLOGISTS

# Endocrine news

## Highs & LOWS

### HYPOGLYCEMIA IN ELDERLY PATIENTS

- Why is hypoglycemia so misunderstood by both patients and healthcare providers?
- How some medications can make matters worse.
- Elderly patients face an entirely different series of risks.
- What the Endocrine Society is doing to raise awareness about this confounding condition.

#### PRACTICAL APPROACHES:

CGM trend arrows and how to interpret them

#### DIABETES & UROLOGY:

A look at a team approach to treating diabetes & urologic issues

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*Hormone Science to Health*




FROM THE **EDITOR**

## Hypoglycemia: The Misunderstood Diabetes Complication

**A**S WE DO EVERY NOVEMBER, *ENDOCRINE NEWS* IS DEVOTING the majority of its feature well to diabetes to coincide with American Diabetes Month. Our cover story, "Highs & Lows: Reevaluating Hypoglycemia in Elderly Patients" by senior editor Derek Bagley (page 18) takes a closer look at this confounding malady that has not only caused a great deal of consternation for patients but to many healthcare professionals as well.

While patients with type 1 diabetes are more likely to be well versed on the topic of hypoglycemia, those with type 2 may not even be aware that they can suffer from it. This stems from the fact that people with type 2 see their doctors when their A1c is too high, rather than too low, according to Robert W. Lash, MD, professor of medicine at the University of Michigan in Ann Arbor. This emphasis on getting the A1c to goal, particularly when diabetes is only one of many medical issues, puts questions about hypoglycemia way down on the list of topics to cover," he explains.

In fact, the importance of spreading the word about the seriousness of the effects of hypoglycemia is so important that the Endocrine Society has created a new effort to raise awareness of the condition. The Hypoglycemia Quality Improvement Project (HQuIP) was created after the Society convened leaders from 18 other organizations representing such diverse parties as other medical specialties, payers, patients, and more to identify opportunities to improve the prevention and management of diabetes and reduce the rates of hypoglycemia. Lash is the chair of the steering committee and says that HQuIP will "play a crucial role in identifying those at risk and reducing the incidence of hypoglycemia." More details on how these efforts came together are in this month's Advocacy column on page 45.

For more information on the Endocrine Society's efforts to reduce the incidence of hypoglycemic events, take a look at the Strategic Blueprint for the diabetes community at [www.endocrine.org/hypoglycemia](http://www.endocrine.org/hypoglycemia). 

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

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THE LEADING MAGAZINE FOR ENDOCRINOLOGISTS

Editor: **Mark A. Newman**  
[mnewman@endocrine.org](mailto:mnewman@endocrine.org)

Senior Editor: **Derek Bagley**  
[dbagley@endocrine.org](mailto:dbagley@endocrine.org)

Art Director/Design: **Catherine C. Neill**,  
**CNJ Creative, LLC**  
[www.cnjcreative.com](http://www.cnjcreative.com)

Production Manager: **Cynthia Richardson**  
[crichardson@endocrine.org](mailto:crichardson@endocrine.org)

Prepress & Printing: **The Sheridan Group**  
[www.sheridan.com](http://www.sheridan.com)

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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.



President: **Lynnette Nieman, MD**  
[president@endocrine.org](mailto:president@endocrine.org)

President-Elect: **Susan Mandel, MD**  
[Susan.Mandel@uphs.upenn.edu](mailto:Susan.Mandel@uphs.upenn.edu)

Past-President: **Henry M. Kronenberg, MD**  
[hkronenberg@partners.org](mailto:hkronenberg@partners.org)

Secretary-Treasurer: **Richard S. Legro, MD**  
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Chief Executive Officer: **Barbara Byrd Keenan, FASAE, CAE**  
[bbkeenan@endocrine.org](mailto:bbkeenan@endocrine.org)

Chief Communications Officer: **Aaron Lohr**  
[alohr@endocrine.org](mailto:alohr@endocrine.org)

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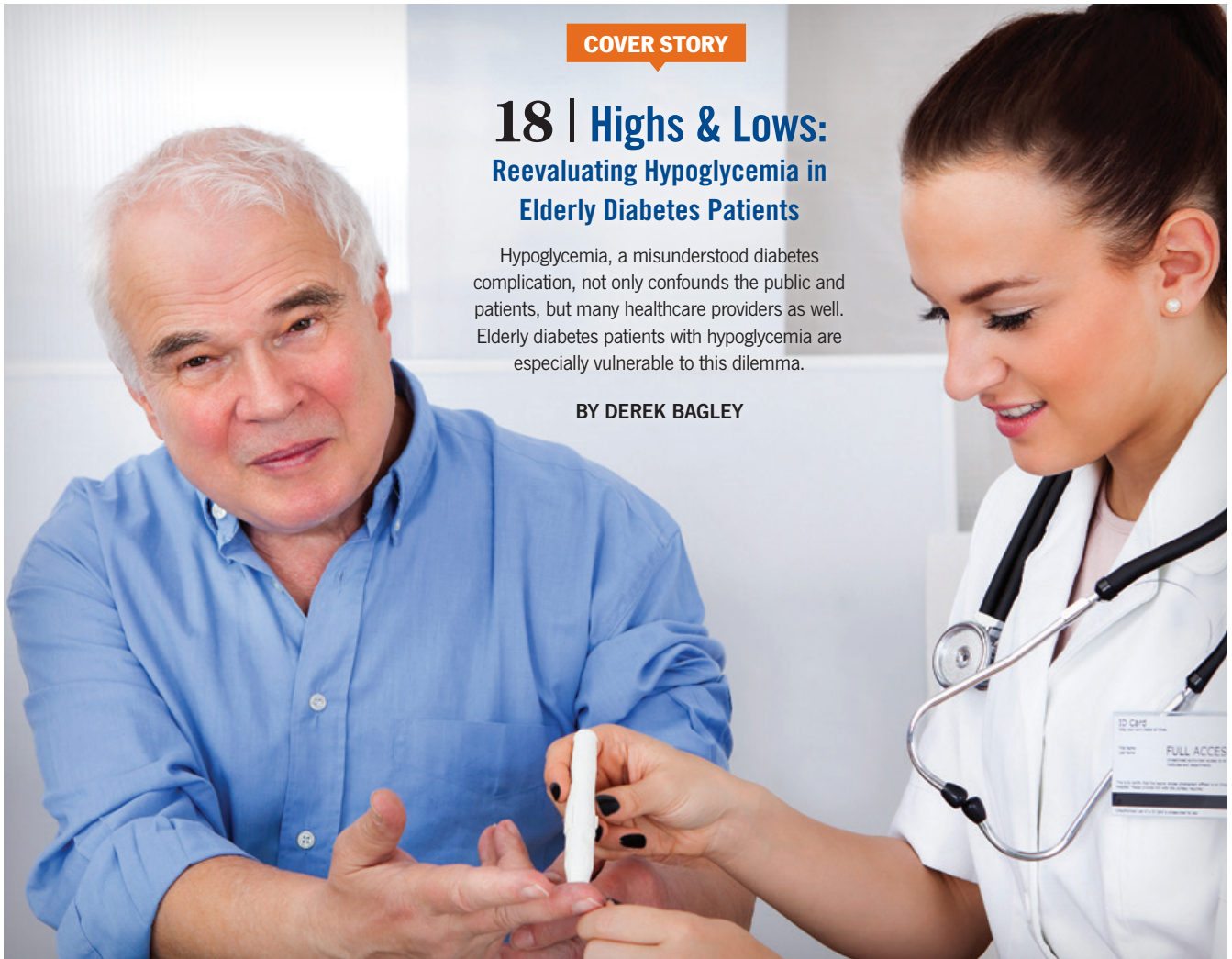


COVER STORY

## 18 | Highs & Lows: Reevaluating Hypoglycemia in Elderly Diabetes Patients

Hypoglycemia, a misunderstood diabetes complication, not only confounds the public and patients, but many healthcare providers as well. Elderly diabetes patients with hypoglycemia are especially vulnerable to this dilemma.

BY DEREK BAGLEY



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## 24 | Group Therapy

Patients with diabetes often present with urologic issues as well, which emphasizes the need for a team approach to treatment. *Endocrine News* spoke with urologists and an endocrinologist who all stressed the importance of working together to increase a patient's health as well as quality of life.

BY DEREK BAGLEY

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*Endocrine News* talked to Dean Eurich, PhD, MSc, BSP, who led researchers in a study that looked at First Nations communities and type 2 diabetes in Canada. He discusses the issues in treating this indigenous population, working with the Canadian government, and creating the Reorganizing the Approach to Diabetes through the Application of Registries (RADAR) project.

BY DEREK BAGLEY

FEATURE

## 36 | A Practical Approach

After the FDA approved the Dexcom G5 Mobile CGM for use in treatment decisions, the Endocrine Society convened expert panels to address questions about how patients should use the trend arrow information when fine-tuning their insulin doses. The new methods ensure that both adult and pediatric patients will have a "practical approach" to using the trend arrows to adjust insulin doses.

BY ERIC SEABORG

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FEBRUARY 22, 2018

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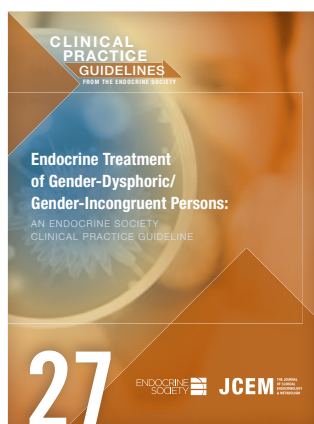
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BY ERIC SEABORG

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## Endocrine Society Strives to Raise Awareness About Diabetes

**N**OVEMBER IS DIABETES AWARENESS MONTH, a special opportunity to highlight the overwhelming need to address the diabetes epidemic worldwide and to work together to find solutions to this ever-growing problem. Our members continue to advance diabetes research and provide top-notch care for their patients. And improving diabetes treatment, coverage, and research funding is a top priority for our Society.

In 2013, the International Diabetes Foundation estimated that 382 million people had diabetes worldwide (8.3%) and predicted that by 2035, this number would increase to 592 million (8.8%), representing a 55% increase in the numbers of adults with diabetes. Currently, the highest adult prevalence is found in Pacific island nations and countries in the Middle East and North Africa (22.9% – 37.5%). The largest proportional increase in the number of adults with diabetes is expected in low and middle-income countries (108% and 60%), with smaller increases in upper middle- and high-income countries (51% and 28%). Thus, the global burden of diabetes is substantial, and it is likely that even more individuals will be diagnosed as screening improves.

Earlier this year, the Centers for Disease Control and Prevention (CDC) released its National Diabetes Statistics Report, which further underscores the importance of this work: more than 30 million individuals, almost 10% of the U.S. population, have diabetes, and an additional 84 million have prediabetes. Diabetes is the seventh leading cause of death and causes more than 14 million emergency department visits annually. While these numbers may seem stark, our advocacy and outreach efforts have contributed to prevention,

treatment, and research. This month, I'd like to share some of those efforts with you.

### Initiatives Around the Globe

Beginning in 2016 under the leadership of past-president Lisa Fish, the Society initiated a series of partnerships with various national societies to improve education and outreach. The first meeting, dubbed “EndoCares: Diabetes” was held in Lima, Peru. The two-day program — achieved through strategic partnerships with three local organizations: Sociedad Peruana de Endocrinología, Asociación de Diabetes del Peru, and Liga

Peruana de Lucha Contra la Diabetes — included a session to educate healthcare providers on diabetes care, a one-day congress for patients with type 2 diabetes, and a one-day type 1 diabetes-focused workshop for patients with type 1 diabetes. Together, EndoCares: Diabetes reached more than 1,000 healthcare providers, approximately 500 patients with type 2 diabetes, 100 patients with type 1 diabetes, and key government officials in charge of healthcare policy.

Building on the success of the 2016 EndoCares program in Peru, the program was hosted in Peru, Argentina, and Brazil this year. As part of our global initiative, the Society looks forward to additional partnerships and collaborations in other countries.

### U.S. Legislative Efforts

**We are helping prevent diabetes:** The

Endocrine Society has been working for a number of years to increase funding for and coverage of diabetes prevention programs throughout the U.S. Through our staff advocacy on Capitol Hill, the CDC was allocated \$22.5 million for these programs in 2017 and Medicare has agreed to provide coverage beginning in 2018.

“  
**Diabetes is the seventh leading cause of death and causes more than 14 million emergency department visits annually. While these numbers may seem stark, our advocacy and outreach efforts have contributed to prevention, treatment, and research. This month, I'd like to share some of those efforts with you.**  
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**We are increasing research funding for the National Institutes of Health:** Ensuring robust, sustained, and predictable funding for medical research continues to be a top priority for the Endocrine Society. Our members have come to Washington to advocate on Capitol Hill, participated in a number of advocacy campaigns, and worked with the scientific community to raise the profile of this issue. As a result, the NIH received a \$2 billion increase in FY 2016 and 2017 and we are working toward securing an increase in FY 2018. Join our campaign to increase NIH funding at [www.endocrine.org/advocacy](http://www.endocrine.org/advocacy).


**We are advocating for the Special Diabetes Program:** Renewal of the Special Diabetes Program (SDP) is a top legislative priority of the Society. We are a leading voice advocating for multi-year extension of both parts of the SDP program, funding for type 1 diabetes research, and diabetes prevention programs for Alaska Natives and American Indians who have a disproportionate risk for developing type 2 diabetes. While the Special Diabetes Program for Indians was extended through December, funding for the Special Type 1 Research Program has now expired. We are working with Congress to ensure retroactive funding for the program to continue important research in the field. As of writing this, the SDP has not yet been reauthorized. Help us advocate for the continuation of this critical program by joining our online campaign here: [www.endocrine.org/SPD](http://www.endocrine.org/SPD).

**We are raising awareness about hypoglycemia:** Given its impact on health outcomes, hospitalizations, and cost burden, the Society is working to raise public awareness about hypoglycemia and to determine approaches to reduce its incidence through a quality improvement program. We have launched the Hypoglycemia Quality Improvement Project (HQuIP) to implement risk assessments for identifying high-risk patients with type 2 diabetes and to determine clinical interventions to reduce hypoglycemic events. We are also partnering with the U.S. Food and Drug Administration's Safe Use team, the Centers for Medicare and Medicaid Services, Department of Veteran Affairs, and the Office of Disease Prevention and Health Promotion to develop a comprehensive strategy to raise the profile of hypoglycemia among various stakeholders. Additional information on these efforts can be found in this issue of *Endocrine News*.

**We are addressing rising insulin costs:** We continue to work to address rising insulin costs and the impact of formulary changes on patient health and administrative burdens. Given our leadership in this area, earlier this Fall, the co-chairs of the Congressional Diabetes Caucus asked the Society to respond to questions so they could better understand these issues. We held a series of discussion groups at CEU 2017 to understand the impact of insulin costs and non-medical switching on their patients and practice. We have conveyed our members' responses to the co-chairs of the caucus and plan to use this information to represent your voices on Capitol Hill and when speaking with manufacturers, pharmacy benefit managers, and insurance companies.

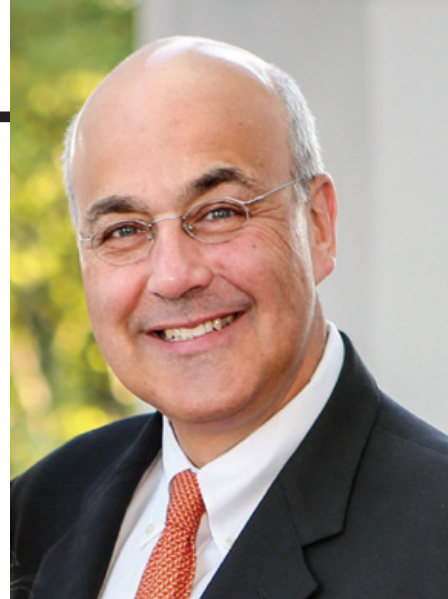
### What can you do?

Over the past year, the Society has been successful in moving the needle to address the diabetes epidemic in America. But there is still so much more to be done.

- ▶ Join our campaign to influence US legislation by visiting our online campaign menu at: [www.endocrine.org/advocacy/contact-congress](http://www.endocrine.org/advocacy/contact-congress).
- ▶ Here, you can join our campaign to increase NIH funding and to urge renewal of the Special Diabetes Program (SDP): [www.endocrine.org/SPD](http://www.endocrine.org/SPD).
- ▶ To get more involved with our advocacy efforts, contact Mila Becker, chief policy officer, at [mbecker@endocrine.org](mailto:mbecker@endocrine.org). 

— **Lynnette Nieman, MD**, President, Endocrine Society

## Robert W. Lash Named Endocrine Society's Chief Professional & Clinical Affairs Officer



“Rob brings a passion for the field and a wealth of experience to the Endocrine Society. We are thrilled to have an endocrinologist of his caliber to develop initiatives that will ensure the long-term growth of the field and achieve advances in scientific discovery and clinical care.”

— BARBARA BYRD KEENAN, FSAE, CAE,  
ENDOCRINE SOCIETY CEO

The Endocrine Society has hired Robert W. Lash, MD — an endocrinologist with more than 25 years of experience in the field — to serve as its first Chief Professional & Clinical Affairs Officer.

Lash will fill a new role on the Society's leadership team. As the Society embarks on its second century, Lash will lead major initiatives to accelerate scientific breakthroughs and improve health worldwide. As a subject matter expert, Lash will represent the Society and be active in outreach to scientific and medical societies, policymakers, and journalists.

Lash has spent the past 20 years at the University of Michigan in Ann Arbor, Mich. He was most recently professor of internal medicine at the University's Medical School and chief of staff for clinical affairs at the University of Michigan Health System.

“I am pleased to have this opportunity to advance the endocrinology profession and support clinical and patient care,” Lash says. “It's a privilege to work with the Endocrine Society's outstanding members, leaders, and staff. I'm looking forward to advocating for all our members and the patients we serve.”

Earlier in his career, Lash was assistant professor of internal medicine at the University of Maryland School of Medicine in Baltimore, Md. He did his endocrine fellowship at the National Institutes of Health's National Institute of Diabetes and Digestive and Kidney Diseases. As an active volunteer with the Endocrine Society, Lash chaired the Clinical Affairs Core Committee and serves on the *Endocrine News* Editorial Advisory Board.

Lash graduated with his Doctor of Medicine degree from Albert Einstein College of Medicine in New York, N.Y. He earned his Bachelor of Arts degree from Dartmouth College in Hanover, N.H.

Lash has received several honors for his role as an educator, including the Kaiser-Permanente Award for Excellence in Clinical Teaching, the Marvin Pollard Award for Outstanding Teaching of Residents, and the Richard D. Judge Award for Excellence in Medical Student Teaching. In addition, he was recognized as the inaugural recipient of the Sisson Endowment for the Teaching of Clinical Skills at the University of Michigan Medical School.

He will begin his duties as Chief Professional and Clinical Affairs Officer on Jan. 2, 2018.





MEMBERS  
in the  
NEWS

## Anthony Hollenberg Takes on New Roles at New York-Presbyterian/Weill Cornell Medical Center

**A**nthony Hollenberg, MD, has been appointed chairman of the Joan and Sanford I. Weill Department of Medicine at Weill Cornell Medicine and physician-in-chief at NewYork-Presbyterian/Weill Cornell Medical Center.

Hollenberg will lead the institutions' largest clinical and academic department, overseeing 16 divisions and nearly 2,600 physicians and scientists who exemplify excellence in their medical disciplines. He will leverage opportunities afforded by Weill Cornell Medicine and NewYork-Presbyterian's clinical expansion to enhance the department's distinguished clinical and research programs. And he will also seek to recruit outstanding physicians and scientists to complement the team already assembled in the Weill Department of Medicine, and nurture the next generation of medical leaders through its medical education programs—including residency programs and fellowships in medical subspecialties.

Currently, Hollenberg is at Beth Israel Deaconess Medical Center, Harvard Medical School in Boston, where he is chief of the Division of Endocrinology, Diabetes and Metabolism, and vice chair for mentoring in its Department of Medicine. He is also currently director of Clinical and Translational Training Programs at Harvard Catalyst, the Clinical and Translational Science Center at Harvard Medical School, where he is a professor of medicine.

Hollenberg is also an associate editor for the Endocrine Society journal, *Endocrinology*.

As an endocrinologist interested in thyroid disorders, Hollenberg investigates the physiological and molecular underpinnings of metabolism, with a particular focus on understanding how thyroid hormones regulate metabolism and lipid levels, and affect body weight. Additionally, his lab is developing protocols to develop functioning thyroid tissue from embryonic stem cells. An accomplished basic and translational researcher, Hollenberg uses findings gleaned from his basic science research to help his patients, who then further inform his work in the lab.

"It's an enormous honor to be selected for this position," Hollenberg says. "Weill Cornell Medicine and NewYork-Presbyterian have nurtured an incredible culture for excellence in science and medicine, which is reflected in the exemplary nature of their entire biomedical enterprise and the resources the institutions provide for innovation. I consider it a privilege to take on these roles, and I'm thrilled about this opportunity."

Hollenberg plans on leveraging the institutions' increasing reach to foster new opportunities for scientific discovery and strengthen existing collaborations between investigators at Weill Cornell Medicine and NewYork-Presbyterian and their colleagues at Memorial Sloan Kettering, The Rockefeller University and Hospital for Special Surgery, as well as Cornell University in Ithaca and Cornell Tech on Roosevelt Island. The Weill Department of Medicine is already a hub for cutting-edge biomedical research, with total research grants exceeding \$44 million in 2016.

Board certified in internal medicine, Hollenberg has published more than 80 original studies in journals and has also contributed 25 book chapters and reviews. He begins his new positions Feb. 1, 2018.

## Society Journal Institutional Subscriptions Increase Worldwide

Since the transition of institutional subscription sales of Endocrine Society journals to Oxford University Press (OUP) last year, there has been significant growth in the global circulation. The greatest increase in subscription sales is a result of including the journals in the OUP collection and consortia sales, which bring Endocrine Society journals to a wider and more diverse market.

The total number of institutional subscriptions increased by 102% from 4,451 in 2016 to 8,989 in 2017.

Regions showing the most significant subscription growth are:

### Europe:

- 2017 – 2,874 subscriptions
- 2016 – 1,135 subscriptions
- 153% growth

### Asia Pacific:

- 2017 – 1,635 subscriptions
- 2016 – 809 subscriptions
- 102% growth

### North America:

- 2017 – 2,287 subscriptions
- 2016 – 1,266 subscriptions
- 80% growth

The journals are also now available in 12 countries that did not have subscriptions prior to the partnership with OUP: Armenia, Bahrain, Belarus, Bulgaria, Fiji, Indonesia, Macau, Paraguay, Portugal, Russian Federation, Venezuela, and Zimbabwe.

Endocrine Society journals are now part of an initiative to provide deeply reduced subscription rates or free access to developing countries. These programs include OUP's



Developing Countries Offer and Research4Life's programs with the United Nations, World Health Organization, and other partners that encompass: HINARI (Health InterNetwork Access to Research Initiative), AGORA (Access to Global Online Research in Agriculture), OARE (Online Access to Research in the Environment), and ARDI (Access to Research for Development and Innovation). As a result, 1,082 institutions in 43 developing countries now have online access to *JCEM*, *Endocrinology*, and *Endocrine Reviews* for the first time — and now know that they have free access, as does the rest of the world, to the *Journal of the Endocrine Society*.

### JOURNALS AIDED RESEARCHERS AFFECTED BY DISASTERS

Endocrine Society journals were made available free of charge to healthcare professionals and aid workers responding to hurricanes Harvey, Irma, and Maria, as well as the earthquake in Mexico.

OUP partnered with the National Library of Medicine (NLM) on the Emergency Access Initiative (EAI), which provided free access to its full biomedical portfolio of 118 journals, including those published by the Society.

The EAI serves as a temporary collection replacement and/or supplement for libraries affected by disasters that need to continue to serve medical staff and affiliated users. It is also intended for medical personnel responding to the specified disaster. For further information see <https://eai.nlm.nih.gov>.





## Endocrine Facts & Figures: Cancers & Neoplasias Published Online

The eighth and most recent Endocrine Facts and Figures chapter: Cancers & Neoplasias has been published online at [endocrinefacts.org](http://endocrinefacts.org).

This chapter presents data on thyroid cancer, adrenal adenomas and carcinomas, familial neoplasia syndromes, parathyroid carcinomas, pheochromocytomas, and pancreatic neuroendocrine tumors. The final chapter of the report: Reproduction & Development is undergoing its final round of review, and is expected to be released for publication this fall.

Endocrine Facts and Figures is a compendium of epidemiological data and trends related to a spectrum of endocrine diseases. The data is organized into nine chapters covering the breadth of endocrinology: adrenal, bone and mineral, cancers and neoplasias, cardiovascular and lipids, diabetes, hypothalamic-pituitary, obesity, thyroid, and reproduction and development.

All data is sourced from peer-reviewed publications, with an additional round of review by a group of world-renowned experts in the field. Additional oversight from the Endocrine Facts and Figures Advisory Panel ensured fair and balanced coverage of data across the therapeutic areas.

The mobile-friendly site continues to expand its reach, featuring 41,944 visitors, 51,079 sessions, 103,392 page views, 3,826 PDF downloads, and 432 unique subscribers.

## Journal of the Endocrine Society Accepted for PubMed Central, Directory of Open Access Journals



The *Journal of the Endocrine Society (JES)* — the Society's newest journal, and first open access journal — successfully completed its scientific and technical review to be included in PubMed Central, a free full-text archive of biomedical and life sciences journal literature at the U.S. National Institutes of Health's National Library of Medicine. All *JES* content will be deposited in PubMed Central and listed in PubMed, significantly increasing the attractiveness of *JES* as a publishing venue.



*JES* has also been accepted for inclusion in the highly selective Directory of Open Access Journals (DOAJ). The DOAJ was launched in 2003 at Lund University, Sweden, and currently contains more than 9,000 open access journals covering

all areas of science, technology, medicine, social science, and humanities.

The DOAJ aims to increase the visibility and use of open access scientific and scholarly journals that use a quality control system to guarantee their content.



## Two Members Elected to National Academy of Medicine



“These newly elected members represent the most exceptional scholars and leaders in science, medicine, and health in the U.S. and around the globe. Their expertise will help our organization address today’s most pressing health challenges and inform the future of health and healthcare to benefit us all.”


— VICTOR J. DZAU, PRESIDENT,  
NATIONAL ACADEMY OF MEDICINE

**E**ndocrine Society members Christos Coutifaris, MD, PhD, and V. Craig Jordan, OBE, PhD, DSc, FMedSci, FAACR, have been elected to the National Academy of Medicine (NAM).

Coutifaris and Jordan are two of the 70 regular members and 10 international members who were announced on October 16 at NAM’s annual meeting. Coutifaris is the Celso Ramon Garcia Professor of Obstetrics and Gynecology and chief, division of reproductive endocrinology and infertility, Perelman School of Medicine, University of Pennsylvania, Philadelphia. Jordan is the Dallas/Ft. Worth Living Legend Chair of Cancer Research, professor of breast medical oncology, and professor of molecular and cellular oncology, University of Texas M.D. Anderson Cancer Center, Houston.

Election to the Academy is considered one of the highest honors in the fields of health and medicine and recognizes individuals who have demonstrated outstanding professional achievement and commitment to service. New members are elected by current members through a process that recognizes individuals who have made major contributions to the advancement of the medical sciences, healthcare, and public health.

“These newly elected members represent the most exceptional scholars and leaders in science, medicine, and health in the U.S. and around the globe,” says National Academy of Medicine president Victor J. Dzau. “Their expertise will help our organization address today’s most pressing health challenges and inform the future of health and healthcare to benefit us all. I am honored to welcome these distinguished individuals to the National Academy of Medicine.”

Established originally as the Institute of Medicine in 1970 by the National Academy of Sciences, the National Academy of Medicine addresses critical issues in health, science, medicine, and related policy and inspires positive actions across sectors. NAM works alongside the National Academy of Sciences and National Academy of Engineering to provide independent, objective analysis and advice to the nation and conduct other activities to solve complex problems and inform public policy decisions. The National Academies of Sciences, Engineering, and Medicine also encourage education and research, recognize outstanding contributions to knowledge, and increase public understanding. With their election, NAM members make a commitment to volunteer their service in National Academies activities. 



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March 17 – 20, 2018

[www.endocrine.org/endo-2018](http://www.endocrine.org/endo-2018)



With over 7,000 attendees, nearly 2,000 abstracts, and over 200 other sessions, **ENDO 2018** is the leading global meeting for endocrinology research and clinical care. Join us for the most well attended and valued translational endocrinology meeting in the world. Bringing together leading experts, researchers, and the most respected clinicians in the field, **ENDO 2018** represents a convergence of science and practice that highlights and facilitates breakthrough discoveries in the field of endocrinology. Spend time connecting with peers and colleagues, exchanging ideas and information, and getting out in front of the latest trends and advancements in hormone health. The meeting also hosts other satellite and pre-conference events.

## Key Dates:

- **Early Registration:** October 18 – November 30, 2017
- **Advance Registration:** December 1, 2017 – January 16, 2018
- **Late-Breaking Abstract Submission:** January 11 – February 5, 2018
- **Housing Deadline:** February 22, 2018

## 19th ASEAN Federation of Endocrine Societies 2017

**Yangon, Myanmar, November 9 – 12, 2017**

ASEAN Federation of Endocrine Societies (AFES) is an association of seven endocrine societies in Southeast Asia with a conference held every two years. With an extensive program covering a broad array of topics, various networking opportunities, poster sessions, continuing medical education, updates on new products and technologies at the AFES Expo, keynote speakers, and more, AFES 2017 is a "must-attend" event in Asia and one of the most recognized congresses among the clinicians and researchers in endocrinology.

[www.afes2017myanmar.com](http://www.afes2017myanmar.com)

## Translational Reproductive Biology and Clinical Reproductive Endocrinology 2017

**New York, N.Y., November 16 – 19, 2017**

The objective of this conference is to offer an authoritative 2017 update for reproductive clinicians and researchers, focusing on new translational developments in the field of

reproductive biology and physiology, as well as clinically relevant patient-care issues. The conference aims to offer basic scientists and clinicians a unique and intimate framework for interactions and exchanges of ideas around paradigm changes and imminent new developments of significance.

<http://frm2017.cme-congresses.com>

## IDF 2017

**Abu Dhabi, UAE, December 4 – 8, 2017**

The global diabetes community will again unite at the IDF 2017 Congress in Abu Dhabi, UAE. The event will include more than 200 speakers, both world-renowned and newcomers, 230 national diabetes associations from 170 countries and high-level participation from the Health Authority Abu Dhabi (HAAD) and other health organizations.

[www.idf.org](http://www.idf.org)

## 11th International Conference on Osteoporosis, Arthritis, and Musculoskeletal Disorders

**Madrid, Spain, December 4 – 5, 2017**

This conference concentrates on the newest and advanced innovations in all the areas of osteoporosis and arthritis research. There will be workshops, symposiums, and special keynote sessions conducted by eminent and notable speakers who surpass in the field of orthopedics.

<http://osteoporosis.cmesociety.com>

## 9th International Congress of Neuroendocrinology

**Toronto, Ontario, Canada, July 15 – 18, 2018**

At the ICN 2018, 64 state-of-the-art speakers and eight plenary lecturers will cover the excitement of modern neuroendocrinology from molecules to behavior, across four main themes – metabolism, reproduction, stress, and timing. Highlights include four concurrent symposium sessions, poster sessions with networking opportunities, and top research in neuroendocrinology from around the world.

[www.icn2018.org](http://www.icn2018.org)



## WHY ENDOCRINOLOGY?

# Finding Community, Identity, and Advocacy

**BY SEAN J. IWAMOTO, MD**, Postdoctoral Fellow, University of Colorado School of Medicine, Anschutz Medical Campus, Division of Endocrinology, Metabolism and Diabetes, Aurora, Colo.

**M**y parents are originally from Hawaii but moved to Seattle before I was born. Growing up, I identified more as Japanese- and Chinese-American, but my mom and dad encouraged me to also embrace the melting-pot culture of Hawaii. As an adolescent, Boy Scouts became a significant part of my life with weekend adventures and continuing a family tradition of becoming an Eagle Scout. While working on my medicine merit badge, I remember learning about different Hippocratic Oath versions and wanting to experience the “joy of healing.” The thought of becoming an endocrinologist was yet to be conceived.

After graduating from Claremont McKenna College in Claremont, Calif., with a degree in neuroscience, I spent time exploring basic science labs but wanted more direct contact with underserved and underrepresented populations. I volunteered for several years with The Trevor Project as a suicide prevention counselor for lesbian, gay, bisexual, transgender, and questioning youth. I was also fortunate to live with my grandparents in Hawaii for a summer, volunteering at Kokua Kalihi Valley Comprehensive Family Services, a non-profit organization dedicated to serving low-income Asian and Pacific Island immigrant populations. There, I met with patients and learned about endocrine health disparities affecting them, including disproportionately high rates of diabetes and obesity. We provided classes on healthy eating and increasing physical activity, integrating cultural norms of the Filipino, Micronesian, Samoan,

and Native Hawaiian communities with improvements in health literacy.

From there, I attended the University of Rochester School of Medicine & Dentistry (URSMD), which instilled in me the science of healing, the art of medicine, and the compassion for taking care of people. My mentors were fellow gay physicians, Drs. Vincent Silenzio (psychiatry) and Christopher Barry (transplant surgery), who inspired me to follow my heart and not be afraid to express myself fully within academia and the community. I was also co-coordinator (with Dr. Glenn Buchberger) of URSMD’s gay straight alliance, Spectrum. We invited alumnus Dr. Norman Spack, a pediatric endocrinologist from Boston Children’s Hospital, to speak to our group. I had only met a couple of physicians who provided medical care for transgender patients and was struck by his enthusiasm for offering gender-affirming hormone therapy to transgender youth. I still didn’t know that endocrinology was in my future but wanted to further explore the breadth of internal medicine.

“  
I have added “hormone detective” to my list of identities and will continue to advocate for my patients as well as the science and art of endocrinology.  
”

Attracted to its congeniality, camaraderie, and compassion, California Pacific Medical Center (CPMC) in San Francisco was a perfect first choice residency match. In our clinic, Drs. Joyce Hansen, Sara Swenson, Carie-Chin Garcia, Eugene Lee, and Ingeborg Schafhalter-Zoppoth demonstrated excellent primary care with a strong endocrinology foundation. I also had a chance to work with the vibrant CPMC endocrinologists, Drs. Karen Earle, Kjersti Kirkeby,

As the Endocrine Society embarks on its second century, *Endocrine News* will continue to tell the stories of how endocrinologists chose this remarkable field. If you would like to share your story with our readers around the world, contact Editor Mark A. Newman at [mnewman@endocrine.org](mailto:mnewman@endocrine.org).


Diana Antonucci, Melissa Weinberg, and Anthony Yin, who generated excitement from both bread-and-butter and emergency endocrine cases. Together, we presented posters at the 2014 and 2015 Endocrine Society Annual Meetings on cases of hypercalcemia secondary to suspected granulomas from poly(methyl methacrylate) injections and a comparison of three guidelines for ultrasound-guided fine-needle aspiration biopsy of thyroid nodules from our clinic.

During my chief residency at CPMC, I formally recognized my love for endocrinology and traveled the country to find another “best fit” program for fellowship training. At the University of Colorado (CU), I met Dr. Margaret Wierman, now on my mentorship committee, who reemphasizes that endocrinologists are “hormone detectives.” We uncover every clue in patients’ histories and physicals to gain insight into their hormone balance. My co-fellows, Drs. Kelsi Deaver and Richard Millstein, and I have mutual gratitude for the knowledge imparted to us by the faculty in the Division of Endocrinology, Diabetes & Metabolism. Dr. Michael McDermott, my first inpatient attending on the first day of fellowship and whose first question to me on rounds was to name the syndrome of Graves’ disease with coexistent toxic nodular goiter (i.e., Marine-Lenhart syndrome), possesses an aspirational clinical acumen that accompanies a dedication to teaching the next generation of fellows.

As a postdoctoral research fellow, I am under guidance from Drs. Daniel Bessesen and Marc-Andre Cornier. These mentors have expanded my obesity and metabolism research experience which includes a pragmatic obesity treatment trial offering a variety of weight loss tools in the primary care setting, large national database analyses of patients’ weight-related healthcare experiences and providers’ obesity medication prescribing practices, and a study of appetite regulation in older obese versus non-obese adults. Together with former fellow, Dr. David Saxon, we presented several oral and poster abstracts at Obesity Week 2017 in Washington, D.C.

More recently, my clinical and research interests are evolving into the realm of transgender health. Spearheaded

by Dr. Micol Rothman, also on my Mentorship Committee, we are developing the UCHealth Integrated Transgender Program at Anschutz Medical Campus that brings together endocrinology, primary care, ob/gyn, plastic surgery, dermatology, and urology to provide comprehensive care in a safe space. With the support from the Division and my mentors, I hope to develop a translational research program emphasizing transgender patient obesity and cardiovascular disease risk. Current increased visibility of transgender social and health issues has reinforced the importance of this marginalized community. Organizations like the Endocrine Society are also raising awareness through recent transgender-focused publications and such as the recently published Clinical Practice Guideline for transgender care, Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society Clinical Practice Guideline.”

My sister, Dr. Kate Iwamoto, a pediatrics resident at the University of Maryland, and I are the first physicians in our family. Our parents nurtured us to care for others regardless of race, religion, sexual orientation, gender identity, and many other labels that often divide. Whether it is getting coverage for a new diabetes medication or gender-affirming treatments, tailoring patient treatment strategies remains my priority. Looking back, I am thankful for the support of my partner, Andy, and my family, friends, colleagues, and mentors. I have added “hormone detective” to my list of identities and will continue to advocate for my patients as well as the science and art of endocrinology. 



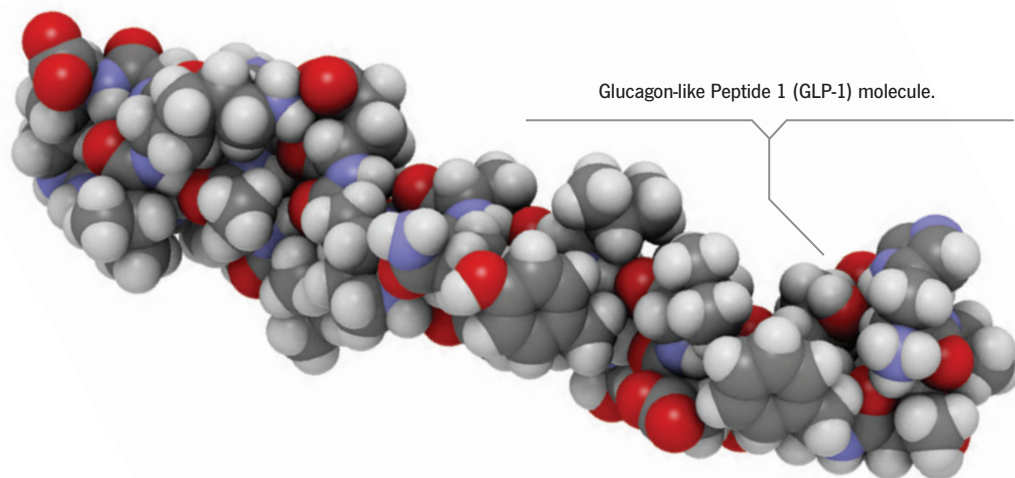
**EDITOR'S NOTE:** The opinions and views of the author do not necessarily represent those of *Endocrine News* or the Endocrine Society.





BY DEREK BAGLEY  
Senior Editor

# Elevated GLP-1 Levels After Roux-en-Y May Affect Responsiveness to Food Cues



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We hypothesized that postoperative elevated GLP-1 levels contribute to the improved satiety regulation after RYGB via effects on the CNS.  
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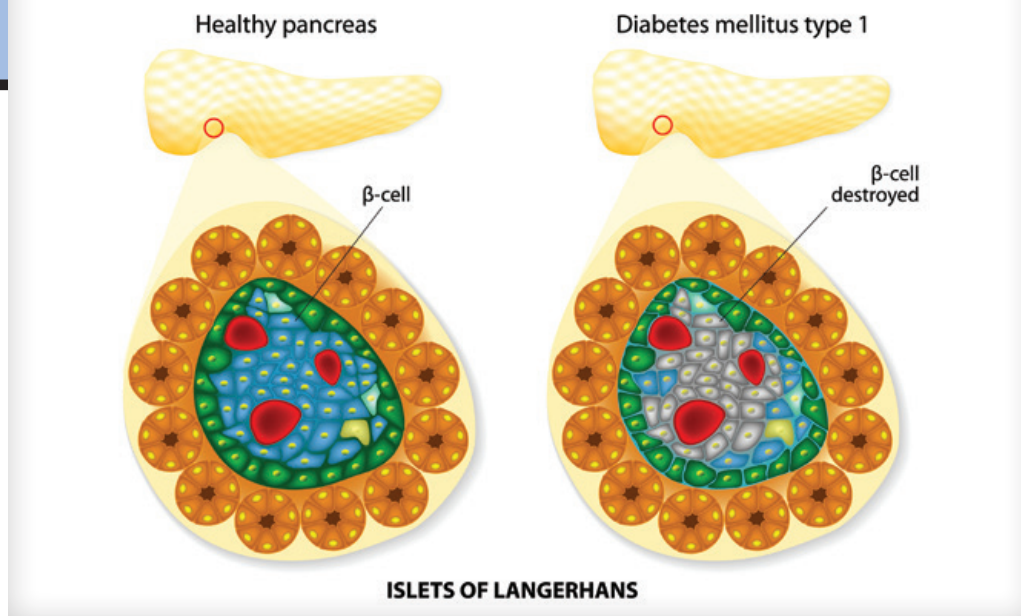
A study recently published in *Diabetes Care* investigated the effects of Roux-en-Y gastric bypass surgery (RYGB) on central nervous system (CNS) activation in response to food cues, measured with functional magnetic resonance imaging (fMRI).

Researchers led by Richard G. Ijzerman of VU Medical Center in Amsterdam, the Netherlands, point out that it has been suggested that weight reduction and improvements in satiety after RYGB are partly mediated via postoperative changes in the CNS and endocrine system. Glucagon-like peptide-1 (GLP-1), is associated with diminishing appetite and weight reduction. Secretion of GLP-1 is greatly enhanced after RYGB. “We hypothesized that postoperative elevated GLP-1 levels contribute to the improved satiety regulation after RYGB via effects on the CNS,” the authors write.

Ten female candidates for laparoscopic RYGB procedures between 40 to 65 years of age were recruited from the Center for Bariatric Surgery in the Netherlands. The patients met the study's weight and health guidelines, and they each had a body mass index greater than 35 kg/m<sup>2</sup>. The

study consisted of four separate patient test visits. Effects of the GLP-1 receptor antagonist exendin 9-39 (Ex9-39), which is used to block effects of endogenous GLP-1, and a placebo were assessed before and after RYGB using fMRI to investigate CNS activation in response to visual food cues (pictures) and gustatory food cues (consumption of chocolate milk). The results indicated that RYGB was consistently associated with increased postoperative levels of GLP-1, and RYGB also decreased activation in feeding regulation areas in the CNS in response to food stimuli.

**Findings:** The effect of Ex9-39 on GLP-1 levels and CNS responses to both the viewing of food pictures and the consumption of palatable food was larger after RYGB compared with before surgery, suggesting that these effects of RYGB may be partly explained by postoperative changes in the levels of endogenous GLP-1 and/or possible changes in sensitivity to GLP-1. These findings provide further insights in the weight lowering mechanisms of RYGB and the sustained efficacy of this procedure, and may ultimately lead to further development of treatment strategies for obesity.



## Human Islets Infected with Virus May Provide Insight into Etiology of Type 1 Diabetes

Researchers are still looking for what sets off the autoimmune response that causes type 1 diabetes, and one of the leading theories is that a virus is the culprit. In a study recently published in the *Journal of the Endocrine Society*, a team of investigators looked at how infecting human islets with the enterovirus coxsackievirus B4 (CVB4) could lead them to better understanding the cellular response.

The team, led by Jennifer P. Wang, MD, of University of Massachusetts Medical School in Worcester, write that clinical reports and epidemiological data support that enteroviral infections may accelerate the autoimmune disease process, and that pancreatic tissue from patients with recent-onset type 1 diabetes reveals enteroviral RNA sequences and evidence of viral proteins in islets, consistent with the possibility that low-grade infection in pancreatic islets may contribute to disease progression. The islets become infected, which sets off a strong autoimmune response, which destroys insulin-producing beta cells. “The role of virus infection in the setting of autoimmunity is still under investigation,” the authors write, “but it has become increasingly clear that an islet insult leading to local inflammation is likely central in initiating the autoimmune process.”

The researchers performed quantitative mass spectrometry analysis on cultured primary human islets infected with CVB4 to identify molecules and pathways altered upon infection. They found that once these islets were challenged with infection, insulin levels dropped considerably, which could be attributed to beta cell death. “Proteins were significantly and differentially regulated in human islets challenged with virus compared with their uninfected counterparts,” the authors write. “Complementary analyses of gene transcripts in CVB4-infected primary islets over a time course validated the induction of RNA transcripts for many of the proteins that were increased in the proteomics studies.”

**Findings:** The researchers conclude that this study provides additional insight on how enteroviruses may suppress human beta cells and identifies potential markers for the initiation and progression of type 1 diabetes. “Our current studies confirm the upregulation/activation of specific molecules and pathways that were previously described in clinical samples of patients with enterovirus-associated fulminant diabetes,” they write. “These molecules are potential therapeutic targets for intervention against [type 1 diabetes].”



“

The role of virus infection in the setting of autoimmunity is still under investigation, but it has become increasingly clear that an islet insult leading to local inflammation is likely central in initiating the autoimmune process.

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The results indicate that all pregnant women and their doctors should monitor and try to limit a substantial increase in blood pressure in mid-to-late pregnancy.  
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## High Blood Pressure During Pregnancy Linked to Increased Risk of Offspring Obesity



When expectant mothers have elevated blood pressure during pregnancy, it may raise their children's risk of developing childhood obesity, according to a study recently published in *The Journal of Clinical Endocrinology & Metabolism*.

“Our study is the first to demonstrate that among pregnant women, elevated blood pressure is associated with a greater risk of overweight and obesity for their children,” says the study's first author, Ju-Sheng Zheng, PhD, of Qingdao University in Qingdao, China, and the University of Cambridge in Cambridge, U.K. “The risk still existed for children of women who didn't have hypertension, but whose blood pressure during pregnancy was at the high end of the normal range.”

The authors point out that in 2010, the prevalence of overweight/obesity among Chinese children ages seven to 18 was 19.2%, and that childhood obesity is associated with many health problems in adulthood, such as type 2 diabetes and cardiovascular disease. “To curb the epidemic of the childhood obesity, it is crucial to identify its potential risk factors, as potential targets for prevention,” they write. “Thus far, a variety of risk factors for childhood obesity have been identified, including parental obesity, birth weight, rapid weight gain during infancy, breastfeeding, short sleeping duration of the children and genetic variations. However, little is known about the role

of maternal pregnancy blood pressure (BP) in the development of offspring overweight and obesity in childhood.”

The prospective cohort study examined blood pressure levels and weight in 88,406 mother-child pairs who participated in the Jiaxing Birth Cohort in southeastern China between 1999 and 2013. The researchers analyzed the women's blood pressure results from the three trimesters of pregnancy. During follow-up visits, the children were weighed when they were between the ages of 4 and 7 years.

**Findings:** Among women who were hypertensive during the second trimester, their children were 49% more likely to be categorized as overweight or to have obesity compared to children of mothers who had lower blood pressure levels. Children of women with high blood pressure during the third trimester were 14% more likely to meet the criteria for overweight or obesity. The mother's body size prior to pregnancy did not affect the association. “The results indicate that all pregnant women and their doctors should monitor and try to limit a substantial increase in blood pressure in mid-to-late pregnancy,” Zheng says. “This may help reduce the likelihood of their children being affected by obesity.”



# Endocrine-Disrupting Chemical Tributyltin Alters Stem Cell Adipose Lineage



In yet another indictment of endocrine-disrupting chemicals, researchers have found a mechanism through which tributyltin (TBT) causes obesity and alters adipose lineage, according to an article recently published in *Endocrinology*.

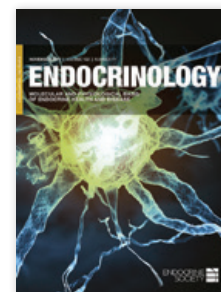
The researchers, led by Bruce Blumberg, PhD, of the University of California, Irvine, point out that nearly 40 percent of American adults are now obese, as are 18.5 percent of American youth (age 2-19). Obesity carries with it a number of comorbidities and is an enormous burden on the U.S. economy. Although lifestyle modification is the first line of treatment for obese individuals, more and more research is showing that environmental factors in utero profoundly affect human health in adulthood. “In particular,” they write, “exposure to xenobiotic chemicals during early development has been implicated as an important contributor to the obesity epidemic.”

TBT is a potent obesogen. Animal models have shown that the chemical activates the peroxisome proliferator-activated receptor  $\gamma$  (PPAR $\gamma$ ) and the retinoid X receptor (RXR). “The obesogenic effects of prenatal TBT exposure are propagated transgenerationally to unexposed generations, presumably via epigenetic modifications of the germline,” the authors write. “Undifferentiated MSCs [mesenchymal stem cells] from mice prenatally exposed to TBT have a proadipogenic, antiosteogenic gene expression profile, which led

us to investigate how TBT influences early cell fate decisions in MSCs.”

To see exactly how TBT acts on these stem cells, the team developed an assay to distinguish the early commitment to adipose lineage from subsequent differentiation. They found that TBT and RXR activators had potent effects in committing MSCs to adipose lineage. They showed that “a [two]-day pretreatment with TBT or the rexinoid IRX4204 was as potent inducing adipogenesis as a 14-day cotreatment with induction cocktail (the standard assay).” The strong PPAR $\gamma$  activator rosiglitazone was inactive.

**Findings:** The activation of RXR alters expression of enhancer of zeste homolog 2 (EZH2) and decreases genome-wide deposition of the repressive histone 3 lysine 27 trimethylation (H3K27me3 mark, thereby, derepressing genes that promote adipose commitment and programming subsequent differentiation. The authors write. “Here we report a role for RXR in the lineage commitment of MSCs and show that RXR activation in MSCs produces genome-wide reduction and redistribution of H3K27me3 marks to promote adipose lineage commitment,” they conclude. “These data identify RXR as an important interface between the environment and the epigenome that can influence the developmental programming of obesity.” <sup>EN</sup>



“Exposure to xenobiotic chemicals during early development has been implicated as an important contributor to the obesity epidemic.”

”

Hypoglycemia, a misunderstood diabetes complication, not only confounds the public and patients, but many healthcare providers as well. Elderly diabetes patients with hypoglycemia are especially vulnerable to this dilemma.



# Highs & LOWS:

BY DEREK BAGLEY

## Reevaluating Hypoglycemia in Elderly Diabetes Patients

**M**ary M. Julius, RDN, CDE, clinical coordinator of Diabetes Self Management Education and Support and a research dietician and nutritionist at the Department of Veteran's Affairs in Cleveland, Ohio, treats an 86-year-old man who has had type 1 diabetes for 50 years. His wife passed away last August. "He said to me, 'Mary, for the past 55 years, all I've had to do is sit down and breakfast would be there,'" Julius says. "I'd sit down and lunch was there. All I had to do was eat. He is going to bed hungry because this is a new skill for him."

Julius's patient is one of many in the very complex realm of hypoglycemia, and the fact that he's in the vulnerable population of elderly people with diabetes, it only compounds the complexities. According to Julius, missing a meal is the number one cause of hypoglycemia, and elderly patients are at a higher risk of missing a meal than the general population. These patients are already frail at baseline, and older people tend not to eat as much anyway, whether they're just not hungry or they suffer from food insecurity, but more on that later.

Hypoglycemia remains a complication of diabetes that's not entirely understood. There still seems to be a lack of awareness among the healthcare community and the public, even among people with diabetes. For instance, hypoglycemia just isn't as appreciated or respected among

people with type 2 diabetes or sometimes even the physicians who treat them. Patients with type 1 diabetes are more likely to receive education on hypoglycemia, since low blood sugar is a common complication. However, patients with type 2 diabetes might not even know they can experience hypoglycemia.

"For most patients with type 2 diabetes, most clinic visits are focused on finding ways to bring glucose levels down," says Robert W. Lash, MD, a professor of medicine at the University of Michigan in Ann Arbor. "This emphasis on getting the A1c to goal, particularly when diabetes is only one of many medical issues, puts questions about hypoglycemia way down on the list of topics to cover."

### Quantity Versus Quality of Life

The first big step in reducing hypoglycemia is understanding these complexities. Hypoglycemia is an especially difficult problem in the elderly population, because there are usually competing priorities in care. "On the one hand, there's the priority for good glycemic control, however one defines 'good,'" says David C. Aron, MD, MS, professor of medicine and epidemiology and biostatistics at Case Western Reserve University School of Medicine in Cleveland. "On the other hand, there is quality of life, so it's quality versus quantity of life."





## OnPoint from the

ENDOCRINE  
SOCIETY 

In 2016, the Endocrine Society created the Hypoglycemia Quality Collaborative Strategic Blueprint. Created as a resource to increase awareness of hypoglycemia and promote actions to reduce its incidence, it can be found online at: [www.endocrine.org/HQC](http://www.endocrine.org/HQC)

“Personalized medicine has always been the essence of medicine. I don’t think that it’s a secret that shared decision-making takes time. And the one thing that is not valued from a reimbursement perspective, is time not doing mechanical procedures.”

— DAVID C. ARON, MD, MS, PROFESSOR OF MEDICINE AND  
EPIDEMIOLOGY AND BIostatISTICS, CASE WESTERN RESERVE  
UNIVERSITY SCHOOL OF MEDICINE, CLEVELAND, OHIO

Julius, who was diagnosed with type 1 diabetes in 1975, says she doesn’t feel comfortable with an A1c below 7%, even though that might fly in the face on conventional medical wisdom. “The last time I went to an endocrinologist, they were not happy with my A1c, but they didn’t ask what my goal was,” she says. “And my goal really is to be between 7 and 8. Not to be a 6.7 or 7.0. I’m really comfortable with a 7.5, 7.6. I don’t like being above 8 but I don’t care if I am. And I think that people should be proud of me, not upset when I have an elevated number. And not interrogate me and not beat me up because there was a number that was too high.”

Julius says what she fears most is another episode of food insecurity, defined as not having enough food to eat for an entire month, which could then lead to another severe hypoglycemia episode, like when she fell asleep in traffic. And while many might associate food insecurity with lower income, Julius stresses that it can happen to anyone. Research appears to back up her claim.

According to a study by Berkowitz et al., published in *PLOS* earlier this year, food insecurity doubled from 2005 to 2012, to historic highs. Another study by Wang et al., published in *Public Health Reports* in 2015, reported that of the 6,709 veterans enrolled in the study, 1,624 (24%) reported being food insecure. “Food insecurity was independently associated with being African American, earning \$25,000/year, recent homelessness, marijuana use, and depression. Being food insecure was also associated with worse control of hypertension, diabetes, HIV, and depression,” the authors write.

“I think food insecurity is a relatively unknown problem,” Aron says. “And it’s masked in a way by the obesity epidemic. How can we have food insecurity and increasing obesity at the same time?”

And here again is another of these vicious cycles. Food insecurity is more prevalent in households that include a person with diabetes. The cost of treating diabetes is expensive, and the costs keep increasing. “You’re given a choice between do I eat or do I buy my medications?” Aron says.

## High-Risk Medications

Older patients with diabetes are in an especially tough position because when given that choice they ask for less expensive medications to manage their diabetes — the medications that carry the risk of hypoglycemia — like sulfonylureas. “Sulfonylureas are particularly bad actors in causing hypoglycemia in the elderly,” Lash says. “If you’re an older patient, you’re more likely to be on an older drug — like sulfonylureas. Glyburide, in particular, can cause prolonged hypoglycemia in older patients. This group of patients may also lack the financial resources to obtain newer medications that don’t cause hypoglycemia.”

Adverse drug events are the other major culprit in hypoglycemia. Insulin ranks up there along with anticoagulants and opioids when it comes to the risk of adverse drug events. “When endocrinologists are taking care of older patients with diabetes, we make a special effort to avoid insulin and sulfonylureas,” Lash says. “We tend to forget that insulin is one of our highest-risk medications, along with opioids and anticoagulants. When you add in the potential for dosing errors and the possibility of a missed meal, insulin becomes an increasingly risky medication.”

And elderly patients can often get caught in the trap of non-medical switching of their insulin. They could be taking insulin that comes in a blue pen that tells them to take 45 units once a day, then receive a green pen that tells them the same thing, not realizing they’re supposed to replace the blue pen with the green one, so they take both. “It just adds one more level of complication to an already complex medical regimen,” Lash says. “These are patients who may have significant comorbidities, or who may not be as knowledgeable about how to reach their diabetes treatment team.”

## Hypoglycemia Quality Improvement Project

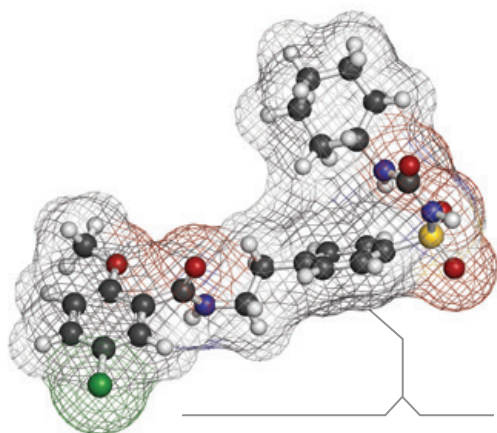
Steps are being taken to address these concerns. On September 2, the Food and Drug Administration held a meeting with providers, payers, patient advocates, and government representatives to discuss mitigating risk factors and reducing hypoglycemic events, during which Julius, Aron, and Lash all gave presentations. And the Endocrine Society has launched the Hypoglycemia Quality Improvement Project (HQuIP). But again, this is a complex issue, and there won’t be any easy answers right away.

For more information on the Society’s Hypoglycemia Quality Improvement Project (HQuIP), go to the Advocacy section on page 63 for more details.



## AT A GLANCE

- ▶ Hypoglycemia is a dangerous part of diabetes, but it’s not always fully understood or respected, especially in patients with type 2 diabetes and those who treat them.
- ▶ Hypoglycemia is especially difficult in elderly patients with diabetes, as they tend to not eat as much and are more prone to adverse drug events.
- ▶ Steps are being taken to bring awareness to hypoglycemia, with the Endocrine Society emerging as a leader in the battle to improve quality and reduce hypoglycemia.



Glibenclamide (glyburide) diabetes drug molecule. 3D rendering. Atoms are represented as spheres with conventional color coding: hydrogen (white), carbon (grey), nitrogen (blue), etc

“Sulfonylureas are particularly bad actors in causing hypoglycemia in the elderly. If you’re an older patient, you’re more likely to be on an older drug — like sulfonylureas. Glyburide, in particular, can cause prolonged hypoglycemia in older patients. This group of patients may also lack the financial resources to obtain newer medications that don’t cause hypoglycemia.”

— ROBERT W. LASH, MD, PROFESSOR OF MEDICINE,  
UNIVERSITY OF MICHIGAN, ANN ARBOR

For Aron, this is going to involve physicians changing the way they think. A target of A1c less than 7% might not be the standard for everyone, and there needs to be honest discussions among physicians and their patients, and payers need to take notice when that happens. “Personalized medicine has always been the essence of medicine,” he says. “I don’t think that it’s a secret that shared decision-making takes time. And the one thing that is not valued from a reimbursement perspective, is time not doing mechanical procedures.”

He gives an example: “You are an endocrinologist in practice, and you’re on the hook for a performance measure. Let’s just say that this patient meets the NCQA criteria for A1c less than 7%. Let’s say, for the sake of argument, they’re on oral agents, and they have an A1c of 7.1%. So what are you going to do? You’re going to tell them to go on insulin so you can get it to 6.9%? What’s the incremental value to the patient? And what’s the incremental negative value of taking an additional drug, or an additional drug that you have to inject yourself with? That’s one of the reasons why I’m not a fan of dichotomous measures.”

Lash, who is the chair of the Society’s HQuIP steering committee, says that in addition to reducing the number of patients becoming hypoglycemic, they also want to raise awareness. Physicians should be asking their patients with diabetes about hypoglycemia as often as they ask them about caring for their feet.

“We also need to consider how to align provider reimbursement with a range of diabetes treatment goals, including glucose control *and* the prevention of hypoglycemia,” Lash says. “Physicians, like all people, respond well to thoughtful incentives. Finding ways to move hypoglycemia prevention up on everyone’s priority list will pay real dividends, in patient safety and reduced medical cost.”

Julius says that she would like to see those involved in diabetes care asking their patients whether they’re going to bed hungry, even if they’re not food insecure but simply lack the skills to feed themselves, like her 86-year-old widower patient. She was able to find a solution to this problem by telling him to eat a bowl of cereal and milk when he can’t decide what to eat, and to alter his insulin injections. “Later he’ll be able to think of more things to do,” she says, “but right now, safe is the goal.” <sup>EN</sup>

BAGLEY IS THE SENIOR EDITOR OF *ENDOCRINE NEWS*. HE WROTE ABOUT THE IMPORTANCE OF FATTY ACIDS IN THE FOOD SUPPLY IN THE OCTOBER ISSUE’S COVER STORY.



# 2019 LAUREATE AWARDS

## CALL FOR NOMINATIONS

DEADLINE: DECEMBER 15, 2017

Fred Conrad Koch Lifetime  
Achievement Award

Gerald D. Aurbach Award for  
Translational Research

International Excellence in  
Endocrinology Award

Outstanding Clinical  
Investigator Award

Outstanding Clinical  
Practitioner Award

Outstanding Educator Award

Outstanding Innovation Award

Outstanding Leadership in  
Endocrinology Award

Outstanding Mentor Award

Outstanding Public Service Award

Outstanding Scholarly  
Physician Award

Richard E. Weitzman Outstanding  
Early Career Investigator Award

Roy O. Greep Award  
for Outstanding Research

Sidney H. Ingbar Award  
for Distinguished Service

## NOMINATE TODAY

The Endocrine Society's Laureate Awards are among the highest honors bestowed by the Society to recognize the highest achievements in the endocrinology field including, but not limited to, seminal research, clinical investigation, translational research, mentorship, and non-traditional activities to support developing countries.

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# Group

BY DEREK BAGLEY

# THERAPY



Patients with diabetes often present with urologic issues as well, which emphasizes the need for a team approach to treatment. *Endocrine News* spoke with urologists and an endocrinologist who all stressed the importance of working together to increase a patient's health as well as quality of life.

# Diabetes rates continue to climb as the endocrinology workforce continues to shrink.

**A**s it stands, 9.3% of the U.S. population has diabetes, and according to a study published in *The Journal of Clinical Endocrinology and Metabolism*, there were 4,841 practicing adult endocrinologists in the U.S. in 2011, meaning each endocrinologist would have to see about 6,000 patients. Endocrinologists have less and less quality time to spend with their patients, frustrating everyone involved.

Ask any endocrinologist, and they'll tell you: To properly care for a patient with diabetes, it takes a team. Diabetes can set off a number of vicious cycles, even in just one patient. Here, we'll narrow it down and look at a few of those cycles as they pertain to how diabetes affects urologic function, and how it ultimately takes the combined efforts of the primary care physicians, endocrinologists, urologists, and therapists to improve the overall health of patients with diabetes who suffer from urologic complications.

"There are some major urologic manifestations or urologic complications that are the result of diabetes, that we as urologists typically see," says Charles Modlin, MD, MBA, a urologist with Cleveland Clinic. "Bladder dysfunction is a big one, both in men and women."

## QUALITY OF LIFE IMPACT

Bladder dysfunction itself is a huge detriment to quality of life, which can rob patients of enjoying even the simplest everyday activities. But for patients with diabetes who suffer from bladder dysfunction, the frequency and incontinence can also be a huge detriment to their treatment. These patients may feel depressed and isolated, so they'll be less likely to exercise, which worsens their diabetes, which worsens their urinary problems. "Urinary issues can meaningfully affect quality of life — leading to changed behavior, withdrawal from social situations, reduced flexibility in travel, increased isolation, shame, stress, and depression," says Graham McMahon, MD, MMSc, an endocrinologist in Chicago and professor of medicine at Northwestern University.

"I have seen patients dealing with the effects of [diabetes] and the issues of frequent urination / leakage of urine," says Kevin

Ostrowski, MD, a urologist in Seattle and assistant professor of medicine at the University of Washington. "This can lead to issues with self-esteem, feelings of depression, and issues associated with recurrent urinary tract infections. This has significant personal and psychological impact on patients and their family."

Diabetes already increases the incidence of infection in general, and it doesn't spare the urinary tract. People with diabetes have higher rates of urinary tract infections, related to several factors including the predisposition to urinary retention associated with autonomic neuropathy. "Issues such as candidiasis are more commonly associated with diabetes than urinary tract infections," McMahon says, "but urinary tract infections are also more common in patients with diabetes than those without."

## A VICIOUS CYCLE

Modlin here points to another vicious cycle. Physicians treat urinary tract infections with antibiotics, which can often lead to yeast infections and even more difficult to treat antibiotic resistant urinary tract infections. Modlin also says that these urinary tract infections can escalate into pyelonephritis, which can then potentiate chronic kidney disease and lead to a need for kidney transplantation. In addition, people with diabetes are at a greater risk of developing urinary retention, which can put a lot of pressure and stress on the kidneys also contributing to kidney failure and the need for a kidney transplant.

People with diabetes are already at a higher risk for fractures. And urinary frequency or incontinence can lead to an increased risk of falls and fractures, since patients have to get out of bed at night to urinate. McMahon says, "movement in the dark increases the risk for stumbles, falls, and even fractures."

Ostrowski adds that patients with diabetic neuropathy and urinary issues are at an increased risk of falling, since the loss of sensation or pain in their feet combined with having to get up to use the bathroom leads to higher incidence of falling.





## AT A GLANCE

- ▶ **Diabetes carries with it a number of comorbidities. This article focuses on one set: urologic complications.**
- ▶ **Diabetes and the subsequent urologic complications form vicious cycles that can drastically reduce patients' quality of life.**
- ▶ **It takes a team approach, from endocrinologists, urologists, and therapists, to optimally treat these patients and improve their overall health.**

"All of these urological complications of diabetes can negatively impact a person's quality of life," Modlin says. "Recurrent urinary tract infections and bladder dysfunction with the associated pain, discomfort, urinary frequency, incontinence, getting up at night a lot to urinate can understandably negatively and dramatically impact your normal everyday functioning, to where you may not want to go out and be in a public place or even be able to go to work."

And again, a very diminished quality of life can lead to depression and other mood disorders. But sometimes the medications prescribed to treat these psychological problems can lead to bladder dysfunction.

### TAKING A TOLL

Of course, none of this is exactly news to experts who deal with these patients. But these examples, these vicious cycles, do speak to the incredible toll diabetes takes on a person and the ever-increasing need of multidisciplinary approaches in order to optimize these patients' health.

The adage is correct, especially here: It takes a village. Primary care physicians and urologists should consider whether a patient with urinary dysfunction might have these problems because they have undiagnosed diabetes. After all, there are some 8 million people in the U.S. who have diabetes and don't know it. A man who suffers from frequent or urgent urination might have an enlarged prostate or the urination problems could be a result of diabetes. Sometimes it's a combination of both. "Sometimes it may behoove the urologist to order a hemoglobin A1c test or just a serum glucose level," Modlin says. "We can also do a urine dip and check for presence of glucose in the urine. There are certain things that we can do. I think it's important for all healthcare providers to be on the lookout."

Patients are often hesitant to open up about these problems. Diabetes not only affects urinary function, but sexual function as well, for men and women. Men may suffer from erectile dysfunction and women may suffer from painful intercourse. Difficult topics to broach, to be sure, so it's on the clinician to ask about these things. "Ask about urinary issues and sexual health, normalize the conversation, and encourage ongoing dialog," McMahon says. "Ask about how any genitourinary issues might be affecting behavior, including asking about nocturia, socializing, and support from others. Ask the patient if they have talked about their issues with their partner, family, or friends."

"I think as healthcare providers a lot of the time we forget also that physical manifestations of diseases such as diabetes can often contribute to the onset of mental health disorders, such as stress, anxiety, and depression," Modlin says. "And if someone does have a very negatively impacted quality of life, we need to refer them to behavioral therapist to assist in their care, which can be very valuable for the overall health of the patient. We all — patients, physicians, and health providers — need to be aware that in cases especially related to taking care of patients with diabetes, it does take a team approach, including having endocrinologist, primary care providers, urologists, and mental health professionals and other specialists and family members all working in concert together." **EN**

BAGLEY IS THE SENIOR EDITOR OF *ENDOCRINE NEWS*. HE WROTE ABOUT THE IMPORTANCE OF FATTY ACIDS IN THE OCTOBER ISSUE.

# Changing COURSE: Treating Gender Dysphoria

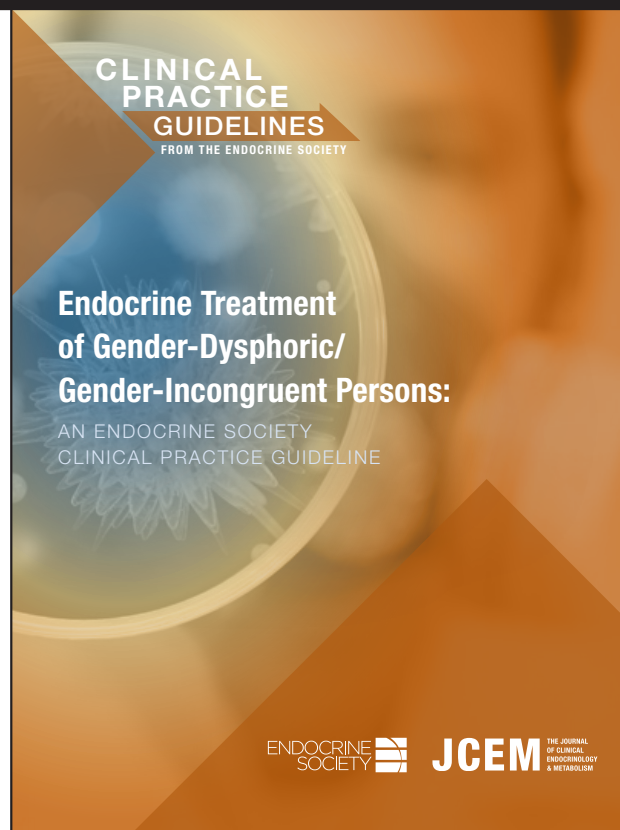
The Endocrine Society published a new guideline for endocrine treatment of patients with gender dysphoria. As treatment gains acceptance and clinical experience grows, this new guideline lays out the protocols for individualizing therapy.

BY ERIC SEABORG

As the literature and clinical experience related to caring for patients with gender dysphoria continue to grow, a new Endocrine Society clinical practice guideline lays out the paths for individualizing therapy according to the life stage when the patient seeks treatment.

Entitled “Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society Clinical Practice Guideline,” the recommendations are not greatly different from those of the previous guideline published in 2009. However, the evidence base is greater and protocols are better established, according to Wylie Hembree, MD, of the College of Physicians and Surgeons at Columbia University and chair of the task force that wrote the guideline.

Socially as well as medically, the understanding and acceptance of gender dysphoria have changed significantly in recent years. One important step since the previous guideline came in 2013, when the American Psychiatric Association’s fifth edition of its diagnostic manual, the DSM-5, replaced the diagnosis of “gender identity disorder” with “gender dysphoria.” The change reflects a shift within the medical community away from the notion of two well-defined sexes toward a recognition that a broad spectrum of sexuality exists



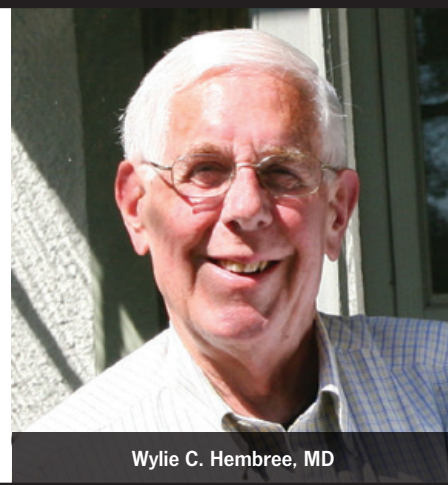
and many people cross or transcend traditional ideas of what it means to be male or female. “Although gender identity may be understood along a continuum, some renounce any gender classification, and others experience an involuntary alternation of gender identity,” Hembree says.

## Nailing Down Definitions

The guideline attempts to define and standardize the terminology for the field, a need illustrated by the previous guideline missing some of the nuances of a continuum by aiming to treat “transsexual persons.” The new guideline defines gender dysphoria as “the distress and unease experienced if gender identity and designated gender are not completely congruent.”

It defines gender incongruence as “an umbrella term used when the gender identity and/or gender expression differs from what is typically associated with the designated gender. Not all individuals with gender incongruence have gender dysphoria or seek treatment.” It notes that gender incongruence is the proposed name of the gender-identity-related diagnoses in the World Health Organization’s International Classification of Diseases, ICD-11, due out in 2018.

“Most children who have gender dysphoria actually lose it. There may be only 10% to 15% whose dysphoria continues throughout childhood and into puberty.”



Wylie C. Hembree, MD



## WHERE TO FIND IT

The guideline, “Endocrine Treatment of Gender-Dysphoric/Gender-Incongruent Persons: An Endocrine Society Clinical Practice Guideline,” appears in the November *Journal of Clinical Endocrinology & Metabolism* and is available online at [www.endocrine.org/GenderDysphoricCPG](http://www.endocrine.org/GenderDysphoricCPG).

## Position Statement

As further evidence of the acceptance of treatment, the Endocrine Society accompanied the guideline with a position statement saying that medical intervention for transgender individuals is “effective,” “relatively safe,” and “established as the standard of care.” Because the treatment is well-established, the position statement urges that “federal and private insurers should cover such interventions as prescribed by a physician as well as the appropriate medical screenings that are recommended for all body tissues that a person may have.”

Although the treatment has become more established, it is complicated by the factor of when a person may come forward to seek treatment, which can range from early childhood to adulthood. To emphasize the need to individualize treatment — and the great difference between treating a prepubertal child, an adolescent beginning puberty, and an adult — the guideline is divided into five sections: the evaluation of youth, adolescents, and adults of varying age; treatment of adolescents; hormonal treatment for adults; prevention of adverse outcomes and provision of long-range care; and appropriate surgical procedures.

## Dysphoria Often Changes Children

Because of the greater recognition of the condition, providers are more likely to encounter children experiencing gender dysphoria at younger ages than in the past. Hembree notes that “most children who have gender dysphoria actually lose it. There may be only 10% to 15% whose dysphoria continues throughout childhood and into puberty.” For this reason, the guideline recommends holding off on any treatment until a child has entered puberty. “Decisions regarding the social transition of prepubertal youth require [the help of] a mental health or similarly experienced professional,” Hembree says.

For adolescents whose dysphoria continues unresolved, the guideline says that puberty can be suppressed with gonadotropin-releasing hormone agonists. “Clinicians may add gender-affirming hormones after a multidisciplinary



team has confirmed the persistence of gender dysphoria/gender incongruence and sufficient mental capacity to give informed consent to this partially irreversible treatment. Most adolescents have this capacity by 16 years old,” the guideline says.

For both youths and adults, the guideline recommends a multi-disciplinary approach, involving people with expertise in transgender-specific diagnostic criteria, mental health, primary care, hormone treatment, and surgery as needed. Individuals seeking treatment should receive information on options for fertility preservation prior to initiation of puberty suppression in adolescents and prior to hormone therapy in both adolescents and adults.

## Straightforward Endocrinology

Hembree said that although the evidence base has grown and the establishment of protocols has made it easier, one thing has not changed in the 25 years he has been dealing with transgender patients: Although the process may appear daunting, the endocrinological aspects are actually straightforward, and should be familiar to endocrinologists who treat patients with disorders that require treatment with sex hormones. Transgender treatment is a matter of suppressing endogenous birth-gender hormones and replacing them with the hormones of the opposite gender.

Once the changeover has been made, the guideline suggests maintaining “sex hormone levels within the normal range for the person’s affirmed gender” and persistently monitoring for adverse effects of sex steroids. It specifically notes that during sex steroid treatment, in both sexes, clinicians should monitor prolactin as well as for metabolic disorders and bone loss.

Clinicians and patients should consider removing gonads when high doses of sex steroids are required to suppress the body’s secretion of hormones or in order to reduce steroid levels in advanced age.

Several organizations were co-sponsors, including the American Association of Clinical Endocrinologists, American Society of Andrology, European Society for Paediatric Endocrinology, European Society of Endocrinology, Pediatric Endocrine Society, and the World Professional Association for Transgender Health.

Hembree says that the previous guideline took time to make its way through the literature, but that with the backing of so many organizations, the new guideline will be published right away in the pediatric and adult literature, both in the U.S. and Europe. **EN**



## AT A GLANCE

- ▶ No longer classified as psychiatric “disorders,” the conditions now known as gender dysphoria and gender incongruence have treatment protocols established by years of clinical experience.
- ▶ The endocrinological aspects of therapy must be individualized, especially to conform with the age of patients when they present, but the process of adjusting a patient’s sex hormones should be familiar to most endocrinologists.
- ▶ A new Endocrine Society position statement recognizes transgender treatment as safe, effective, and a standard of care that government and private insurers should cover.

SEABORG IS A FREELANCE WRITER BASED IN CHARLOTTESVILLE, VA. HE WROTE ABOUT BIOIDENTICAL HORMONES IN THE OCTOBER ISSUE.

# *The* **DESCENDANTS**

BY DEREK BAGLEY





**Endocrine News** talked to Dean Eurich, PhD, MSc, BSP, who led researchers in a study that looked at First Nations communities and type 2 diabetes in Canada. He discusses the issues in treating this indigenous population, working with the Canadian government, and creating the Reorganizing the Approach to Diabetes through the Application of Registries (RADAR) project.



**A**s diabetes rates skyrocket, perhaps no groups are hit harder than indigenous populations. First Nations communities in particular are three to five times more likely to develop type 2 diabetes and its subsequent burdens than the general Canadian population. So a group of researchers led by Dean Eurich, PhD, MSc, BSP, research chair in Chronic Disease Prevention and Management and associate professor in the School of Public Health at the University of Alberta, Canada, in partnership with Okaki Health Intelligence Inc., started the Reorganizing the Approach to Diabetes through the Application of Registries (RADAR) project, “developed in alignments with federal calls for innovative, culturally relevant, community-specific programs for people with type 2 diabetes, developed and delivered in partnership with target communities.”

The project is ongoing, but the study protocol was published earlier this year in *BMC Health Services Research*. The authors conclude that they hope “RADAR, in combination with other similar initiatives, may bridge the gap between First Nations health and the general population, and reduce diabetes-related morbidity and premature mortality.”

*Endocrine News* caught up with Eurich to discuss the RADAR project, its background and design, its challenges and victories.



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**Endocrine News: Tell me about the background of this study.**

**Dean Eurich:** I think the impetus of the study really came about from the simple fact that we know people of First Nations descent are at significant increased risk of poorer health outcomes and mortality. In Alberta, there's about a 12-year gap in mortality between First Nations and non-First Nations people. This is clearly driven by social, economic, and political reasons, but also just underlying health gaps are quite significant in the population. In Canada, and Alberta for sure, diabetes is one of the major diseases, and that is increasing in incidence in patients of First Nations descent. So we really wanted to look at how can we improve some of the outcomes around diabetes and diabetes management in the First Nations population. There've been lots of studies that show that diabetes care and their outcomes are significantly worse compared to the general population. Given my interest in diabetes as an area that we thought we could dive into and try to improve some of their outcomes.

One of the challenges in working with First Nations is that they're geographically very diverse throughout the province. They're very high up in the north and all the way down to the south, to the U.S. border, so trying to think of a program that could reach out to some of these very isolated communities that have First Nations patients with diabetes was really a challenge for us. When we first started thinking about the project we were quite certain that if we could put a diabetes nurse or a pharmacist or a physician or a dietician in each one of these communities to work with these patients on their diabetes, we'd likely improve their outcomes, because most of these communities are very limited in terms of their resources around medical staff and access to medical care. The downside of that is it's just not feasible. That's not a sustainable model.

So, in talking with a number of experts in First Nations communities, we came up with the RADAR model, which was really to try to improve diabetes care in these remote, isolated communities, but also do it in a sustainable manner. The way we thought we could do that is that if we had an electronic registry system, an electronic medical record system that was integrated, and that if we had a care coordinator who was a nurse or a dietician or someone along those lines who could then work with those communities remotely to try to identify their high-risk patients and work with the front-line healthcare staff to improve the outcomes for those patients. That's kind of where RADAR all came about.

**EN: The care coordinators are able to work remotely?**

**DE:** How the model works is that we do send the care coordinator to the communities for the first couple weeks to provide some education and also to make sure that the front-line staff understand the study but more importantly understand the software that is going to be used to try to manage the population. Some of these communities are not actively engaged with the use of electronic medical records yet so it's a change for the staff to go from a paper-based record to a fully online system that we have to use for this type of project, so there's some education around that. Once that first couple weeks of education are done, the care coordinator comes back to the central location – Edmonton, Alberta – and works with the communities on a weekly basis to manage their patients.

**EN: You talk about location being a barrier. In your paper you also write about the cultural barriers.**

**DE:** Absolutely. I think there are very significant cultural differences between First Nations and non-First Nations. And one of the reasons that we've seen the big spike in diabetes has been a movement away from some of the more traditional meals and activities that the First Nations were doing. As they become more — for lack of a better term — westernized in terms of what we tend to eat, they're just more susceptible to diabetes. Making sure that any intervention and any activity that we undertake fits within their cultural belief system and their cultural norms is very important for us to ensure that the intervention is going to be successful. They have a different way of looking at health. It's much broader than how non-First Nations look at health. We needed to make sure we took that into account when trying to improve their outcomes.

**EN: Communication breakdown sounds like another challenge.**

**DE:** Yes. A lot of these communities are still using paper-based charts, and that information is not easily accessible to individuals in health centers. Just to give you as more concrete example: In Alberta, we have a system called Netcare. It doesn't matter which physician you go see. When you get a lab test order or an x-ray or any of those types of procedures, it's entered into an online database. If you're a certified healthcare professional with access to Netcare, you can go in and look at patients' lab results, etc. so you can make better informed decisions about their care. When a patient shows up at a pharmacy, the pharmacist can look online to see what drugs



“ We really wanted to look at how can we improve some of the outcomes around diabetes and diabetes management in the First Nations population. There've been lots of studies that show that diabetes care and their outcomes are significantly worse compared to the general population. Given my interest in diabetes as an area that we thought we could dive into and try to improve some of their outcomes.”



## About DEAN EURICH

Dean Eurich, PhD, MSc, BSP, a Tier II Canada Research Chair in Chronic Disease Prevention and Management, and a professor in the first Canadian Accredited School of Public Health at the University of Alberta, Canada.

Within the School, Eurich is the program director for the Clinical Epidemiology program. He is also a research associate with the Alliance for Canadian Health Outcomes Research in Diabetes ([www.ACHORD.ca](http://www.ACHORD.ca)), a member of the Alberta Diabetes Institute Research & Trainee Steering Committee at the University. Provincially, Eurich is a joint lead, Career Development in Methods & Health Services Research platform for Alberta's Strategy for Patient Oriented Research (SPOR) Support for People and Patient-Oriented Research and Trials (SUPPORT) Unit. Nationally, he is the chair for the Personal Awards Committee and Board Member of the Canadian Diabetes Association National Research Council.

Eurich's research has focused largely in the areas of clinical epidemiology and health services research.



they've had filled, not only within their pharmacy but anywhere else in the province.

In many First Nations communities, they didn't have access to Netcare. They didn't have the software that ensured that the connections were secure, and they didn't have their privacy impact completed within the communities. So many of these providers in the First Nations communities, especially the providers on reserve, have access to some of the information that should be available freely to them to help manage their patients.

One of the things that RADAR did for many of these communities is that we got them access to the Netcare system so they could see their patients' labs, drugs, etc., online and in real time, which again, we hope will improve outcomes by having that information available to them.

**EN:** This is an ongoing project, but can you share some results you've seen so far?

**DE:** Sure. Around the whole idea of the relay, in one of the communities we went to, the community was set up so that there was a healthcare center on reserve. And then literally about 300 meters away, was a physician clinic providing care to First Nations and non-First Nations people off reserve. We brokered the very first meeting between the health administrators between those two health sites. Even though they're in the same community, the health systems are so different that they actually hadn't talked to each other.

And what was quite surprising to us is that for diabetes patients, one of the key parts of care is making sure they get their eyes checked on an annual basis. This community was about three and a half hours away from an urban center and so the non-First Nations physicians were sending all their patients into the urban center, so it was a three-and-a-half hour drive each way. What they didn't realize was that on the First Nations reserve, within that health center, they actually had a machine in place that physicians could remotely look in at the

eyes of patients to provide remote access to eye care (tele-ophthalmology). So one of the good things that came out of the meeting, instead of patients traveling three and a half hours to get their eye care done, they use tele-ophthalmology within the First Nations reserve. All the patients, regardless of whether they're First Nations or non-First Nations, can go over to the healthcare center to get their tele-ophthalmology done. That's been a big win.

The other big win is that the frontline staff have become much more educated around diabetes care. The care coordinators have provided a lot of resources to them to help manage care.

When we started the project, about 50% of First Nations patients had standard process-of-care measures within the last year. Simple things like getting their blood glucose levels checked, those types of things. I do know that's gone up significantly. That's one of the key things that we aim for, to make sure everyone has their bloodwork done in a timely fashion so that changes in medications and things like that can be done.

I think there's been significant improvements in the communications among healthcare professionals. There's been a large uptick of education among the frontline staff in the communities. And just the ability to recognize and recall these individuals to get the appropriate process-of-care measures done in a timely fashion has been a big success so far. Whether or not that translates into improved health outcomes and reduced complications is a little farther down the line, but we're hoping that by improving the process-of-care, that we see improvements in outcomes as well.

**EN:** What's something endocrinologists should take away from this study?

**DE:** I think the biggest one is the significant care gaps that are happening. Many of the patients that we've been dealing with go see a specialist because they're running into kidney problems, eye problems, or cardiovascular system problems. So they see their specialist, but they don't really have anyone back in the communities providing that frontline care. From a specialist point of view, they tend to assume that the family doctor is providing the basic primary care for individuals, but in many of these patients, that's simply not happening because there aren't enough resources in the community to provide that. **EN**



PHOTO CREDIT: MEUNIERD / SHUTTERSTOCK.COM

BAGLEY IS THE SENIOR EDITOR OF *ENDOCRINE NEWS*. HE WROTE ABOUT HOW THE TRAVEL BAN IMPACTED AN ENDOCRINE SOCIETY MEMBER IN THE SEPTEMBER ISSUE.





**Left: Children take part in a First Nations festival in Canada.**

PHOTO CREDIT: ALINA R / SHUTTERSTOCK.COM

**Below: Moraine Lake in Alberta, Canada.**



“Many of the patients that we’ve been dealing with go see a specialist because they’re running into kidney problems, eye problems, or cardiovascular system problems. So they see their specialist, but they don’t really have anyone back in the communities providing that frontline care.”

## Canada’s 5 Rs of Diabetes Care

According to Eurich, Diabetes Canada created the 5 Rs of Diabetes care to build best practices for treating diabetes patients. “The whole process of care revolves around those five Rs,” he says, “so when we were looking at trying to build the best practices and management for it, we really looked at the diabetes model put forth by the Canadian Diabetes Association to look exactly at what the five Rs were and how they really fit into diabetes care for these communities.” However, he says, the five Rs aren’t really working the way he and his team wanted them to in the First Nations communities.

**RECOGNIZE:** “This is to not only recognize individuals in the communities who have diabetes, but also to recognize people in the communities who are at risk of diabetes,” Eurich explains. “Trying to identify the high-risk factors for diabetes and then screen the population for the occurrence and presence of diabetes.”

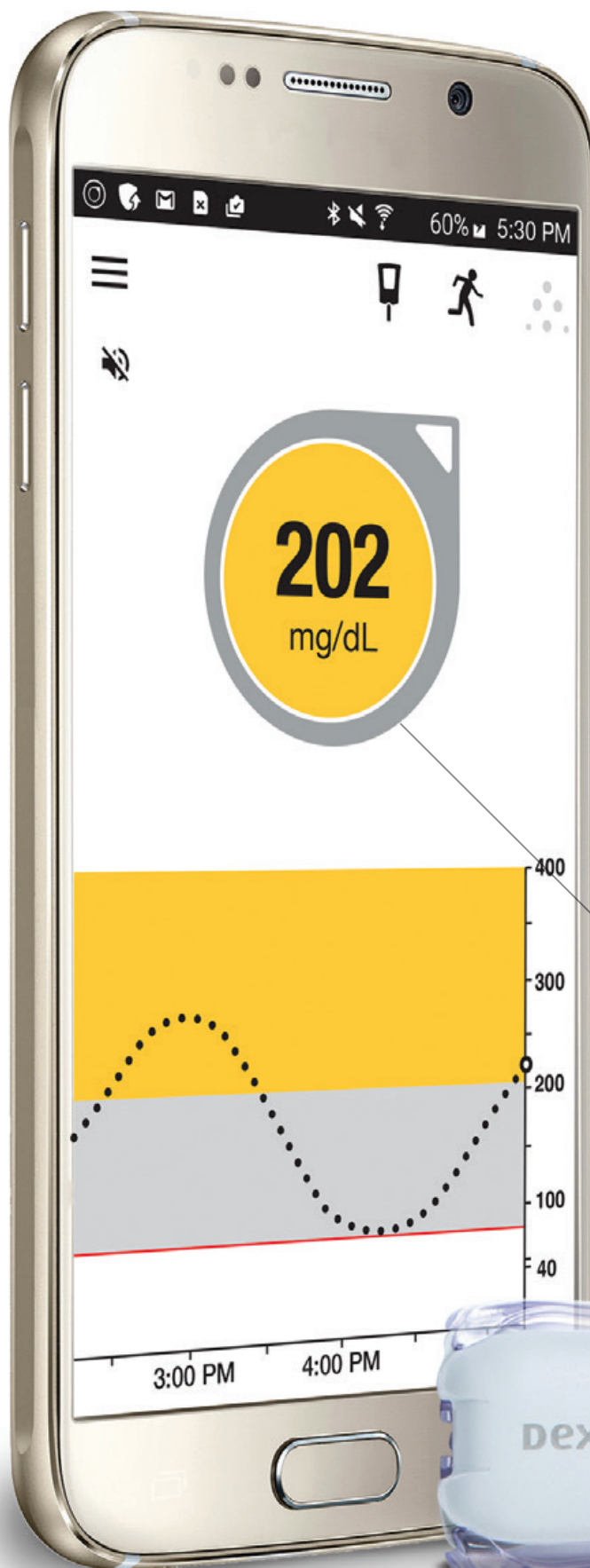
**REGISTER:** Develop a registry or some type of method to track these individuals. “Having worked in these communities now for several years, each community had a different approach to this,” Eurich says. “Some communities had a semi-formal roster of patients in their community whom they knew had diabetes. Other communities didn’t have anything. Each community was a little bit different in terms how they were trying to track some of the patients with diabetes.”

**RESOURCES:** According to Eurich, this R was all about putting resources in place to care for these patients, which is one of the most important areas within the First Nations communities. “It’s very difficult to get healthcare providers to work in these communities,” he says since some are very remote, up to five hours away from major urban centers. “Trying to entice new doctors and new pharmacists to work in these communities has been a real issue for the First Nations health administrators.”

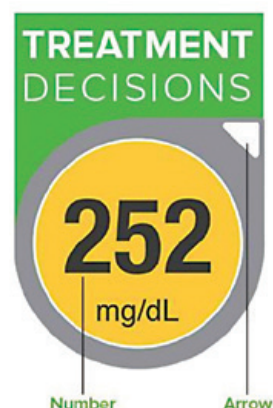
**RELAY:** Get the information between the patient and the medical team for coordinated care and timely management change. This issue is more complex among First Nations communities since much of the funding comes from Health Canada but the actual care is left up to the provinces. “There’s a lot of disconnect between what’s being done at the federal level and what can be done at the provincial level,” Eurich says. “You have a number of different healthcare professionals involved, from urban centers all the way out to the remote communities that may be looking after these patients as well. There’s a lot of breakdowns in communications between the different care providers, particularly in patients living on reserves. That’s been a big issue that we’ve noticed.”

**RECALL:** A reminder system to make sure healthcare providers follow up with these patients.

For more information, go to [www.diabetes.ca](http://www.diabetes.ca)



After the FDA approved the Dexcom G5 Mobile CGM for use in treatment decisions, the Endocrine Society convened expert panels to address questions about how patients should use the trend arrow information when fine-tuning their insulin doses. The new methods ensure that both adult and pediatric patients will have a “practical approach” to using the trend arrows to adjust insulin doses.



Dexcom G5 Mobile is the first device that works without pricking a finger.



BY ERIC SEABORG

# A Practical APPROACH

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**Continuous glucose monitors (CGMs) have had a great impact on improving diabetes care, and their influence will only grow with recent government approvals expanding their use.**

**L**ate last year, the U.S. Food and Drug Administration (FDA) approved the Dexcom G5 Mobile CGM System (Dexcom G5) for patients with diabetes to make insulin dose decisions without needing confirmatory fingerstick testing. This is the first CGM to receive such an FDA approval. And early this year Medicare announced it would begin covering the devices for qualified patients.

CGMs continuously measure interstitial glucose as frequently as every five minutes to give patients much more insight into their changing glucose than traditional blood glucose monitors. Certain devices, such as the Dexcom G5 Mobile CGM system (Dexcom G5), transmit that data in real-time to give patients alerts and alarms for low or high glucose levels and even how fast glucose is changing.

The rate that glucose is changing is shown as a “trend arrow.” Trend arrows give patients and the people caring for them a tremendous amount of information in a single set of symbols. These arrows show how fast glucose is changing – up or down. This can be a powerful tool to plan ahead, prevent dangerous low or high glucose levels, and adjust the amount of insulin a patient might take.

In the case of the Dexcom G5, all that data can be sent to a pocket-sized receiver, compatible smart device, or even shared through an app with loved ones or doctors. But how are trend arrows being used? If the arrows are going up, a patient might

take more insulin. If they’re going down, patients might take less. But how much more or less? There are a couple of methods available, but they have drawbacks in how they are used across pediatric and adult patients.

The Endocrine Society has taken a leadership role to ensure the safe and effective use of the Dexcom G5 trend arrows when adjusting insulin doses with a pair of publications by expert panels that developed a “practical approach” for children and adults.

## **Endocrine Society Advocacy**

In its clinical practice guideline on diabetes technology issued in September 2016, the Endocrine Society recommended CGMs as the gold standard of care in type 1 diabetes, and the Society has been advocating for FDA approval of this expanded use in insulin dose decisions for some time. “The Endocrine Society believes that CGM is lifesaving technology that is yet another tool to help people with diabetes effectively manage their disease,” according to Nicholas Argento, MD, diabetes technology director at Maryland Endocrine and Diabetes in Columbia, Md., who testified to the to the FDA Clinical Chemistry and Clinical Toxicology Devices Panel in July 2016.

“The Dexcom CGM has been proven to be accurate enough to allow direct treatment,” he said, pointing out that patients



# THE CASE FOR APPROVAL

Four reasons the Endocrine Society supported approval of the use of CGM for treatment decisions:

- ▶ “Dexcom CGM has been proven to be accurate enough to allow direct treatment...and enables patients to make safe and timely treatment decisions.”
- ▶ “Patients are already making real-time treatment decisions based on their CGM data without fingerstick verification, and doing it effectively and safely.”
- ▶ “Doing proper and accurate fingerstick verification is often highly impractical if not impossible in the workplace and doing so could put others in danger of exposure to blood products.”
- ▶ “Patients need guidance on using unverified CGM data safely and effectively. FDA’s approval of this change would enable Dexcom to offer patient support and education on the best ways to use unverified CGM data in real time.”

*From the testimony of Nicholas Argento, MD, on behalf of the Endocrine Society to the FDA Clinical Chemistry and Clinical Toxicology Devices Panel on July 21, 2016.*

**The papers:** “A Practical Approach to Using Trend Arrows on the Dexcom G5 CGM System to Manage Children and Adolescents with Diabetes” and “A Practical Approach to Using Trend Arrows on the Dexcom G5 CGM System for the Management of Adults with Diabetes” can be found in the *Journal of the Endocrine Society (JES)*.

are already using it for insulin dose decisions, but had no guidance on how to do so. Official FDA recognition of this de facto use would improve patient safety by freeing the manufacturer and others to develop recommendations on how best to use the CGM data.

During the approval process, FDA officials noted their agreement with this position and the need for information for physicians and patients. Once the FDA issued its approval, the Endocrine Society convened two expert panels to develop and publish approaches to using the trend arrow information; one for adult patients and one for pediatric patients. The panels aimed to have their publications ready by November, Diabetes Awareness Month. The approaches to using trend arrows will be published in the *Journal of the Endocrine Society (JES)* by the end of the year.

## Embracing Advanced Diabetes Technology

“We have had various CGM devices available for almost 20 years. Since the early generation devices, there have been tremendous improvements in device performance,” says Lori Laffel, MD, MPH, chief of the Pediatric, Adolescent, and Young Adult Section at the Joslin Diabetes Center and professor of pediatrics at Harvard Medical School, who chaired the pediatrics expert panel. “[Dexcom G5] can provide up to 288 glucose readings each day and is approved for up to seven days of consecutive wear. The diabetes community, including providers and patients, embraces this advanced technology that has demonstrated improved performance and usability. CGM helps patients to improve their glycemic control without increasing their risk for hypoglycemia. Clinicians and patients along with family members now need tools to use these devices effectively and safely. Our expert panels wanted to create a usable, easy-to-implement approach to fine tune insulin doses using the CGM data and trend arrows. We all wanted to create a method that could be readily taught and implemented in the diverse population of pediatric and adult patients with insulin-treated diabetes.”

“People with diabetes using CGM can do so much more than in the past because the mobile device screen tells them where their glucose levels were for the previous 24 hours, where they are in the moment, but most importantly, where they are trending based on the rate of change arrows,” says Grazia Aleppo, MD, who chaired the adult panel. Aleppo is associate professor of medicine and director of the Diabetes Education Program at Northwestern University. But how a patient should react to this information for insulin management is a complex question involving many factors. “We looked at the patient as facing many situations while using these trend arrows, whether pre- or post-meal, exercising, or during sick days,” Aleppo says.

## Starting an Important Conversation

The new approach is based on “previously published algorithms..., clinical experience as endocrinologists, and guidance from other diabetes specialists,” the pediatric document says. “Although there is a wealth of clinical experience, we don’t have clinical trials that have actually verified the various algorithms we reviewed, so this publication would not fall in the category of a true guideline. Rather, this is a perspective paper with a practical approach for the CGM users and their healthcare providers,” Aleppo says.

The approaches from the expert panels are a starting point for a much-needed discussion in the medical community on how to best use trend arrow information in the Dexcom

G5 as well as across other CGM devices as indications for using insulin-dose decisions expand. There will also be opportunities to put these approaches into clinical studies and discuss how they could be used in special patient circumstances.

## A Practical Approach

The expert panels developed approaches that take into account the patient's established correction factor (also called insulin sensitivity). For each range of correction factors, the authors suggest an insulin dose adjustment that is given as an increase or decrease in insulin dose depending on the direction of the trend arrow(s). The approaches also take the wide range of correction factors in adult and pediatric patients into consideration as well as the limitations of patients using insulin pens that can only deliver insulin in 1.0- or 0.5-unit increments. The end result is an approach that is safe and easy to use for a wide range of patients on different treatment plans.

Importantly, the adjustments aren't a substitute for typical calculations. The perspectives note that "adjusting insulin doses using trend arrows does not replace standard calculations. [It] is an additional step that increases or decreases the insulin dose that has been calculated using standard parameters." Laffel calls this "fine-tuning" the insulin dose.

The Dexcom G5 indicates the rate of change by displaying trend arrows: two arrows pointing straight up or down mean rapidly rising or falling glucose; a single arrow pointing up or down denotes rising or falling glucose; a single diagonal arrow pointing upward or downward means slowly rising or falling glucose; and a horizontal arrow represents a steady glucose level.

The heart of each approach is a table of suggested insulin dose adjustments based on the direction of the arrow(s) and the patient's correction factor. For example, a single rising arrow indicates:

- for an adult patient who has a correction factor less than 25, an insulin dose adjustment of +3.5 units;
- for an adult patient with a correction factor of 25 to <50, an insulin dose adjustment of +2.5 units;
- for an adult patient with a correction factor of 50 to <75, an insulin dose adjustment of +1.5 units; and
- for an adult patient with a correction factor of 75 or more, an insulin dose adjustment of +1.0 unit.

## Differences for Adults and Children

For both adults and children, the panels suggest that patients start adjusting insulin doses conservatively until they gain experience. But the panels also call out the differences in how to approach adjusting insulin doses in adults and children.

In the adult approach, the panel suggests special guidance for up to four hours following a meal that reduces the risk of low and high glucose levels and prevents insulin "stacking."

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**C Display device** — The display device can be either a compatible smart device with the Dexcom G5 Mobile app OR the Dexcom G5 Mobile Receiver.



## AT A GLANCE

- ▶ The FDA has recognized advances in continuous glucose monitoring technology by approving the Dexcom G5 CGM System to be used for treatment decisions including insulin dosing in patients with diabetes.
- ▶ The Endocrine Society responded to the FDA decision by convening two expert panels to develop approaches for how patients can use "trend arrow" information to adjust insulin dose decisions.
- ▶ The expert panels created simplified approaches that can be widely and safely used by patients to fine tune their insulin doses.
- ▶ Future discussions are needed on how this approach could be used in other CGM systems and special patient cases.



“ **Medicare patients with diabetes are now able to use CGM technology, which will keep them safer.** They will feel empowered when they see that the interventions they make result in a huge difference for their glucose control.”

— GRAZIA ALEPPO, MD, ASSOCIATE PROFESSOR OF MEDICINE; DIRECTOR, DIABETES EDUCATION PROGRAM, NORTHWESTERN UNIVERSITY, CHICAGO, ILL.

This is because meals can have variable effects on glucose that impact trend arrows and adults tend to eat less frequently than children and want to correct soon after eating. For these reasons, the adult paper has a special table for postprandial monitoring and treatment. The paper also highlights the caveats in using the approach in frail and elderly individuals.

The pediatric guidance notes that treatment is complicated by the fact that insulin sensitivity changes with age, and divides patients into three broad categories of pre-school-age/toddlerhood (ages two to six), school-age/middle childhood (ages seven to 12), and adolescence/young adulthood (ages 13 to 22). “Insulin sensitivity is generally greater in younger, pre-pubertal patients and decreases over time as youth age with decreasing insulin sensitivity associated with pubertal growth and development,” it notes. In young adults who have completed pubertal growth and development associated with adolescence, insulin sensitivity often increases again, Laffel says.

But age is just one factor that these papers consider in trying to provide “custom-tailored treatment,” Aleppo says. “I tell my patients who use CGM in non-adjunctive fashion that they always need to consider where they are in the moment: Are they sick, did they just eat, are they exercising, did they take acetaminophen? When people with diabetes engage in aerobic exercise, even though they might see one arrow trending up on their CGM, may be more insulin sensitive from the exercise, therefore they should use caution and not be as aggressive in taking a correction compared to other circumstances.” Each document contains sections addressing these kinds of variables.

## Medicare Approval

Another development making guidance on how to use these devices even more important is the announcement that Medicare coverage will be extended to CGMs for patients with

type 1 or type 2 diabetes who receive multiple daily injections of insulin or use an insulin pump. The Endocrine Society had been advocating for this change for many years.

Aleppo expects this ruling to lead to many more patients using CGMs, particularly because it includes type 2 diabetes: “I can think of many patients on Medicare who should go on a Dexcom G5 as soon as possible because they will really benefit. I recently saw a patient on Medicare who has had diabetes for a long time. She is on intensive insulin therapy, has kidney disease, and has frequent low glucose levels. Unfortunately, most of the time, she doesn’t feel the glucose levels going down and is at significant risk of severe hypoglycemia. She needs a CGM. Medicare patients with diabetes are now able to use CGM technology, which will keep them safer. They will feel empowered when they see that the interventions they make result in a huge difference for their glucose control. They can modify their insulin dose as needed based on the CGM information and by doing so, can decrease the amount of extreme high and extreme low glucose levels.”

“These perspectives serve as a starting point,” Laffel adds. “In the current era of increased penetration of advanced diabetes technologies in routine care, we will be able to further refine these recommendations when more empiric evidence becomes available.”

The two publications are only the start of the Endocrine Society’s efforts to get the word out as well. “The Society will be working to ensure that the clinicians and healthcare professionals who care for patients on CGM get the much-needed counsel that these papers provide. We will focus on provider education in early 2018 and will soon follow up with materials targeted to patients and caregivers,” says Meeghan De Cagna, MS, the Society’s chief strategic partnerships officer. **EN**





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[www.agamatrix.com](http://www.agamatrix.com)

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[www.glytecsystems.com](http://www.glytecsystems.com)



### Afrezza Inhaled Insulin

Afrezza is the only FDA-approved inhaled insulin to help control adult diabetics' blood sugar during mealtime. The rapid-acting insulin reaches maximum (peak) level in 12 to 15 minutes and can stay active for up to three hours helping patients reach and maintain their A1C goals.

[www.afrezza.com](http://www.afrezza.com)



### Humalog Junior KwikPen

Humalog Junior KwikPen combines the convenience of a prefilled pen with the ability to dose in half-unit increments. Until now, the only way to deliver half units of insulin with a pen was through a reusable pen, requiring users to remove and load cartridges. The Junior KwikPen enables finer dose adjustment for people who take relatively small doses of insulin.

[www.humalog.com](http://www.humalog.com)



### Tandem Diabetes Care t:slim X2™ Insulin Pump

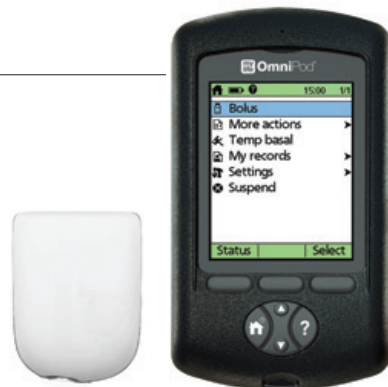
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[www.tandemdiabetes.com](http://www.tandemdiabetes.com)

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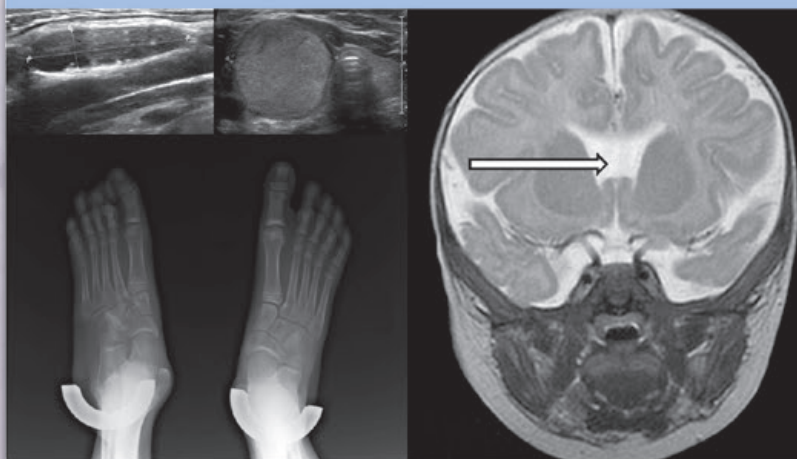
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## President Trump, Congress Continue Policy Debate Over Health Reform

Last month President Trump made a number of announcements related to health insurance policy. First, he signed an executive order that seeks to increase competition by facilitating access to association health plans, short-term limited duration insurance products, and health reimbursement arrangements.

The order will not change things immediately; rather, President Trump has directed several government agencies to draft regulations to implement new policies over the next two to three months. Experts disagree about whether and how these policies can be implemented via regulation, so it is not yet clear what the effects of these new policies may be. Since association health plans and short-term insurance products do not need to follow many patient protections included as part of the Affordable Care Act (ACA), they could appeal to younger, healthier people who seek less expensive coverage. This would raise costs for many of the people Endocrine Society members treat who need comprehensive coverage.

President Trump also announced that the White House will discontinue making cost-sharing reduction (CSR) payments to health insurance companies that subsidize out-of-pocket costs for low-income people. Plans in a number of states have increased premiums in anticipation of the CSR payments stopping, but the biggest risk for consumers is that insurance companies will drop out of marketplaces for next year. Already 15 states and the District of Columbia have filed lawsuits to ensure that the payments continue, so it is also unclear whether this change will take effect.

The combined effect of these policies adds further uncertainty to the health insurance market, where insurers and individuals are preparing for the start of open enrollment

on November 1. These actions also add new pressure for Congress to pass legislation to stabilize health insurance markets, since many in Congress want to fund the CSRs and implement other policies to stabilize the marketplace. President Trump said he would veto legislation to make the CSR payments unless he receives something in return, either a deal to repeal and replace the ACA or funding for the border wall.

The Society will closely monitor the development of regulations to implement President Trump's executive order and potential legislation in Congress regarding insurance markets. We will continue to advocate for access to comprehensive, quality insurance for patients and will provide an update as more information on the impact of these changes becomes available.

### INFORMATION & RESOURCES ABOUT THE QUALITY PAYMENT PROGRAM

While the Centers for Medicare and Medicaid Services (CMS) finalizes changes for Year 2 of the Quality Payment Program (QPP), the Society continues to educate our members on the payment program that went into effect this year and provides resources to support the transition. A session was held at Clinical Endocrine Update on the QPP and potential changes for 2018. A recording of that session can be found on the Society's QPP at [www.endocrine.org/topics/macra](http://www.endocrine.org/topics/macra).

## Society Works on Ways to Address Insulin Price Increases



The Society continues to work to identify solutions to rising insulin costs and the impact of formulary changes on patient health and administrative burdens. Given our leadership in this area, the co-chairs of the Congressional Diabetes Caucus, Representatives Diana DeGette (D-CO) and Tom Reed (R-NY), submitted a formal request to the Society to better understand these issues and to share our perspective on the impact of insulin cost and formulary switching on patients and practices.

In addition to working with members of the Society's Clinical Affairs Core Committee, in September we held a series of discussion groups at the Clinical Endocrinology Update in Chicago where we talked to our members from around the country and in all kinds of practice settings about these issues and gathered their responses to questions forwarded by the Congress.

Our members consistently told us that cost is a major consideration in determining what insulin to prescribe and they shared their frustrations because they often have no way to determine up-to-date information about a patient's formulary or identify what the cost is of a drug. Physicians described the difficulty of keeping a patient under control when they have to switch drugs because of formulary changes during the course of the year.

Several recommendations emerged from these discussion sessions, including:

- Exempting insulin from deductibles;
- Requiring formularies to extend for at least one year (currently Medicare can switch twice a year and Medicaid can switch formulary plans every quarter);
- Allowing a patient who has been under control using the same insulin for a year to stay on that insulin if the formulary switches;
- Requiring plans to provide up-to-date information about a patient's formulary through electronic medical record systems; and

- Creating a "common application" for all prescription drug assistance programs.

We plan to share the responses and recommendations from the discussion groups with Congress. We also plan to take a resolution to the American Medical Association (AMA) House of Delegates (HOD) meeting this month. The AMA HOD provides a unique opportunity to identify policy issues and positions the AMA and the entire House of Medicine will support. We would like to see the HOD support a resolution that includes several of the recommendations listed above.

For more information about the Society's position and advocacy on insulin pricing, please contact the Society's health policy director, Meredith Dyer, at [mdyer@endocrine.org](mailto:mdyer@endocrine.org).

### AFFORDABLE INSULIN PROJECT AIMS TO HELP PROVIDE AFFORDABLE ACCESS TO INSULIN

The Diabetes Patient Advocacy Coalition (DPAC) has launched a new project called "Affordable Insulin Project." The goal of the project, which coincides with the annual open enrollment period for employer-sponsored health plans, is to help people understand how they can advocate with their employer for health insurance plans that are more favorable to people with diabetes and identify resources if they are finding their insulin unaffordable.

The Affordable Insulin Project offers tools, resources, and data so that people impacted by today's rising healthcare costs can positively influence the affordable access to this life-essential drug. The project is unique in that it provides specific information to three different audiences: People who receive healthcare benefits through an employer; employers; and people with no insurance or a high deductible plan. For more information, please visit [www.affordableinsulinproject.org](http://www.affordableinsulinproject.org).





## Endocrine Society Advocates for Reauthorization of Special Diabetes Program

**T**he Endocrine Society continues to advocate for the renewal of the Special Diabetes Program (SDP), which expired on October 1 and is top priority for our members. We have been actively working with Congress to ensure that funding is made available for both parts of the SDP: Type 1 diabetes research administered by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and diabetes prevention programs administered by the Indian Health Service for Alaska Natives and American Indians who have a disproportionate risk for developing type 2 diabetes. While funding for the Indian Health Services program was extended for three months, we continue to work toward a multi-year renewal of both components of the SDP at \$150 million per year.

Our members have been actively engaged on this issue, joining our online advocacy campaign, and even coming to Washington to meet with their representatives in person. We also held a briefing for Congressional staff with Judith Fradkin, MD, director of the Diabetes Division at NIDDK, to describe the research that has been funded through this program. Our advocacy has gained bipartisan support — 356 members of the House of Representatives and 75 senators signed onto a letter of support.

Yet, as this issue of *Endocrine News* goes to press, Congress has not yet worked out a deal to reauthorize the SDP. At issue is how to pay for it. Some Republican representatives have recommended using funds from the Prevention and Public Health Fund, a source that funds programs in the Centers for Disease Control and Prevention budget, which the Society has opposed. We continue to advocate for immediate reauthorization without jeopardizing other critically important prevention and public health programs. In addition to our online grassroots advocacy campaign ([www.endocrine.org/advocacy](http://www.endocrine.org/advocacy)), we have also involved diabetes researchers who have received funding from the SDP in contacting members of Congress to share the importance of SDP funding and our message.

For the latest developments about the SDP, please visit [www.endocrine.org/advocacy](http://www.endocrine.org/advocacy).

## Endocrine Society Joins National Obesity Care Week 2017: Take 5 Pledge to Change the Way We Care

**T**oday, more than 90 million adult Americans currently have obesity, and in the last 20 years, obesity rates have doubled among adults. With obesity on the rise, the Society is working with other obesity stakeholders to raise public awareness about this disease and to improve prevention, education, and treatment. During the 3rd Annual National Obesity Care Week, October 29-November 4, the Society joined the Take 5 Pledge to Change the Way We Care campaign, which recognizes that:

- ▶ Obesity is a serious disease.
- ▶ Weight bias is faced by many.
- ▶ Healthcare providers need to have positive, helpful conversations about weight with their patients.
- ▶ Science-based weight management options are available for treatment.
- ▶ Congress should pass the 2017 Treat and Reduce Obesity Act to improve treatment and coverage for obesity.

The Society will continue to work to improve education and treatment of obesity and to raise public awareness about these important issues.

# Introducing the Endocrine Society's New Hypoglycemia Quality Improvement Project



## SOCIETY PLANS TO IMPROVE SURVEILLANCE, RISK ASSESSMENT & MANAGEMENT OF CARE TO REDUCE INCIDENCE OF HYPOGLYCEMIA

**T**he Endocrine Society has made hypoglycemia prevention a top priority. Since 2014, the Society has worked on increasing national awareness of hypoglycemia and has facilitated several activities for multi-stakeholder involvement to reduce its incidence. This month, the Society is pleased to announce the development of the Hypoglycemia Quality Improvement Project (HQuIP) that aims to accomplish three primary goals:

- ▶ Decrease the frequency and severity of episodes of hypoglycemia;
- ▶ Identify patients at high risk for hypoglycemia in a timely manner; and
- ▶ Support appropriate clinical interventions for patients in outpatient settings.

While any individual with diabetes, type 1 or type 2, can experience hypoglycemic events, individuals with type 1 are more likely to receive education on how to avoid and manage hypoglycemic events. Individuals with type 2 are less likely to receive this education and may even be unaware of the potential to experience a hypoglycemic event. Consequently, the HQuIP will focus on preventing hypoglycemia in individuals with type 2 diabetes who are on insulin and sulfonylureas.

Through this multi-year project, the Society hopes to change clinical practices to improve care. HQuIP will develop a pilot and toolkit, which will support providers in assessing and managing patients at-risk for hypoglycemia,

and will be tested in multiple sites to evaluate its impact on clinical outcomes and to determine ways to implement the project broadly. HQuIP will also lead to the development of quality measures that can be adopted into existing and future incentive programs. Ultimately, HQuIP will provide evidence-based strategies for better prevention and be used to align provider reimbursement to promote these strategies.

Rob Lash, MD, chair of the Society's Clinical Affairs Core Committee and chair of the HQuIP Steering Committee notes, "Hypoglycemia is an often unrecognized complication of glycemic control in individuals with type 2 diabetes and we are working to find effective ways to minimize the occurrence of this dangerous and costly problem. HQuIP will play a crucial role in identifying those at risk and reducing the incidence of hypoglycemia."

The Society is excited to work with endocrinologists, primary care physicians, diabetes educators, patients, and payers on the HQuIP Steering Committee as well as to continue to collaborate and receive feedback on HQuIP from its partners on the Hypoglycemia Quality Collaborative. In addition, the Society will assemble a patient panel to ensure the patient voice is part of HQuIP and will work with a corporate roundtable made up of corporate supporters of the initiative to gain their insight on the project as well.

The Society is grateful for foundational support for HQuIP from the following corporations: Merck, Lilly, Novo Nordisk, Sanofi, and Abbott Diabetes.

## HYPOGLYCEMIA FACTS & FIGURES

- ▶ **\$600 Million**  
Estimated spending on emergency department visits for therapy-associated hypoglycemia between 2007–2011
- ▶ Hypoglycemia is the largest single barrier to achieving glycemic control in type 1 and type 2 diabetes
- ▶ The prevalence and impact of hypoglycemia is substantially underappreciated in both type 1 and type 2, and improved surveillance is urgently needed, especially approaches that leverage electronic health records (EHR)

“The HQuIP initiative is an important effort to unify influential organizations in the diabetes space and tackle the public health issues posed by hypoglycemia,” says Endocrine Society CEO Barbara Byrd Keenan. “We are proud the Society has taken the lead on this initiative, which has the potential to move the needle and improve patients’ health.”

HQuIP environmental scan findings as well as additional information about the project will be published shortly. For more information about HQuIP, the release of the toolkit, and opportunities to participate in the pilot, please contact Endocrine Society advocacy and policy director Stephanie Kutler at [skutler@endocrine.org](mailto:skutler@endocrine.org).

*HQuIP is facilitated in partnership with Avalere Health.*



## SOCIETY-LED MULTI-STAKEHOLDER EFFORTS TO REDUCE INCIDENCE OF HYPOGLYCEMIA

- ▶ **2014** – Summit on Impact of the Affordable Care Act on people with diabetes. Summit attendees and speakers included professional societies, patient advocacy and community-based groups, health plans, research institutions, federal agencies, and policymakers. The summit resulted in a number of recommendations, including support for pilot studies that feature team-based approaches to improving diabetes care by assisting the patient in achieving glycemic control, lessening hypoglycemic incidents, and preventing or managing comorbid conditions.
- ▶ **2015** – Roundtable Sessions to further explore how stakeholders could have an impact on hypoglycemia. The roundtables brought together representatives from federal agencies, patient and provider groups, payers, and industry. Participants agreed on the need to work together to determine actions needed to increase national awareness and execute tactics to improve prevention.
- ▶ **2016** – Formation of the Hypoglycemia Quality Collaborative. The Society brought together 18 organizations representing medical specialties, payers, industry, patient advocates, diabetes educators, and research organizations to identify opportunities to improve the prevention and management of diabetes and reduce hypoglycemia. The Collaborative developed a Strategic Blueprint to articulate its recommendations and to identify activities that could be pursued by the diabetes community to reduce the incidence of hypoglycemic events.

[www.endocrine.org/hypoglycemia](http://www.endocrine.org/hypoglycemia)



## NIH Advisory Councils Discuss Key Policies and Research Issues

In September, the Endocrine Society participated in several meetings of advisory councils and committees at the National Institutes of Health (NIH). The advisory councils provide guidance, consultation, and recommendations to the Directors of NIH Institutes and Centers. A summary of key policy and research issues discussed follows.

### NIDDK Council Discusses Data Management, Research Evaluation, and Training Grants

During the NIDDK Advisory Council meeting, the Council heard an update from the director of the National Library of Medicine (NLM), Patricia Brennan, RN, PhD, about key priorities for the NLM and challenges that the NLM faces in data deposition and storage. The Council acknowledged the need to ensure data accuracy and accountability, especially during data deposition. They further discussed the quality control workflows for image data, electronic health records, and other sources of data. Brennan noted that the NLM is in the process of developing a strategic plan, and they will use expert panels, functional audits, site visits, and input from surveys, town halls, and social media to develop the plan.

George Santangelo, PhD, director of the Office of Portfolio Analysis, Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI), joined the Council to discuss new metrics and tools for evaluating the impact of NIH-funded research. Santangelo described a new tool called the Relative Citation Ratio (RCR), a field-normalized metric that shows the scientific influence of published articles relative to an average paper. The Council was curious about how data-driven approaches could be used to help with decision-making for e.g., funding decisions.

During the meeting of the Diabetes, Endocrinology, and Metabolic Diseases Subcommittee, Council members heard about the Institute's interest in exploring options to improve outcomes for physician-scientists and other trainees on T32 grants. Many potential strategies were put forward; the Council was interested in how the Funding Opportunity Announcements



might be modified, or if more careful selection of trainees could be accomplished to better identify those trainees who are more likely to pursue research careers while also capturing trainees such as physicians who might be naïve to research.

### NIH Office of Research on Women's Health Advisory Committee Discusses SABV and Strategic Planning

The director of the Office of Research on Women's Health (ORWH), Janine Clayton, MD, discussed updated journal policies that promote better reporting and analysis of sex as a biological variable. The Endocrine Society journal *Endocrinology* was recognized for having particularly high standards that go further than International Council of Medical Journal Editors' recommendations. Clayton also noted the need to ensure greater awareness of research supplements to promote reentry into biomedical research careers. ORWH staff then led discussions of priorities and plans to improve research on women's health.

Ching-Yi Shieh, PhD, delivered a presentation on "Updates and Insights from the 'Raising the Bar' Data Analysis" workshop. The workshop called for interdisciplinary research to fill knowledge gaps — including biomedical and epidemiological research methods, and an integrated approach to life course assessment). The Committee was encouraged by the potential for new research that incorporates factors such as psychosocial stress, trauma, and epigenetics.

Chyren Hunter, PhD, associate director for basic and translational research, delivered an update on the NIH policy to include Sex as a Biological Variable (SABV) in research grant applications. She shared information on new resources to help investigators understand grant guidelines, and noted that Research Performance Progress Reports (RPPRs) will now also need to show information on how SABV is addressed. She further discussed how ORWH is still working on answers to questions from researchers about what a thorough grant review should consider, recognizing that full implementation of the SABV policy will require a phased approach that recognizes the nuances of different disciplines.

Committee members encouraged ORWH to examine the intersections of mental and physical health in the context of future strategic planning, as well as the impacts of divorce and domestic violence on women's health. Better understanding of the molecular basis of resilience in response to trauma was also highlighted as a research goal.

### NCATS Advisory Council and Cures Acceleration Network Review Board Discusses New Resources and Programs

The director of the National Center for Advancing Translational Science (NCATS), Christopher Austin, MD, discussed advances in translational science and new scientific opportunities in early, mid, and late stage translational projects. One of the projects highlighted by Austin was the NCATS Stem Cell Translation Laboratory, which opened on July 6, 2017. The goal of the laboratory is to bring induced pluripotent stem (iPS) cells closer to clinical applications by developing characterization standards and improved iPS differentiation protocols. Austin then described challenges in developing gene therapies for rare diseases and how a suite of new platform-based technologies developed through the Therapeutics for Rare and Neglected Diseases Program can be used to help overcome these challenges. Examples of technologies include new manufacturing processes for adeno-associated virus serotypes, compendiums of standard analytical methods, and devices for CNS delivery in infants.

Austin also discussed the NCATS Clinical and Translational Science Award (CTSA) program and a new Common Metrics initiative to help evaluate the successes of the CTSA program that are not typically captured in scientific evaluation metrics. For example, CTSA programs have been shown to reduce average days to approval by institutional review boards (IRBs).

The Council then heard an update about the SMART (streamlined, multisite, accelerated, resources for trials) IRB Platform. This platform is meant to facilitate single IRB reviews by multisite clinical studies through a single IRB reliance model. The reliance model would provide a consistent approach that builds trust between the relying institutions and the IRB of record for a multi-site study. The SMART IRB platform involves an authorization agreement between institutions and tracks reliance agreements and relationships; more information about the platform can be found on the SMART IRB website at <https://smartirb.org>. The council expressed a great deal of support for this program, and considered how it might be further built out to involve consenting for multisite trials involving rare diseases and build trust with physicians.

## European Parliament Rejects EDC Criteria; Endocrine Society Eager to Collaborate with EU Lawmakers on Science-based Regulations

On October 4, the European Parliament voted on and rejected proposed criteria that would have failed to identify endocrine-disrupting chemicals (EDCs) currently causing harm to public health. In the months leading up to the vote, the Society repeatedly expressed concerns the proposed criteria would not ensure a high level of health and environmental protection.

An EDC is a chemical or mixture of chemicals that can cause adverse health effects by interfering with hormones in the body. EDCs contribute to serious health problems such as diabetes, obesity, and neurodevelopmental and reproductive disorders. Scientific criteria to effectively identify and regulate EDCs are critical to ensure the health and wellbeing of the public for this and future generations. There are more than 85,000 manufactured chemicals, of which thousands may be EDCs. EDCs are found in everyday products and throughout the environment.

The rejected criteria failed to support the latest scientific evidence. The proposal contained arbitrary exemptions for chemicals specifically designed to disrupt and target insect endocrine systems that have similarities in humans and wildlife. The Endocrine Society, the European Society for Endocrinology, and the European Society for Paediatric Endocrinology released a statement during the summer strongly objecting to the addition of loopholes in the criteria as they create frameworks where potentially dangerous chemicals cannot be defined as EDCs by law. In the days leading up to the vote, members of the Endocrine Society met with Members of the European Parliament (MEPs) and European Commission staff to explain our objections to the criteria, and how the criteria could be improved to better protect public health. Angel Nadal, PhD, chair of the Society's EDC Advisory Group, also delivered a presentation during an event in the European Parliament about how the Parliament can assess the criteria proposed by the Commission.

The Society believes new, science-based criteria need to be developed to maximize the ability to identify chemicals that pose a threat to human health. It will be critical for scientists with expertise in hormone biology and endocrine systems to be deeply involved in the processes to identify EDCs. The Endocrine Society's experts are prepared to play a role providing scientific guidance on the development of effective criteria for identifying EDCs and hope to work with European lawmakers as they move forward with this process.

For more information about EDCs and the Society's position, please visit [www.endocrine.org/edc](http://www.endocrine.org/edc). 

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# HORMONES AND HYPOGLYCEMIA

## WHAT YOU NEED TO KNOW

Diabetes is a disease in which blood glucose (sugar) levels are too high. It is most often treated with insulin – the hormone that helps move glucose from your bloodstream into your body's cells. If your insulin levels are too high, your blood glucose can drop. Hypoglycemia is a term for low blood glucose (sugar). Hypoglycemia has many causes, and is most often associated with taking insulin injections and other diabetes medications.

### WHAT IS HYPOGLYCEMIA

Glucose comes from the food you eat, and is the fuel that your brain and body need to function properly. If your blood glucose level drops below normal (below 70 milligrams per deciliter or mg/dL), your cells do not have enough energy to function. You may experience a variety of symptoms, ranging from mild to severe:

**Mild:**  
Below 70 mg/dL

- Hunger
- Nervousness and shakiness
- Sweating

**Moderate:**  
Below 55 mg/dL

- Extreme fatigue
- Confusion
- Difficulty speaking
- Mood changes such as increased anger or irritability

**Severe:**  
Below 35-40 mg/dL

- Seizure or confusion
- Loss of consciousness or coma

Severe hypoglycemia can be dangerous and should be treated promptly.

### DID YOU KNOW?

Hypoglycemia occurs most often in people who are taking certain medications to treat diabetes. The most common diabetes medication associated with hypoglycemia is insulin. If you don't match your diabetes medications with your food or level of physical activity, you could develop hypoglycemia.

### OTHER FACTORS

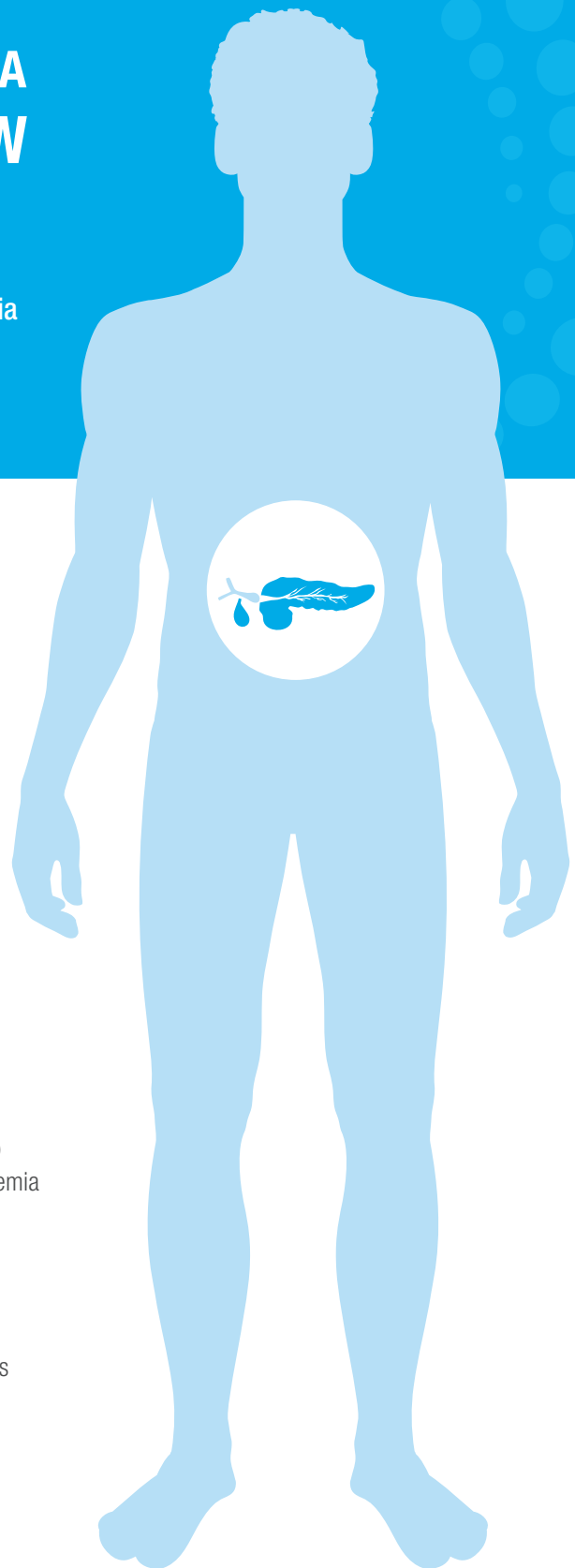
- If you don't eat enough carbohydrates after taking certain diabetes medications
- You skip or delay a meal after taking certain diabetes medications
- You increase your physical activity level beyond your normal routine
- You drink too much alcohol without enough food
- You get sick and are unable to eat or keep food down

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

Additional Editing by Deena Adimoolam, MD,  
Mount Sinai St. Luke's



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## TREATMENT

If you have diabetes and have symptoms of hypoglycemia, check your blood glucose level right away. If it's low, you should eat or drink one of the following to quickly raise your blood sugar:

- 2-3 Glucose tablets
- 2-3 pieces of hard candy (not sugar-free)
- 1 tablespoon of white sugar
- 1/2 cup of juice (not sugar-free)
- 6 ounces of regular (not diet) soda

Wait 15-20 minutes and retest your blood glucose level. If it is still low, take the same action again.

## HYPOGLYCEMIA FACTS

- 1.4 million Americans are diagnosed with diabetes every year
- Hypoglycemia leads to more than 100,000 emergency room visits each year
- Severe hypoglycemia has the potential to cause accidents, injuries, coma, and death

*Source: American Diabetes Association*

## 4 QUESTIONS TO ASK YOUR DOCTOR

- Can my diabetes medicines cause hypoglycemia?
- If I get hypoglycemia, what should I do to bring my blood glucose level back to normal?
- Do I need a supply of glucagon?
- What should I tell my friends and relatives about my hypoglycemia?

## PREVENTION

Knowing your blood glucose level can help you decide how much medicine to take, what food to eat, and how physically active to be. Here are steps you can take to prevent hypoglycemia:

- **Monitor your glucose level.** When you feel any symptoms of hypoglycemia, check your blood glucose to confirm hypoglycemia and treat if necessary. Sometimes people with diabetes don't feel the symptoms of hypoglycemia. If you are unaware of hypoglycemia symptoms or you're hypoglycemic often, ask your health care provider about a continuous glucose monitor.
- **Eat regular meals and snacks.** Your meal plan is key to preventing hypoglycemia. Eat regular meals and snacks with the correct amount of carbohydrates to help keep your blood glucose level from going too low after you have taken your diabetes medications.
- **Approach physical activities safely.** Monitor your blood glucose level during the activity and for several hours afterward to help prevent hypoglycemia. If your blood glucose level is low before exercise, consider eating a low-carb snack prior to working out.
- **Take your diabetes medication as recommended.** Follow your doctor's advice and see him or her regularly for testing and monitoring of your condition.

## BE PREPARED

- Close friends and relatives should be aware of your condition and be taught how to recognize severe hypoglycemia and how to treat it quickly with an injection of glucagon (a hormone that raises blood glucose levels)
- Train children and loved ones to call 911 in the case of emergencies
- If you live alone, consider purchasing a medical alert device
- If you suffer from hypoglycemia, make sure that your doctor prescribes you a glucagon pen in the case of emergencies
- If you have hypoglycemia unawareness (when you do not develop symptoms of hypoglycemia), talk to your doctor about a continuous glucose monitor



## Patients have questions. We have answers.

The Hormone Health Network is your trusted source for endocrine patient education. To learn more about diabetes and its complications, visit [dailydiabetes.org](http://dailydiabetes.org).



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## Endocrinology Opportunity in Montana

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- Excellent benefits
- St Vincent Healthcare is a Truven Top 100 Hospital in 2016 and 2017

St Vincent Healthcare is located in Billings, Montana, a family-oriented community that provides an outstanding quality of life (and was voted Outdoor Magazine's #1 Town in 2016), where you can practice state of the art medicine and also live only minutes away from unlimited access to amazing year-round activities. Montana is truly splendid; offering views, adventure and landscapes that are incomparable to anything in the US. With two national parks, excellent fly fishing, hiking trails, 12 different ski hills, and over 300 days of sunshine, Montana is an outdoor enthusiast's paradise!

**\*Candidates must be American Board Certified/Eligible to apply. Send CV to Carrie Ballard, Physician Recruiter to apply or contact for details**

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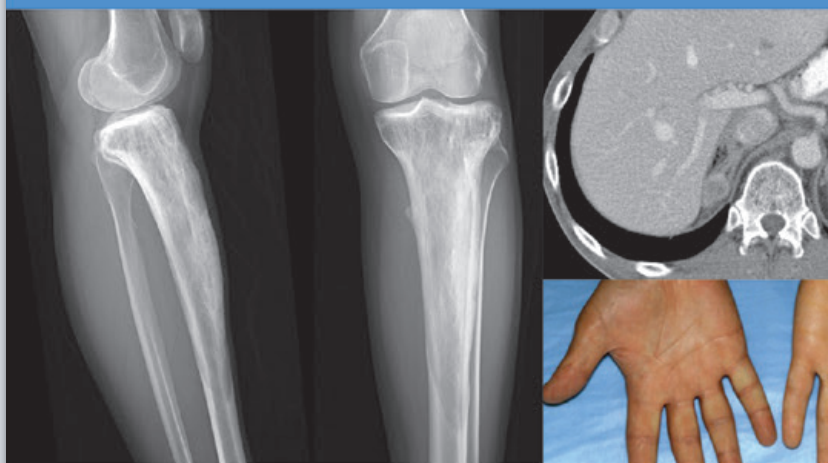
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