Mr. Gray Goes to Washington

Florida teen Rush Gray lobbies Capitol Hill policymakers on behalf of type 1 diabetes research

Also in this issue:

• How To Avoid Holiday Overindulging
• Everything You Should Know About The New Insulins
• Can Chromium Supplements Help Control Diabetes?
• Having a Healthy Mouth Helps with Diabetes Management
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A Letter from the Editor

Everything You Should Know About the New Insulins
For those who require medication to help manage their diabetes, there are more options available than ever before.

Diabetes Education and Support: Everyone Has a Role. What’s Yours?
The National Diabetes Education Program, a program of the National Institutes of Health, offers a wealth of tools to help people with diabetes optimally manage their disease.

How To Avoid Holiday Overindulging
The holidays don’t have to be a time when your waistline and stress level expand along with your social calendar if you have a strategy in place to handle the holidays.

Mr. Gray Goes To Washington
Diagnosed with type 1 diabetes as a youngster, Florida teen Rush Gray recently appeared on Capitol Hill to advocate for diabetes research funding as a delegate of the JDRF 2015 Children’s Congress.

Mastering Self-Management: A guide for parents of young children and teens with type 1 diabetes
Perhaps one of the most daunting of tasks when you are a parent of a child with diabetes is deciding when, and how, it is appropriate to shift management of the illness to your child.

Having a Healthy Mouth Helps with Diabetes Management
What do brushing and flossing have to do with diabetes? Actually, a great deal. If you have diabetes, here’s why dental care matters even more.

Diabetes Among Risk Factors For Dementia
Although the evidence is modest, studies over the years have suggested people with diabetes appear to have a higher risk of dementia when their blood sugar is poorly controlled. Recent research reports seem to support that theory.

Insulin Pump Therapy Strategies for Optimal Performance
Insulin pumps can ease diabetes control in many ways, but there’s still a lot of work that you’ll have to do once you’re up and running. Here we offer some valuable tips for troubleshooting pump problems.

Can Chromium Supplements Help Control Diabetes?
Since the 1950s, when researchers discovered a possible link between essential mineral chromium and lowering of blood sugar, a number of studies have explored the effectiveness of chromium supplements in controlling blood sugar levels in persons with diabetes.
AACE recently adopted the universal endocrine logo design (left), which is intended to serve and be recognized by the scientific community and the public at large as an international symbol of recognition of all areas of the specialty of endocrinology (academic/research/clinical).

In its simplest form, the logo represents a continuous loop that conveys the concept of endocrine science, education, communication, safety, and overall good endocrine health; lay focus groups identified “balance” and endocrinologists identified “feedback loop” – both are desired interpretative attributes.

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ACE is the scientific, charitable and educational arm of the American Association of Clinical Endocrinologists (AACE). ACE is dedicated to promoting the art and science of clinical endocrinology for the improvement of patient care and public health.

AACE is a professional medical organization with more than 6,000 members in the United States and more than 90 other countries. Founded in 1991, AACE is dedicated to the optimal care of patients with endocrine problems. AACE initiatives inform the public about endocrine disorders. AACE also conducts continuing education programs for clinical endocrinologists, physicians whose advanced, specialized training enables them to be experts in the care of endocrine diseases such as diabetes, thyroid disorders, growth hormone deficiency, osteoporosis, cholesterol disorders, hypertension and obesity.
A Letter from the Editor:

Dear Reader,

2015 is drawing to a close - you might be wondering just how did this year go by so quickly! Seemed only yesterday lazy vacation days were on the agenda - now it is back to work, back to school.

Yet much has been happening over the summer and this year in the arena of diabetes and healthcare. In this issue, we bring to your attention new insulins that have been made available in the past year...what they are, how they can be used. We also share tips on insulin pump safe use - at home, while traveling.

And pediatric endocrinology experts give tips for parents that care for young children and teens who have diabetes and are using insulin. Managing diabetes is an everyday challenge, and there are no short cuts- read about your role in diabetes education and support.

Recent studies have re-emphasized the link between diabetes and dementia, particularly if the diabetes is poorly controlled. Read about the details of this link, as well as the link between dental health and diabetes.

We also continue our series on supplements. This issue’s article focuses on chromium and what evidence there is for and against its role in managing blood sugars.

And finally, we offer some healthy tips to survive the holiday season to help you end the year on a positive note!

Best wishes to you all for good health in 2016!
Although many people can control their diabetes by eating well and exercising, medication is a necessity for others. Fortunately for these folks, there are more options than ever before to help control their blood sugar. And several new insulins have recently been added to the mix: Afrezza, Toujeo, Humalog U-200, Tresiba and Ryzodeg. Here we highlight these new weapons in the diabetes therapy arsenal.

**Afrezza: Could this be the end of insulin injections?**

A new insulin delivery system, Afrezza, was just approved by the FDA and is currently available. Afrezza is an inhaled, man-made insulin that is approved for adults with type 1 diabetes (the diabetes in which your own body produces antibodies against your insulin-producing cells) or type 2 diabetes (the type of diabetes where the insulin being produced does not work as it should combined with the body producing less insulin over time).

Afrezza is a meal-time insulin taken before eating. This new insulin therapy may be added when your blood sugars can no longer be controlled by pill medication alone or when long-acting insulin injection is not enough to manage your diabetes. It is currently available in a cartridge form which is loaded into a small device. Cartridges come in four, eight and twelve units. Prior to eating, you would inhale the dose of insulin prescribed by your clinician. Long-acting insulin administration is still required if you have type 1 diabetes.

Like other FDA-approved insulin products, Afrezza has potential side effects, such as low blood sugar. Also, the dosing is limited to four, eight, or twelve units or a combination of these units: for example, you cannot administer three units or 10 units with this insulin delivery system.

Insurance coverage issues as well as possible higher co-pays – and, therefore, affordability – might be additional challenges faced with this insulin delivery system. Also, lung function will need to be checked and monitored by your doctor, since long-term side effects on the lungs are not known. And this insulin is not recommended for those with any existing lung problem or if you smoke.

**Toujeo and Humalog U-200: The new injectable insulins**

Until recently, Lantus was the only type of concentrated insulin available in the U.S. market. This year, two other concentrated insulins were approved by the FDA: Toujeo and Humalog U-200. The main purpose of these insulins is to deliver...
the usual unit dose of insulin in less volume, which can potentially improve absorption of insulin and help decrease the frequency of having to change insulin pens.

Toujeo contains the same type of long-acting insulin glargine (Lantus), but delivers three times the concentration of the previous version; that is, each millimeter of liquid in Toujeo carries 300 units – U300 – of insulin versus 100 – U100 – for Lantus.

Similarly, Humalog U-200 contains short-acting insulin lispro (Humalog), but delivers two times the amount of insulin for every unit; therefore, it is twice the concentration of Humalog U-100. These two medications are only available in pre-filled pen forms designed to give the exact amount of insulin dose needed in less volume. Thus, it is not recommended they be drawn out of their original pen form. These medications can be particularly beneficial for those who require high doses of insulin.

How is the pen used?
Toujeo and Humalog U-200 come in pre-filled pen delivery systems. The same technique is used to administer and deliver the insulin dose as its less concentrated pen forms. One different technique to note is the amount of insulin used to prime (safety test) the pens. It is recommended that Toujeo be primed (flushed) using three units of insulin, while Humalog U-200 should be primed with two units of insulin. Priming should be performed before each injection. These two insulins should never be extracted from their pen forms as this will result in an overdose. Upon first use of Toujeo and Humalog U-200, it is best to review with your diabetes healthcare team the proper techniques used to inject insulin pens.

How are Toujeo or Humalog U-200 prescribed and started?
There is no difference in how Toujeo and Humalog U-200 are prescribed compared to other insulin pens. Your diabetes specialist will continue to recommend the exact amount of insulin you need and the frequency of use. No adjustment will be needed to accommodate the concentrated nature of these two insulins. It is important to make sure that you stop using insulins that might have similar action to the more concentrated Toujeo and Humalog U-200. Make sure you discuss with your diabetes specialist how to transition to the new insulins.

How are Toujeo and Humalog U-200 stored?
After first use, these two insulins can be kept at room temperature, but should be discarded after 28 days. Any unused pens should be stored in a refrigerator and discarded upon the expiration date indicated on the package.

What type of monitoring is involved when using Toujeo and Humalog U-200?
If you do start Toujeo or Humalog U-200, you should be monitoring your blood glucose (sugar) using a glucose meter as often as recommended by your diabetes healthcare team. Close monitoring is important to know if the insulin is doing its job, preventing high blood sugar as well as low blood sugar.

What is the cost of Toujeo and Humalog U-200?
Cost may vary depending on each insurance coverage and retailer price. You should check with your insurance company for coverage information or your local pharmacy for pricing.

Long-lasting Tresiba and Ryzodeg
Two more insulins were recently approved by the FDA. Insulin degludec (Tresiba) and a 70/30 mix of insulin degludec and short-acting insulin aspart (Ryzodeg) should be available in pharmacies shortly.

Tresiba is a long-acting insulin that is approved for use in adults with either type 1 or type 2 diabetes. The drug is given as an injection once daily at any time of day. In studies with this insulin, individuals with type 1 and type 2 diabetes who had inadequate glycemic control at the start of the study reached goal blood sugar control comparable to what has been seen with other previously approved long-acting insulins.

The second insulin, Ryzodeg 70/30, combines a long-acting insulin (insulin degludec) with a rapid-acting insulin (insulin aspart or Novolog) and is also indicated for improvement of blood sugar control in adults with diabetes. Study results with

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this insulin showed that in patients with type 1 and type 2 diabetes who had inadequate blood sugar control at study entry showed the same blood sugar control ability when using Ryzodeg 70/30 as previously available long-acting or pre-mixed insulin.

Hypoglycemia, allergic reactions, injection site reactions, pitting at the injection site, itching, rash, edema and weight gain were the most common adverse events associated with Tresiba and Ryzodeg in clinical trials.

So which insulin is the best for me?
Each person is different, so the best insulin for you is the one that works to control your blood sugars the best with little to no hypoglycemia (low blood sugar). Additional concerns are cost and what is covered by your insurance plan.

It is good practice for you to always bring your logbook or blood glucose meter to your appointments to help your diabetes team help you to best control diabetes blood sugar. And if you have any questions, please discuss them with your team– all questions are important and need attention!

Dr. Peter Huynh is a clinical pharmacist and Certified Diabetes Educator at the University of Washington Diabetes Care Center. He graduated from the University of Connecticut with his Doctor of Pharmacy degree and has completed a diabetes research fellowship at Washington State University. He is actively involved in direct patient care and plays an active role in the diabetes education program at the University of Washington, Diabetes Care Center.

Dr. Rhea C. Smith is a board-certified diabetes educator and a clinical pharmacist at University of Washington Medical Center Diabetes Care Center. Dr. Smith is actively involved in direct patient care as well as serving as a preceptor for students at University of Washington (UW) School of Pharmacy and UW Medicine Pharmacy residents.

ARE YOU PREPARED FOR THE UNEXPECTED?
Emergencies happen year-round. Be sure your diabetes emergency kit is prepared for any situation at any time. Visit: www.mydiabetesemergencyplan.com
Diabetes Education and Support: Everyone Has a Role. What’s Yours?

BY LINDA SIMINERIO, RN, PHD, CDE
Chair, National Diabetes Education Program

If you have recently been diagnosed with diabetes - or if you have been living with diabetes for a while - it’s important to understand that learning to manage your diabetes from the start can help you have fewer diabetes-related health problems later.

For people with diabetes, there is so much to learn about staying healthy, including what food choices to make; how to become and stay physically active; and when to take medications that have been prescribed for you.

At the same time, living with the daily demands of diabetes can be challenging, particularly as your diabetes needs can change over time. But here’s the good news: you don’t have to manage this disease alone. Support from your family, friends, caregivers and health care providers can help you manage this chronic disease every day.

That’s why I’m excited about the National Diabetes Education Program’s (NDEP) theme for National Diabetes Month this November: Diabetes Education and Support: Everyone Has a Role. What’s Yours? The NDEP is a joint program of the National Institutes of Health and the Centers for Disease Control and Prevention, and we developed this message because we believe people with diabetes can live healthier lives when they learn about their disease and receive the proper support to manage it. To help people understand what role each person plays, the NDEP provides tools and resources for people with diabetes, family and caregivers, health care professionals and community members.

As you consider your own support system, keep in mind that you are the most important member of your healthcare team. And remember to manage your disease so it doesn’t manage you. One helpful reminder is to think of what we call the “Diabetes ABCs.” That’s an easy way to remember that you should talk regularly with your health care team about how to manage your A1C, blood pressure, and cholesterol levels, and—if you smoke, how to stop—all of which can help you lower your chances of having a heart attack, stroke, or other diabetes problems.

You can learn more about diabetes from a variety of professionals, including diabetes educators, nurses, dietitians, pharmacists, peer leaders and community health workers. And the NDEP also offers many resources you can use to manage your diabetes, such as:

- **4 Steps to Manage Your Diabetes for Life:** This publication is helpful for people newly diagnosed with diabetes or who just want to learn more about controlling the disease.
- **Just One Step:** Change begins with just one step. This tool helps people break down their goals to make modest but important lifestyle changes in small, achievable steps.
- **Make a Plan:** Making changes in how to care for health is a matter of trying and learning. It’s all about choosing a goal that’s right and working toward it. This tool provides some questions to help people get started.
- **Diabetes HealthSense:** Diabetes HealthSense is an online library that provides easy access to more than 160 resources from more than 80 organizations that support people with diabetes, people at risk for the disease, and those who care for them in making changes to live well or facilitating behavior change in others.

The NDEP wants to help you learn about your diabetes and receive good support so you can stay healthy. To learn more about how to manage your disease, please visit [YourDiabetesInfo.org](http://www.YourDiabetesInfo.org) or [diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).

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**Dr. Siminerio** is the Executive Director of the University of Pittsburgh Diabetes Institute and Professor of Medicine in the Division of Endocrinology and Metabolism. She is also currently Chair of the National Diabetes Education Program (NDEP). In 2011, she received ADA’s Outstanding Educator in Diabetes Award. She is former President of Health Care and Education for the American Diabetes Association (ADA) and former chair of the International Diabetes Federation World Congress. Dr. Siminerio has authored numerous publications, including the National Standards for Diabetes Education and the recent position paper on Diabetes Self-Management Education and Support in Type 2 Diabetes which was published jointly by the American Diabetes Association, the American Association of Diabetes Educators and the Academy of Nutrition and Dietetics.
With the holiday season rapidly approaching and planning for upcoming festivities and special times with family and friends in full swing, there may be challenges with making healthy, sensible choices at these gatherings, particularly if you have diabetes, high cholesterol or high blood pressure.

Below are some helpful tips to enjoy this time of year in a healthier way.

Cheers?
Even though alcohol consumption is prevalent all year-round in the U.S., with estimates suggesting that one-third of Americans drink alcohol on a regular basis (and this might be a conservative number), there is scientific data from observational types of studies that suggests moderate alcohol intake can have a protective effect on the development of diabetes. But the studies made an important point: that this was indeed moderate alcohol intake—that is, 0.5–2.5 drinks per day. There was no associated benefit with drinking more.

In fact, it appears that there may be a relationship between alcohol and type 2 diabetes in which there is a higher risk of developing diabetes with both low and high intake of alcohol. However, there is a lower risk with moderate intake. This does not mean that you should treat alcohol as a diabetes preventative. Data are lacking as to what difference might be made by specific choice of alcoholic beverage, whether the frequency of drinking makes a difference, and whether the same effect is seen in those who might have other risk factors for diabetes such as being overweight, being a smoker or having a family history of diabetes. So, if you’re thinking that glass of wine could decrease the blood sugar effect of eating that fudge brownie, sorry to say there is no data to support this.

The negative effects of alcohol are numerous. It can temporarily increase blood pressure in anyone after an estimated three drinks. Alcohol can interfere with some blood pressure medications, increasing the side effects of some and making others less effective. Plus, alcohol has calories, which are often handled as fat calories by the body, increasing your risk of weight gain with regular alcohol intake. And that weight gain also creates the risk for high blood pressure.

Cutting back on alcohol can decrease systolic blood pressure (the top number in a blood pressure reading) by as much as two to four points (usually reported as millimeters of mercury—denoted by the symbol mmHg) and diastolic blood pressure (the bottom number in a blood pressure reading) by one to two mmHg.
Additionally, if you are using blood sugar-lowering medications, there can be potential side effects: for example, your risk of hypoglycemia (low blood sugar) can be significantly higher if you drink alcohol. And, although data are conflicting, if you have type 2 diabetes and have more than moderate alcohol use, you might be at more risk of developing diabetes-associated eye disease.

Alcohol intake also can increase the “heart protective” type of cholesterol, namely HDL cholesterol (high density cholesterol—the “good” kind), but drinking too much alcohol can increase the levels of sugar fats (called triglycerides) in the blood. When elevated, triglycerides can cause an inflammation of your pancreas, a very painful condition called pancreatitis which, over time, can actually destroy the pancreas. Triglycerides might also contribute to heart disease, potentially more so in women than men.

Alcohol intake can lead to heart muscle disease (cardiomyopathy), irregular heartbeat (arrhythmia) and stroke. And heavy alcohol use can leave the heart too weak to pump efficiently, a condition called congestive heart failure.

So how much alcohol is safe? It is generally agreed that “moderate alcohol intake” is safe. Moderate drinking can be defined as: 12 ounces of beer, five to six ounces of wine or 1.5 ounces of 80-proof distilled spirits. Also considered a “safe” alcohol consumption rate: two drinks a day for men younger than age 65, one drink a day for men 65 and older, and one drink a day for women of any age.

And if you drink, you should also make sure that you eat to reduce the risk of hypoglycemia (low blood sugar). Drinking alcohol inhibits the liver’s ability to release glucose (the sugar your body converts into energy), into the bloodstream. This is particularly troublesome for those on insulin, as the liver is not able to produce and release enough glycogen (the sugar your body stores in both your liver and muscle cells) to keep blood glucose levels from going too low under the influence of the insulin. This liver impairment can last for several hours after drinking. To counteract this effect, stick to non-sugary drinks and eat plenty of foods with protein, fats and complex carbohydrates, which your body can convert and absorb as glucose.

‘Tis the Season for Temptation
Aunt Clarice’s pecan pie, sister Jane’s macaroon cookies, mom’s raisin bread pudding — almost every family has traditional holiday foods along with expectations that these items will be shared enjoyed by all. And while they may be difficult to resist and feelings might be hurt by resisting that wonderfully tasty item, it’s wise to steer clear of these types of items, especially if you’re watching your weight, your blood sugar levels, blood pressure or cholesterol.

If you plan on indulging later in the day, start your day with a small meal that includes whole grains and low-fat or fat-free dairy and protein. Don’t starve yourself beforehand. Eat a small, lower-calorie meal before you head off to a soiree. Don’t rush to eat. Socialize and settle into the festivities before eating...and move your socializing away from the buffet or appetizer trays. This will minimize unconscious “nibbling.”

“Taste” rather than eat. This means choosing the smallest plate available, asking for a small piece or slice, or even asking someone to share a plate or a dish (that fudge brownie, for example). At a buffet, you might even limit your “plate” to a napkin. Another approach to help yourself is to take one bite of an item and then toss the remainder away, wrapped in your napkin. These approaches allow you to decrease portion size while tasting the food and being able to fully participate socially.

Make better choices. This means reaching for the vegetable tray or fruit tray at buffets rather than the baked goods. Grab a bottle of water, or if you must choose punches or juices, try filling your glass with ice first; this will dilute and decrease your drink portion size of drink. Sparkling water can be another festive way to dilute a carbohydrate-rich drink.

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And watch out for hidden salt (sodium) that can worsen blood pressure. Unfortunately, many prepackaged foods use sodium for its preservative effects. So foods such as broths used as bases for gravy, sauces or soups can be high in sodium. Keep these food choices to a minimum. Ask if stuffing has been prepared with salt—and if so, have a taste instead of eating a full portion.

Offer to bring a dish or two (or more). You then have control over a food choice, or several choices, that you fully know the contents of.

**Stress-Busting Strategies**

As joyous a time as the holidays can be, they can also be very stressful. High expectations for a perfect party, family tensions, even depression can play a major role in creating a not-so-perfect time of year. Some people avoid celebrating the holidays altogether for this reason.

Stress can play a major role in interfering with any disease self-management. Missing medication, disrupted sleep, “stress eating” and making poor choices with alcohol intake can become more prevalent at the end of the year.

To reduce your stress, make expectations reasonable. Set a limit on your social event commitments to one or two per week. Suggest to friends that you meet after the holidays when schedules are more flexible. Offer a buffet rather than sit-down dinner if you’re hosting an event. Or limit your gathering to just appetizers or desserts rather than a sit-down meal. Agree to meet for breakfast or coffee rather than dinner to limit calorie temptations. Limit gifts to specific dollar amounts and have a family lottery to see who gives to whom.

Take care of yourself. Will anyone really remember if you didn't have multiple meal choices or if there was dust on the bookshelves? Make sure to get as much sleep as possible, slip some exercise into your busy schedule and make good meal choices. Following these tips will increase your enjoyment of this special time of the year.

(See Calculating Calories and Carbs During the Holidays on page 25)
ush William Gray was a mere six years old when he was diagnosed with type 1 diabetes (T1D), the potentially fatal autoimmune disease in which a person’s pancreas produces little or no insulin, requiring multiple daily finger pricks for blood sugar tests, constant monitoring of food intake, and a lifetime dependence on injected or pumped man-made insulin.

Now, at age 16, Rush hardly remembers life without the condition.

But instead of wallowing in WHY MEs and WHAT IFs, he’s busy doing his part to help eradicate T1D: In July, the Ponte Vedra Beach, Florida resident traveled to Washington, D.C. to lobby Capitol Hill policymakers for research funding and access to improved T1D therapies.

A delegate of the JDRF (Juvenile Diabetes Research Foundation) 2015 Children’s Congress, Rush was among 160 children and teens hand-picked from around the U.S. who descended upon our nation’s capital for a once-in-a-lifetime opportunity to meet with officials at the highest level of government to share their personal stories of living with T1D and explain why funding for research is crucial. They were joined in their mission by additional representatives from Australia, Denmark, Canada, the Netherlands, the United Kingdom and Israel.

“The message that I wanted my legislators to hear was how important it is to continue funding for JDRF research and the Special Diabetes Program, which both are bringing us closer to a cure at a faster pace,” Rush said. “I also wanted them to hear about my life with T1D, so they would see how important a cure is for those living with this terrible disease.

“And I wanted to ask them to support Medicare coverage for continuous glucose monitors (CGM),” he added. “Many seniors depend on them to maintain good blood sugar levels, which means less complications and that means less hospital visits, which could save Medicare lots of money in the long run.”

Besides meeting with Florida Congressman Ron DeSantis and Senators Bill Nelson and Marco Rubio (who is currently running for the Republican party 2016 presidential nomination), Rush spent time during the three-day congress socializing with celebrity role models, all of whom have the disease, including professional snowboarder Sean Busby, recent American Idol contestant Adam Lasher, elite professional cyclist Becky Furuta, “Beauty and the Beast” actor Austin Basis, former Miss America Nicole Johnson and retired LPGA pro golfer Carling Nolan. “It was great to hear about how these well-known people handle their life with type 1 diabetes,” Rush said.

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ENDOCRINOLOGISTS GO TO BAT FOR DIABETES CAUSES

Along with the JDRF, a number of organizations advocate for diabetes patients’ care. Among them is the American Association of Clinical Endocrinologists (AACE).

AACE is the driving force behind the National Diabetes Clinical Care Commission Act (H.R. 1192/S. 586). The legislation proposes the creation of a public/private commission composed of the country’s foremost diabetes experts - endocrinologists, other clinical care specialists, patient advocates and representatives of federal agencies involved in diabetes care - to better coordinate diabetes activities that are currently managed by three dozen federal departments, to identify duplicative efforts and critical gaps, and to recommend new approaches to improve clinical care. For information on how to contact your government representatives and request their support, please visit: https://www.aace.com/diabetesbill

AACE also is pushing for the passage of the Medicare CGM Access Act (H.R. 1427/S. 804), which would ensure Medicare coverage of continuous glucose monitors (CGMs). A CGM is an FDA-approved, physician-prescribed device that continuously detects and displays a patient’s blood glucose level and also reveals patterns in the levels that often are not detected using finger-stick glucose measurements alone. By viewing continuous data and responding to CGM alerts, patients can respond to rising or falling blood glucose levels before they become dangerous. For more information about CGMs and how to support the Medicare CGM Access Act, please visit: https://www.aace.com/files/advocacy/cgm-fact-sheet.pdf

Mr. Gray Goes To Washington

(Continued from page 11)

Back on the home front, Rush is equally engaged. A typical teenager, he doesn't let his diabetes stand in the way of doing what he loves most—dirt bike riding, jet-skiing and playing flag football and soccer—but is careful and cognizant at all times, carrying an emergency bag of diabetes items wherever he goes. “My family, friends, teachers and coaches know to grab that bag if I pass out,” Rush said.

“Sometimes it can be hard to balance the exercise and insulin doses,” he added. “My soccer teammates see me on the sidelines checking my blood sugar, because I don’t want to have problems during a soccer game and be stuck sitting on the bench waiting for my blood sugar to get back in range.”

He also serves as a youth ambassador for the Jacksonville chapter of the JDRF. And Rush and his family have made advocacy efforts a family affair, forming “Rush’s Rangers,” a walk team that participates in diabetes organizations’ fundraising efforts, such as the JDRF One Walk®, the organization’s flagship fundraising event and the largest type 1 diabetes event in the world.

“My family (mother, Becky; father, Axel, and 18-year-old sister, Murphy) and I have worked to bring awareness about life with T1D and the need for a cure to as many people as we can in our community,” Rush said. “I remember the first year that I attended the JDRF Walk to Cure Diabetes in Jacksonville, Florida. I was only seven years old. It was so exciting to see all the people that cared about me and everyone else living with T1D.”

“My mom now volunteers through the JDRF as a mentor to newly diagnosed families because she found it to be helpful when I was diagnosed,” he continued. “Plus, these organizations are a great way for kids living with T1D to get together and to know that you are not alone.”

His advice to other diagnosed with type 1 diabetes? “Be brave and do not let this disease stop you from enjoying life.”

For additional information about the JDRF and its advocacy efforts, visit http://cc.jdrf.org or https://www.facebook.com/JDRFAdvocacy

Axel, Murphy, Becky and Rush Gray
What do you call kids who don’t let type 1 diabetes stand between them and their dreams?

At Lilly, we call them everyday heroes.

It takes a special type of kid to handle the rigors of high school, manage the daily demands of type 1 diabetes, and grow into a great young adult. That’s why at Lilly, we’re proud to support the Diabetes Scholars Foundation, offering scholarships to help pay for college.

To learn more about these scholarships, visit diabetesscholars.org/Lilly. And take this page to discuss with your healthcare provider. For more information about all the helpful programs Lilly offers families with type 1 diabetes, visit lillydiabetes.com.
MASTERING SELF-MANAGEMENT:
A guide for parents of young children and teens with type 1 diabetes

By Sripriya Raman, MD, Heather Feingold, LCSW, Lara Simon, LCSW, CDE

All parents want their children to become healthy, happy and independent adults. When you’re a parent of a child with type 1 diabetes, sometimes figuring out how to do that is a huge challenge. Diabetes care does add a whole new level of responsibilities and obligations for patients and their families. As parents you are faced with difficult decisions about when to shift the diabetes management from you to your child. If you make this shift too early your child may become noncompliant to care, experience treatment errors, or experience failure and disappointment. If you make this shift too late, your child may question their ability to take care of themselves or may feel inadequate and have difficulty assuming responsibility later in life.

The transfer of diabetes management from a parent to a child is a process and should be done with thought and preparation. Here we have provided developmentally appropriate type 1 diabetes self-care tasks to assist you in preparing a well-thought-out plan to make this transition smooth and successful.

Infants (up to 1 year old)
Children at this stage are developing a sense of trust with parents and the world around them. Erratic sleeping and eating patterns are expected.

When diabetes is diagnosed in infancy, parents are expected to provide all diabetes management.

- Have all of your supplies ready before testing blood sugars or giving injections
- Do not use your child’s bed/crib for injections or blood sugar checking. This keeps their bed/crib a safe place for them
- Use the smallest lancet for finger sticks
- Be sure that diabetes care is shared with other caregivers to avoid burnout

Toddlers (1 to 2 years old)
Toddlers are able to participate in some self-care. They often begin looking for approval from parents while testing their limits. Many toddlers are picky eaters and become easily distracted. Important issues are temper tantrums and discipline. Parents are still expected to provide all of the diabetes care.

- Be organized to minimize your stress
- Be patient and calm. Test blood sugar before ignoring a temper tantrum
- Have your child help with simple tasks, such as choosing a finger for testing or choosing a site for injections
- Be sure that diabetes care is shared with other caregivers to avoid burnout
Pre-school (3 to 5 years old)
Preschoolers are BUSY! Eating and sleeping habits should become less erratic. They are able to start understanding rules and can perform more self care under a parent’s supervision. Preschoolers will ask the question “why?” Let preschoolers know that diabetes management is not negotiable.

- Allow them to do more diabetes care - test blood sugar or use a lancet device
- Use a reward system such as sticker charts for compliance
- Help your child learn symptoms of low blood sugars
- Assure your child that diabetes care is NOT being used as punishment
- Do not label blood sugars as “bad” or “good”

School Age (6 to 10 years old)
School-aged children are fearful of being different from their peers. They also begin to spend a lot of their time away from home. Children at this age can perform some of their diabetes self care, but adult support and assistance is still necessary.

- Make sure that the school and other caregivers are fully educated on diabetes management
- Have your child participate in school activities or sports to help with normal peer relationships
- Allow your child to make decisions around meal planning and injections ahead of time to avoid stress
- Teach your child how to count carbohydrates, calculate insulin doses and use their insulin pump or pen

Early Adolescence (12 to 15 years old)
Children in early adolescence are susceptible to erratic insulin requirements due to rapid growth changes. Blood sugar control may become somewhat difficult. Body image, peer pressure and self-esteem become very important during this time. Plus, many children in early adolescence begin to challenge authority.

- Continue to educate the school and other caregivers on diabetes management
- Let your child make decisions regarding treatment options
- Begin to allow independent visits with your child’s healthcare team
- Closely monitor school performance and attendance
- Teach coping skills to enhance their ability to self-manage
- Begin to allow independent visits with your healthcare team
- Closely monitor school performance and attendance
- Teach coping skills to enhance their ability to self-manage
- Your child should be providing most of their own diabetes management with parental supervision when needed or when compliance is a concern
- Watch for signs of depression, anxiety, or eating disorders (these are very common when children are diagnosed with a chronic disease)

Later Adolescence (16-18 years old)
Adolescence is a time for autonomy and developing a sense of self.

Many adolescents experiment with risk-taking behaviors (not taking insulin, forgetting to check blood sugars, drinking or smoking). Adolescents with diabetes should be independent in all diabetes care, with assistance from caregivers when compliance is a concern.

- Parents should monitor for risk-taking behaviors
- Allow independent visits with their healthcare provider
- Teach them how to download information from their meters and pumps to monitor for patterns
- Discuss the transition process to an adult healthcare provider
- Discuss future goals and plans (ex: further education, jobs, insurance)
Mastering Self-Management: A guide for parents of young children and teens with type 1 diabetes

(Continued from page 15)

Parental involvement in diabetes is extremely important through all stages of your child’s development. As a parent, it is essential for you to understand what tasks your child can accomplish, when to lessen your involvement in your child’s diabetes care and when to increase it. Your child will be able to adjust to their diabetes, cope more successfully and be happier and healthier if you remain involved, helpful and supportive with their care. If you notice your child having a difficult time with these tasks, be sure to talk with your diabetes healthcare provider and consider asking for mental health support.

Dr. Sripriya Raman is a pediatric endocrinologist at Children’s Mercy Hospital in Kansas City, Missouri affiliated with the University of Missouri – Kansas City. She has been caring for children with type 1 diabetes for more than six years. She has a particular interest in preparing her patients and their families for a smooth transition into adult endocrinology. She has served as the president for the Heartland Chapter of the American Association of Clinical Endocrinologists (AACE). She continues to support AACE as an advisory board member and as a member of the Program Planning and Pediatric Endocrine Scientific Committees.

Heather Feingold is a licensed clinical social worker at Children’s Mercy Hospital and Clinics in Kansas City, Missouri as part of the Endocrine and Diabetes Section. She has experience in working with children, teenagers and families with coping and adjusting to diagnoses such as type 1 and type 2 diabetes and other endocrine disorders. She regularly facilitates supports groups and educational sessions for patients, families, and community partners.

Lara Simon is a licensed clinical social worker who has worked with the Endocrine and Diabetes Section of Children’s Mercy Hospital, in Kansas City, Missouri, for over 15 years. She obtained her master’s degree in social work from the University of Missouri-Columbia. She is also a Certified Diabetes Educator. She enjoys working with high-risk teenagers while helping them to make healthier life choices related to their diabetes.

TAKE CONTROL OF YOUR HEART DISEASE RISK.

Heart disease risk is a lot more complicated than it might seem. Factors such as age, gender, weight, blood pressure, family medical history and more all weigh into the equation. However, there’s no question that elevated blood fats are a major risk factor for cardiovascular disease.

The “Get To The Heart Of It” program now offers an interactive calculator to assess whether your LDL (bad) cholesterol levels put you at risk for heart disease.

Learn the key numbers you need to know and steps you can take for a healthier heart at www.get2theheartofit.com.
To improve the health of people living with diabetes

Boehringer Ingelheim and Eli Lilly and Company are committed to researching and developing innovative treatments that make a difference for people affected by diabetes.
Most people understand the importance of regular brushing, flossing and dentist visits to promote overall oral health and to treat dental problems in their initial stages. What many people don’t know is that if you have diabetes, these preventive actions can actually help you better manage your blood sugar and diabetes.

When diabetes is not properly controlled, the resulting high blood glucose (sugar) levels found in the saliva provide an ideal environment in the mouth for bacteria to thrive. These bacteria build up, causing plaque that irritates the gums and leads to chronic inflammation and infection in the mouth over time. As happens in people with diabetes, the infection can cause the blood sugar to rise higher. This makes diabetes even harder to manage because you are even more susceptible to infection (both in your mouth or systemically) and are less able to fight the bacteria invading the gums.

For those age 45 and older whose blood glucose levels are not well-controlled, the risk of developing severe gum disease is nearly triple that of those who do not have diabetes. Even in people who have not been diagnosed with diabetes, gum disease can make blood sugar difficult to control, and blood sugars left unchecked can lead to complications.

Plus, eating healthy foods that are part of your diabetes management plan can be more challenging with gum disease. Imagine eating an apple if you’re missing a few teeth and your gums are in pain. Taking care of your mouth will help you continue to eat healthy foods and have better control of your blood sugar.

Living with diabetes can be challenging, but keeping your mouth healthy does not have to be. Here are five tips to enhance your oral health:

• Keep your blood glucose in a healthy range. People with gum disease may have a harder time lowering their glucose levels and may need to change their diabetes care plan.

• Practice good home care:
  • Brush twice daily with fluoride toothpaste
  • Floss daily
  • Use a mouth rinse with fluoride
  • Drink water (fluoridated is best) instead of soda and other sugary drinks
  • Get regular dental checkups and be sure to tell your dentist you have diabetes.
Gum Disease Warning Signs

Like type 2 diabetes, gum disease is often silent, which means symptoms can be hard to detect until the disease is advanced.

The following is a list of warning signs that you need to take note of:

- Red, swollen, or tender gums
- Mouth pain
- Bleeding while brushing, flossing, or eating hard foods
- Receding gums
- Loose or separating teeth
- Mouth sores
- Persistent bad breath
- Changes in the way your teeth fit together when you bite or a change in the fit of partial dentures.

For more information about diabetes and dental disease, refer to the following resources:

The Mighty Mouth: http://www.themightymouth.org/ 

ANOTHER REASON FOR TREATING DIABETES-RELATED DENTAL DISEASE

Just this fall a study showed that if you have type 1 diabetes (the diabetes in which insulin production is lost due to your own antibodies acting against your pancreas), periodontal (gum) disease duration is an independent predictor of long-term progression of coronary artery calcium (CAC), an indicator of heart vessel disease.

Over an average of 6.1 years of follow-up in a research study, just under 500 patients with type 1 diabetes and just over 500 without diabetes were followed. The researchers saw no difference in the presence or duration of gum disease at the start of the study between individuals with diabetes versus those without diabetes (14.5 versus 13.4 percent, six versus nine years). And there was no significant relationship between the duration of periodontal disease and baseline CAC presence at the start of the study.

However, the duration of gum disease was significantly related to CAC progression in patients with type 1 diabetes, but not in those without diabetes as these study participants were followed over the next half-dozen years. The limitation of the study was that it relied on self reports from participants as to the presence of gum disease. But the progression in CAC was measured through specific x-ray procedures. Not determined was whether treating gum disease could help protect against developing coronary disease - certainly a question for future studies.

Dr. Scott Kennedy is Chief Medical Officer and Chief Operations Officer at Olympic Medical Center in Port Angeles, Washington. A family medicine physician by training, Dr. Kennedy has been in his position at Olympic Medical Center for more than 12 years. Dr. Kennedy serves on the board of the Washington Dental Service Foundation and is a staunch supporter of initiatives that support public health and prevention, including evidence-based medicine, CDC-recommended immunizations, and water fluoridation. Dr. Kennedy earned his medical degree from the University of Washington and completed his residency at Tacoma Family Medicine.

Eat a well-balanced diet that includes healthy snacks like:
- Low-fat cheese
- Fresh fruit
- Vegetables
- Nuts

If you smoke, do all you can to quit. Smoking worsens oral disease.
any of us are concerned about the possibility of developing Alzheimer’s disease or another type of dementia as we grow older. The prospect can be of particular concern for those who have witnessed a family member, friend or colleague undergo a devastating loss of thinking skills and memory or have been a caregiver to a loved one going through this ordeal.

And while the steady decline of brain function seen in these diseases cannot be avoided—Alzheimer’s disease is incurable and is now the sixth leading cause of death in the U.S. according to the CDC—there is one scenario in which a person may be able to reduce their risk of developing dementia: keeping blood sugar under control if you have diabetes.

Dementia is an overall term for diseases and conditions characterized by a decline in memory or other cognitive abilities that affect a person’s ability to function normally. It’s caused by damage to nerve cells in the brain called neurons. When neurons are damaged, they can no longer function normally and die, which in turn leads to changes in memory, behavior and the ability to think clearly.

Several research studies following large groups over many years have suggested an association between diabetes and dementia when the blood sugar is out of control, and recent studies support this finding.

Research results presented this fall at the European Association for the Study of Diabetes (EASD) produced evidence that high blood glucose levels increase the risk for dementia in individuals with type 2 diabetes (the diabetes that is the result of insulin not working as it should combined with less insulin produced over time). But the very good news was that better blood sugar control might just prevent such thinking and memory decline.

Study researchers followed approximately 350,000 people with type 2 diabetes (2DM) from the Swedish National Diabetes Registry between 2003 and 2012. The study participants did not have dementia at the start of the study period and were followed for an average period of almost five years. The participants were divided into seven groups based on individuals’ baseline HbA1c, a blood test that measures long-term control of blood sugar levels.

In examining the possible association between dementia and blood sugar control, researchers identified possible additional risk factors, complications and associated medical conditions, as well as medication use, to eliminate contributing factors that could impact the results related to just blood sugar control alone.

Study results suggested that there were no dementia risk levels at an HbA1c level of 6.7 percent, but that higher A1c levels in excess of 10 percent increased the rate of dementia from 23 percent to 77 percent. Thus, blood sugar control is a powerful protector.
Not surprisingly, dementia risk also increased with old age, increased diastolic blood pressure (the lower number on blood pressure measurement) and elevated low-density lipoprotein cholesterol (LDL cholesterol is the high-risk heart disease cholesterol). Being overweight or obese and being a smoker are additional risk factors.

Having had a stroke increased the risk for dementia by 43 percent, but the presence of atrial fibrillation (an irregularity of heart rhythm), or coronary heart disease (heart vessel disease) caused little risk increase. Also, those patients who developed microalbuminuria (moderately increased protein in the urine) or macroalbuminuria (a lot of increased protein in the urine) also had a higher risk for dementia than those without albuminuria.

Those who did not perform any daily physical activity versus those who did had a higher dementia risk, so exercise made a significant difference in protecting against cognitive problems.

And the use of blood pressure control medications and statin medication—a specific class of drugs that decrease blood cholesterol levels—also protected against the development of dementia.

What can you do to reduce your risk?
Keep your blood sugars under control. Talk with your diabetes healthcare team about your personal blood sugar targets, what is ideal and what would be acceptable. Discuss in detail specific steps that would help you reach those goals, ranging from changes in your daily physical activity level to changes in your meal intake choices and medication. Review your blood pressure control targets. Is your blood pressure at target goal? If not, what steps can be taken to reach that goal, such as medication? Also, is your blood cholesterol under control? These are all issues to examine.

What about other approaches?
There are studies suggesting that taking a low-dose aspirin every day may lower the risk of heart attacks for some people with diabetes—men over 50 and women over 60 years old with other risk factors such as high blood pressure or high cholesterol. Aspirin has been shown to help those with diabetes who have had a heart attack or a stroke or who have heart disease. But if you have not had a heart attack or a stroke, aspirin may not be as risk-free
and safe. You should ask your healthcare team whether you should take aspirin, as there is increased risk of bleeding with aspirin intake, especially as you age and have not had a vascular event. Even a dose of 81 milligrams (considered a low dose or “baby aspirin”) can be associated with a bleeding risk, such as a stomach ulcer. Benefits and risks have to be considered, with the objective of benefits clearly outweighing risk. See more at: http://www.diabetes.org/living-with-diabetes/treatment-and-care/medication/other-treatments/aspirin.html#sthash.dXQQndMp.dpuf

While the association between dementia and diabetes is clear, researchers still don’t fully understand the mechanism of how diabetes triggers dementia. Until that connection is understood, awareness of that link could help people realize further how important it is to manage their diabetes and help motivate them to do so to reduce their risk.

Dr. Dace Trence is Director of the Diabetes Care Center and Professor of Medicine at the University of Washington Medical Center in Seattle. She is also the University of Washington Endocrine Fellowship Program Director and Director of Endocrine Days, a medical education program for endocrinologists practicing in the Pacific Northwest. She is on the American College of Endocrinology Board of Trustees and chairs the CME Committee and is also chair of the AACE Publications Committee.

Everything you like about this magazine... and (much, much) more.

EmPowerYourHealth.org
EmPower Magazine’s online home.

The internet’s most comprehensive source for endocrine health information, written by endocrinology experts for you.
When starting the use of an insulin pump, it is common to spend many hours learning how to safely operate the device, program features and push buttons. Education is also needed on how to troubleshoot unexplained high blood glucose levels and pump malfunctions. Unfortunately, as time goes by, it may be difficult to recall these important skills if you have not had the opportunity to use them.

This article is a primer on navigating this type of insulin delivery after the pump start. Topics include what to do if your pump stops working, emergency supplies to keep on hand and tips for keeping infusion sites in good shape.

Insulin Pump Device Settings and Emergency Supplies

When the transition to insulin pump therapy is made for the first time or when the device is upgraded to a newer model, individualized settings must be programmed into the pump memory. The settings include the “basal” insulin, the amount of rapid-acting insulin delivered per hour between meals and overnight insulin, as well as the “bolus” insulin. Bolus insulin is described as the amount of the mealtime and correction insulin administered by the user several times per day, based on the individual’s food intake and pre-meal blood glucose level.

Users expect their pumps to efficiently deliver basal insulin 24 hours a day and mealtime and correction insulin as needed throughout the life of their insulin pump warranty period, usually four years.

It is easy to take for granted that these amazing little devices will work without a hitch. Regrettably, an insulin pump is like any piece of equipment: it can stop working without notice, often at the most inconvenient times. Since it might take a day or two for a replacement pump to arrive, an emergency insulin injection plan should be discussed with your healthcare provider and the necessary supplies should be in place in advance of needing them.

Emergency plans should include the following:

- Long-acting insulin (glargine or detemir) – either a new (unused) vial or insulin pen in the refrigerator; make sure it is not expired. This will replace the pump’s “basal” insulin delivery.
- Discuss with your healthcare provider how many units of long-acting insulin are needed each day until the new pump arrives. HINT: This is typically the 24-hour basal dose total.
- Rapid-acting insulin (lispro, aspart, or glulisine) will be taken at mealtime and to correct elevated blood glucose levels using your current insulin-to-carbohydrate ratio, insulin sensitivity factor and blood glucose target ranges.
- Syringes or pen needles

It is also recommended that you prepare for the unexpected by keeping a copy of the pump settings in a safe place. Device settings can be written down on a piece of paper and stored with pump supplies or in a wallet. Another strategy is to take a picture of the pump settings and store it in a smartphone. Pump manufacturers also provide a secure place to upload your pump settings in online patient...
portals. A password and user name are required to obtain access to the portals to protect your personal health information. Uploaded data from the pump’s memory can be shared with your healthcare provider to evaluate diabetes self care and to make medication adjustments.

**Infusion Set Health**

Infusion set and insulin pump manufacturers recommend changing infusion sets and sites every two to three days (48-72 hours). Frequent set changes can also reduce the risk of adverse events such as skin and site irritations or infections or thickening of the skin at the infusion site.

Lipohypertrophy is thickened, rubbery swelling of tissue that is sometimes soft, sometimes firm. Although the exact cause of lipohypertrophy is unclear, various local injection-related factors seem to be at play. The problem intensifies with infusion of insulin at the same site for three consecutive days. Therefore, having a site rotation strategy is an important part of any insulin pump treatment plan. Inspection of sites requires both looking at the skin and manual examination of the sites. Normal skin can be pinched tightly together, whereas overused injection sites cannot; it may be easier for your healthcare provider to examine sites when standing.

Individuals who experience more than one infusion set failure per month should seek assistance from their healthcare provider to determine what the cause might be. Understandably, infusion set issues can have a major impact on glucose control.

**Unexplained Hyperglycemia When Using an Insulin Pump**

People who use an insulin pump are also at greater risk of experiencing diabetic ketoacidosis (DKA) than people who give themselves injections. DKA occurs when the body does not have enough insulin to use glucose for energy. The body needs insulin to move glucose out of the bloodstream and into the cells, where it is used for energy. Without insulin, the body will use fat for energy. When fat is used for energy, the body produces ketones as a byproduct. High levels of ketones can make you feel ill.

DKA occurs because pumps do not use long-acting insulin. Pumps are usually filled with rapid-acting insulin (such as lispro, aspart or glulisine) that starts working in less than 15 minutes and lasts four to five hours. As a result, blood glucose levels can start rising very quickly and cause DKA if the pump malfunctions or if it is disconnected for more than five or six hours. DKA can also occur if there is problem with the infusion set: the small Teflon tube or stainless steel needle that is connected to the insulin pump that is used to deliver insulin can become clogged, kinked or dislodged.

Early signs of DKA include thirst, stomach pain, nausea and fruity odor of the breath. More severe signs are vomiting and difficulty breathing. If you are experiencing high blood glucose and these symptoms are present, check your urine for the presence of ketones using ketone test strips. If blood glucose and ketones are both elevated, it should be considered a serious medical problem and prompt medical attention is imperative. It should be noted that a serious illness or infection can also cause ketone and blood glucose levels to rise.

The bottom line to reduce the risk of DKA: if you have delivered more than one correction bolus and your glucose level is not coming down, further corrections doses should be taken the old-fashioned way with a syringe or insulin pen. The old infusion set needs to be replaced with a new one filled with fresh insulin.

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**Alison B. Evert** is a Diabetes Nutrition Educator and Coordinator of Diabetes Education Programs at the University of Washington Medical Center Endocrine & Diabetes Care Center in Seattle, WA. She is part of the Diabetes Care Center’s multi-disciplinary diabetes team. She also coordinates diabetes education classes in the primary care clinics in the Greater Seattle area-affiliated University of Washington Medical Center. In this role she works to translate evidence-based diabetes and nutrition research into practical information that can be used by people with diabetes. She writes and presents frequently about the role of nutrition therapy in diabetes.
TROUBLESHOOTING PUMP AND INFUSION SET PROBLEMS

If high blood glucose does not decrease after a correction bolus is delivered with the insulin pump it might be because:

- The insulin inside the pump is no longer good because it got too cold or too hot
- The insulin pump infusion set or tubing is kinked or clogged
- The infusion set is no longer delivering insulin because it has come out from under the skin.

If the blood glucose levels are over 250 mg/dL and the infusion set and pump appear to be working:

- Administer a correction bolus with the insulin pump
- Check your blood glucose again in one hour
- If blood glucose is going down, continue to check it a bit more often than usual for the rest of the day.

If blood glucose levels are still higher than 250 mg/dL a couple of hours after the correction bolus:

- Check your urine for ketones (or check your blood if you have a meter that measures ketones)

If blood glucose levels are rising or ketones are medium or large:

- Administer a correction dose of rapid-acting insulin by syringe, not by pump.
- Remove and dispose of your current infusion set, tubing and cartridge, using insulin from a new vial.
- Check your blood glucose every hour until it returns to normal.

Calculating Calories and Carbs During the Holiday (Continued from page 10)

According to research from the Calorie Control Council, the average American will consume more than 4,500 calories from the traditional holiday dinner with turkey and all the trimmings. And that doesn’t even account for other meals, snacks and parties.

Although the holiday season may seem like one endless eating and drinking marathon, a little bit of diligence can go a long way in helping you avoid overconsumption. Here are some common holiday food items and drinks along with their calorie counts to assist you with making educated choices.

<table>
<thead>
<tr>
<th>Food</th>
<th>Calories</th>
<th>Carbohydrates (grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buffalo wings, 6</td>
<td>300</td>
<td>12 grams</td>
</tr>
<tr>
<td>Hot artichoke dip, 1 serving (Not including crackers)</td>
<td>321</td>
<td>10 grams</td>
</tr>
<tr>
<td>Nachos (bean, cheese, 1 cup)</td>
<td>206</td>
<td>19 grams</td>
</tr>
<tr>
<td>Green bean casserole, 1 serving</td>
<td>161</td>
<td>17 grams</td>
</tr>
<tr>
<td>Mashed potatoes and gravy, 1 ¼ cup</td>
<td>443</td>
<td>43 grams</td>
</tr>
<tr>
<td>Sweet potatoes with marshmallows, one large scoop</td>
<td>609</td>
<td>131 grams</td>
</tr>
<tr>
<td>Pecan pie, 1 slice</td>
<td>503</td>
<td>64 grams</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beverage</th>
<th>Calories</th>
<th>Carbohydrates (grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumpkin Spice Frappucino®, 16 ounces</td>
<td>470</td>
<td>74</td>
</tr>
<tr>
<td>Cider, 12 ounces</td>
<td>150-200</td>
<td>12-27</td>
</tr>
<tr>
<td>Egg nog, 6 ounces</td>
<td>450</td>
<td>34</td>
</tr>
<tr>
<td>Hot buttered rum, 8 ounces</td>
<td>316</td>
<td>11</td>
</tr>
<tr>
<td>Kahlua and cream, 4 ounces</td>
<td>260</td>
<td>32</td>
</tr>
<tr>
<td>Peppermint hot chocolate, 6 ounces</td>
<td>203</td>
<td>32</td>
</tr>
<tr>
<td>Red wine, 4 ounces</td>
<td>100</td>
<td>4</td>
</tr>
<tr>
<td>White wine, 4 ounces</td>
<td>85-95</td>
<td>2-4</td>
</tr>
</tbody>
</table>
Have you been tempted to try chromium supplements to help control your diabetes? If so, you’re not alone. Many people with type 2 diabetes (which results from insulin not working as it should, added to by decreasing insulin production over time) have increased chromium supplement use in recent years. In 2002, sales of chromium supplements were estimated at $85 million; more recent estimates place this number closer to $100 million.

An essential trace element, chromium is needed by the body in minute concentrations to help process carbohydrates, protein and fat and has long been thought to improve the action of insulin: In clinical research conducted in 1957, brewer’s yeast was found to prevent an age-related decline in the ability of rats to maintain normal levels of sugar in their blood and chromium was identified as the active ingredient in brewer’s yeast. Since that discovery, a number of researchers have examined the effects of chromium supplements for type 2 diabetes and other ailments.

There is also considerable interest in whether supplemental chromium may help treat the pre-diabetes state. However, the research thus far is inconclusive. No large, randomized, controlled clinical trials testing this have been reported in the U.S., although a recent report this year from France suggested a possible positive effect.

The French researchers presented a meta-analysis of data (an examination of multiple previously published reports) looking at 875 total participants ranging in age from 30 to 83 years old, with eight to 24 weeks of follow-up. Four different doses of supplemental chromium preparations were tested in these studies.

Compared to preparations without chromium, preparations containing the supplement showed no effect in participants’ HbA1C (a blood test that reports an average level of blood sugar over the previous three months). However, brewer’s yeast formulation of chromium did show a decrease in fasting blood sugar of about 20 milligrams per deciliter (mg/dL) in the study, which is a significant reduction. Whether this effect can be seen over the long term or whether it is significant to diabetes or pre-diabetes remains unclear, as the longest study lasted only six months.

Another landmark study in China using very large doses of chromium (between 600 to 1,000 micrograms per day) appeared to make a substantial reduction in blood sugar control in study participants with diabetes. However, the problem with this particular study is that the study participants had a significant chromium deficiency at the beginning of the research period.

Other research on chromium has studied its possible effects on lowering blood cholesterol levels, aiding weight loss and promoting more muscle or lean body mass. For example, in some studies, chromium has decreased total and low-density lipoprotein (LDL or “bad”) cholesterol, as well as...
lowering levels of triglyceride (a type of blood fat). Additionally, increased levels of apoipoprotein A, a component of high-density-lipoprotein cholesterol known as HDL or the “good” cholesterol have been detected in those with atherosclerosis who have taken chromium.

Yet other studies have shown that people who were on beta-blockers, a class of medication used for blood pressure control as well to protect heart function when coronary vessel disease is present, raised their good cholesterol levels when taking chromium. But other similar studies have not showed the same benefit.

Some researchers think that chromium supplements benefit only people with poor nutrition or low chromium levels, suggesting that the problem in the research might be a failure to measure chromium levels at the beginning of these studies. Other researchers have said that diet changes could have made a difference in study results and that diet diaries could be beneficial. Unfortunately, these types of studies haven’t been conducted.

Then there’s the theory about chromium and weight loss: Does chromium help people shed pounds? Another meta-analysis suggests not. No firm evidence could be determined comparing different doses of chromium with placebo for weight loss, percentage of body fat composition, or change in waist circumference. Additionally, significant side effects were noted in this particular study, leading to some study participants dropping out of the studies.

And although chromium has been popular with body builders, and is frequently a component of sports nutrition supplements, little data supports that chromium can help gain strength or build muscle mass.

According to guidelines from the National Institute of Health Office of Dietary Supplements, an adequate daily chromium intake for men is 35 micrograms per day and 25 micrograms per day for women. Even with these modest requirements, an estimated 90 percent of American diets are low in chromium. Adult U.S. women on average take in about 23 to 29 micrograms of chromium per day from food, while adult men average 39 to 54 micrograms per day. The amount of chromium delivered by dietary intake depends on the amount the body absorbs, which can differ from person to person, as well as what is eaten with the chromium-containing food. Overall absorption of chromium from the gut is low, ranging from less than 0.4 percent to 2.5 percent of the amount entering the gut. However, chromium absorption can be increased by eating foods that are high in vitamin C along with the chromium-containing foods, such as fruits and vegetables and their juices, and when the B vitamin niacin is also high (such as in meats, poultry, fish and grain products).

Chromium can be found in a number of readily available foods including whole-grain products, broccoli, mushrooms and green beans, but most foods contain only small amounts (less than two micrograms per serving). Meat and some fruits, vegetables and spices, are reliably good sources as well, while foods high in sugars such as table sugar and fructose are low in chromium.

There are risk factors for a chromium deficiency. Diets high in simple sugars (defined as when sugars account for more than 35 percent of ingested calories) can increase chromium excretion through the urine. Infection, acute exercise, pregnancy and lactation, and stressful incidents (such as physical trauma) also increase chromium losses. And age by itself could result in a relative chromium deficiency, although this suggestion is controversial.

Side effects from ingesting too much chromium are mild and commonly include itching, skin flushing and stomach irritation. But fast, irregular heartbeats, liver abnormalities, even kidney damage have been reported with chromium intake. If you have liver or kidney problems, or anemia, do not take chromium without first talking to your physician and healthcare team.

If you already take chromium, don’t exceed doses of 400–800 micrograms (mcg) per day, and make sure you’re checking your blood glucose levels regularly. Because it can interact with some medicines, including beta-blockers, insulin, nicotinic acid (niacin), corticosteroids, ibuprofen and aspirin, it’s important to let your physician know if you do take chromium—or any other supplement for that matter. And report any possible side effects to your doctor.

Now that you’re armed with all of this information,
Can Chromium Supplements Help Control Diabetes?  
(Continued from page 28)

should you consider taking a chromium supplement to see if it helps with your blood sugar control? It’s an intriguing question, but more evidence is needed to prove the substance’s beneficial effects.

For additional information, visit: http://umm.edu/health/medical/altmed/supplement/chromium or http://lpi.oregonstate.edu/mic/minerals/chromium

Dr. Dace Trence is Director of the Diabetes Care Center and Professor of Medicine at the University of Washington Medical Center in Seattle. She is also the University of Washington Endocrine Fellowship Program Director and Director of Endocrine Days, a medical education program for endocrinologists practicing in the Pacific Northwest. She is on the American College of Endocrinology Board of Trustees and chairs the CME Committee and is also chair of the AACE Publications Committee.

You can become an active participant in protecting your well-being by visiting www.thyroidawareness.com.

The site features in-depth content about thyroid disease risk factors, symptoms and treatment options, as well as downloadable flyers about the range of thyroid conditions.

Coming Soon: Look for all-new content about thyroid disease on the website and in a special section of EmPower Magazine.

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