



DIABETES IS PRIMARY

TIMELY NEWS AND NOTES FOR PRIMARY CARE PROVIDERS
from the American Diabetes Association

By Max Bingham, PhD

FROM THE JOURNALS.....

Topical Corticosteroids and Type 2 Diabetes Risk

A real-world positive association likely exists between topical corticosteroid use and risk of type 2 diabetes, according to Andersen et al. (*Diabetes Care*, doi.org/c5fz). Based on two case-control studies and one cohort study, they found that prior topical corticosteroid use was positively associated with incident type 2 diabetes and that a dose-dependent relationship appears to exist between potency of steroids and diabetes incidence.

Concerns around such a relationship have previously been raised, particularly in terms of longer-term use. Indeed, hyperglycemia and glucosuria are often listed as potential side effects of topical corticosteroids. Despite this, the risks surrounding topical corticosteroids and diabetes were unclear, according to the authors.

Using routinely collected health care data from Denmark and the United Kingdom, the authors looked at incident type 2 diabetes and topical corticosteroid exposure in ~115,000 and ~55,000 adults in the Danish and U.K. case-control studies and 2.7 million individuals initially included in the Danish cohort. They found that topical corticosteroid exposure was significantly associated with type 2 diabetes in both case-control studies, and in the cohort study, individuals with exposure had significantly increased risk for incident type 2 diabetes.

The authors conclude: "Clinicians should be cognizant of possible diabetogenic effects of high-potency topical [corticosteroids] and consider other treatment options if possible."

Rotavirus Vaccine and Type 1 Diabetes: A Link?

Apart from preventing diarrheal diseases in children, rotavirus vaccine might have a surprising off-target effect: preventing type 1 diabetes. The link, detailed in an analysis by Perrett et al. (*JAMA Pediatrics*, doi.org/c5f3), is based on observations that cases of type 1 diabetes

in Australian children dropped after the introduction of the vaccine in 2007. Specifically, for children born in the 4 years after the vaccine's introduction, there was a 14% decrease in the rate of type 1 diabetes. Conversely, children >5 years of age had the same rate of type 1 diabetes as before the introduction of the vaccine.

Although certainly not a conclusive link—all sorts of confounding factors could explain the pattern—the observation is not a shot in the dark. The research group previously reported links between type 1 diabetes immune markers and rotavirus and have also used laboratory models that suggest rotavirus infection of pancreatic cells can trigger an immune attack against insulin-producing cells.

"While not conclusive, our latest study suggests that preventing rotavirus infection in Australian infants by vaccination may also reduce their risk of type 1 diabetes," author Len Harrison said. "We will be continuing this research to look more closely at the correlation, by comparing the health records of young children with or without type 1 diabetes. At this stage, we don't yet know whether the reduction in type 1 diabetes is a permanent effect or transient, and it may only be relevant to Australian children."

Beware the Influence of Influencers on Kids' Snacking

A recent study by Coates et al. (*Pediatrics*, doi.org/c5f7) reveals some particularly negative outcomes of the modern practice of manipulating the food choices of children via social media.

The study involved 176 children aged 9–11 years who were randomly split into three groups and shown artificial but realistic Instagram posts from two social media influencers (YouTube video bloggers, or vloggers) who are popular with children (both have millions of followers). One group viewed posts of the influencers with healthy snacks, another saw the influencers with unhealthy snacks, and the third saw posts of the influencers interacting with a non-food product.

The children were then told they could freely eat as many unhealthy or healthy snacks as they liked in the 10 minutes

Max Bingham, PhD, is a science writer and editor in Rotterdam, Netherlands. He can be reached on Twitter at @maxbingham.

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after viewing the posts. The children who saw the unhealthy snack posts consumed 32% more calories from unhealthy snacks and 26% more calories from snacks overall than the children who saw the non-food control posts. Conversely, the healthy snack posts resulted in no difference in energy intake compared to the control group.

"These findings suggest that the marketing of unhealthy foods, via vloggers' Instagram pages, increases children's immediate energy intake," lead author Anna Coates said. "The results are supported by celebrity endorsement data, which show unhealthy food endorsements increase children's unhealthy food intake, but healthy food endorsements have little or no effect on healthy food intake."



TREATMENTS + THERAPIES

DiRECT at Year 2: Sustained Type 2 Diabetes Remission With Weight Loss

An update from the Diabetes Remission Clinical Trial (DiRECT) suggests that approximately one-third of individuals with type 2 diabetes who lost substantial weight (>15 kg) and reversed their diabetes remained in remission at 2 years. The results build on previously reported outcomes from the study that showed 46% of participants were in remission 12 months after the intervention. Now, Lean et al. (*Lancet Diabetes & Endocrinology*, doi.org/c5gd) report that 70% of those individuals remained in remission at 2 years. That equates to ~36% of the individuals who originally received the dietary intervention

program, and sustained remission was linked most closely to sustained weight loss. The authors suggest that their data, along with those of others, point toward intensive weight management in type 2 diabetes to reduce or delay complications and improve clinical outcomes.

"These results are a significant development, and finally pull down the curtain on the era of type 2 diabetes as an inevitably progressive disease," author and co-primary investigator Roy Taylor said. "However, everyone in remission needs to know that evidence to date tells us that your type 2 diabetes will return if you regain weight."

The study is expected to run for 3 years, and the authors hope to secure further funding to see what happens in the longer term.

Insulin Costs Double in 4 Years

The cost of insulin doubled in the 4 years between 2012 and 2016, according to a report from the nonprofit Health Care Cost Institute (bit.ly/2MmsyS0). Using health care claims data to investigate total health care spending on individuals with type 1 diabetes, researchers found a rapid increase in spending driven primarily by gross spending on insulin, although insulin use rose only modestly and the types of insulin used also changed modestly. The researchers conclude that insulin spending increases were driven primarily by price increases. They report that the median price increase among a range of insulin products was 92% over the period studied, with certain products rising in price by nearly 150%.

To give these findings a human perspective, they calculate that an individual using one glargine and one lispro pen every 1–2 weeks would have seen their annual cost of ~\$3,200 in 2012 increase to ~\$5,900 in 2016.

The researchers acknowledge that their analysis does not completely deal with the issue of manufacturer rebates or coupons, which they describe as "complex," but conclude that the average price of insulin would still have doubled between 2012 and 2016.

FDA Warns Against Using Pre-Owned or Used Glucose Test Strips

The U.S. Food and Drug Administration (FDA) has issued a safety warning (bit.ly/2H1dO90) against using unauthorized, pre-owned, or used glucose test strips because they may cause infections or give inaccurate results. The warning follows the discovery of sellers of such products on online platforms such as Amazon, eBay, and Craigslist. The concern focuses on the possibility that such strips may have expired or been stored improperly, which could lead to inaccurate measurements and subsequently improper dosing of medication such as insulin. The warning also highlights the possibility of cross-contamination of blood in the case of used strips.

Although the FDA is not aware of any deaths or serious injuries associated with pre-owned or unauthorized test strips, its aim is to prevent such events from occurring. It recommends that users inspect packaging for signs of previous opening and check expiration dates. It also suggests that if a user is able to purchase prescription-only test strips without a prescription, the products are likely unauthorized. Patients who have concerns about the cost of test strips are encouraged to talk to their health care provider or pharmacist about organizations and programs that can provide financial assistance.

“Millions of Americans use test strips at home to monitor serious diseases or conditions,” Tim Stenzel, director of the Office of In Vitro Diagnostics and Radiological Health in the FDA’s Center for Devices and Radiological Health, said in a statement (bit.ly/2G2KILz). “We recognize that some people may be choosing to purchase pre-owned or unauthorized test strips because they believe there is a cost savings. However, by doing so, they may be putting themselves at risk for serious injury or even death.”

Artificial Pancreas System Works for Very Young Children

The ambition of creating a viable closed-loop insulin therapy system for the treatment of type 1 diabetes, otherwise known as the artificial pancreas (AP), has taken a step forward.

Tauschmann et al. (*Diabetes Care*, doi.org/c5f9) reveal the successful use of a version of the approach in free-living very young (1–7 years of age) children, with a convincing clinical outcome. They report that their approach appears to be feasible in young children and also appears to be safe from the perspective of avoiding hypoglycemia. Additionally, they report no tangible difference in using standard concentrations of insulin versus a diluted version in this population.

Author Roman Hovorka told us: “Managing diabetes in very young children places huge burden on families due to highly fluctuating insulin needs during and between days. We showed that closed-loop insulin delivery is feasible, safe, and achieves excellent glucose control, especially overnight, helping families to live a better life. Diluting insulin for children with a total daily dose above 10 units per day does not change outcomes. We are planning a longer and larger study based on these exciting observations.”

Many Young Patients Have Trouble Using Artificial Pancreas System

According to a report from the ENDO 2019 conference (Goodwin et al., bit.ly/2PPZVyy), nearly 20% of first-time users prescribed an AP system stopped using it within months because of technical difficulties. Calibration and sensor issues, skin irritation, and forced exits from auto mode were common areas of difficulty.

This real-world study involved 83 individuals aged 6–25 years who were prescribed the setup via a clinic in Boston, Mass. Despite the setbacks, a majority of individuals managed to use the system in auto mode for at least some of the time in follow-up, and those who achieved the most use in auto mode experienced reductions in A1C.

“Closed loop insulin pump therapy is the most exciting new development in type 1 diabetes in decades,” lead author Gregory Goodwin said in a statement (bit.ly/2PSuKTc), “but this technology needs to become more user-friendly. Patients can reap the full benefits of the system in auto mode, but it is demanding and requires a technically sophisticated patient or parent to use it.”





ADA NEWS

Association Awarded Continuing Education Accreditations

The American Diabetes Association (ADA) recently received Joint Accreditation for Interprofessional Continuing Education for health care professionals. The association was awarded the maximum 6-year accreditation through the Accreditation Council for Continuing Medical Education, the Accreditation Council for Pharmacy Education, and the American Nurses Credentialing Center. This standing allows ADA to offer continuing education credit for physicians, nurses, pharmacists, physician assistants, psychologists, and social workers.

As of February 2019, the ADA now also offers Maintenance of Certification credit to physicians through the American Board of Internal Medicine, in collaboration with the Accreditation Council for Continuing Medical Education for live programs.

"These designations position the ADA as a prestigious international leader in education," said Kristine Paschalis, ADA Managing Director, Professional Services. "The new accreditations expand ADA's ability to provide high-caliber professional education programs that are effective in improving the knowledge and competencies of health care professionals and in advancing team-based care."

New Continuing Education Resources Available on Continuous Glucose Monitoring

A new ADA self-assessment program and webcast offer straightforward information about identifying candidates for continuous glucose monitoring (CGM), selecting the best CGM system for a given patient, implementing and optimizing CGM efficiently, and interpreting and acting on CGM data. These resources are designed for the interprofessional primary care team and are

offered free of charge. Diabetes health care professionals can participate at professional.diabetes.org/ce

New Diabetes Nutrition Consensus Report Published

ADA recently published a new consensus report intended to update and replace the 2014 ADA nutrition position statement. The new report and four related featured articles were published in the May 2019 issue of *Diabetes Care* in a special section titled "The Continuing Evolution of Nutritional Therapy for Diabetes." Access the May issue at care.diabetesjournals.org/content/42/5.

2019 *Standards of Medical Care in Diabetes* Updated

The ADA's *Standards of Medical Care in Diabetes* were recently updated through the association's Living Standards process. In April 2019, the section on lifestyle management was updated with guidance from the association's newly published consensus report on nutrition therapy. A new recommendation was added to the section on cardiovascular disease and risk management based on the results of REDUCE-IT (Reduction of Cardiovascular Events with Icosapent Ethyl—Intervention Trial). New information was also incorporated to reflect findings of the DECLARE-TIMI 58 (Dapagliflozin Effect on Cardiovascular Events-Thrombolysis in Myocardial Infarction 58) trial regarding the use of the sodium–glucose cotransporter 2 inhibitor dapagliflozin in people with impaired renal function; the approved use for dapagliflozin per estimated glomerular filtration rate was revised from ≥ 60 to ≥ 45 mL/min/1.73 m².

These updates can be found on the *Diabetes Care* journal website (care.diabetesjournals.org) and on the Standards of Care page of the ADA website (professional.diabetes.org/SOC).



CONFERENCE SPOTLIGHT

Large Population Study Reveals Consequences of Severe Obesity

Severe obesity is linked to substantial increases in risk for a range of noncommunicable diseases and death, according to an analysis of 2.8 million National Health Service patients in the United Kingdom. Estimates suggest that individuals with the highest BMIs (40–45 kg/m²) have 12 times the risk of developing type 2 diabetes and 22 times the risk for sleep apnea compared to individuals who are neither overweight nor obese (BMI <25 kg/m²). The study was presented at the European Congress on Obesity held in Glasgow, Scotland, from 28 April to 1 May 2019.

Nearly all groups of individuals with a BMI >25 kg/m² had increased risk for numerous diseases, including arthritis, kidney disease, asthma, various cardiovascular conditions, hypertension, and dyslipidemia. The highest BMI levels were also associated with increases in all-cause mortality risk. The presence of baseline comorbidities such as type 2 diabetes, hypertension, dyslipidemia, or a cardiovascular event also increased risks for numerous other outcomes.

“With the number of people living with obesity almost tripling worldwide over the past 30 years, our findings have serious implications for public health,” author Christiane Haase said. “Body mass index represents an important modifiable risk factor for ameliorating the risk of a wide variety of serious health problems in the general population.”

To learn more about ADA's continuing education opportunities, including Diabetes Is Primary events in your community, please visit **professional.diabetes.org/ce**.