diaTribe®

research and product news for people with diabetes

in this issue

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from the editor

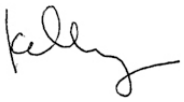
More than most conditions, diabetes is all about self-management. It demands constant care and attention, and for all the support out there – from our loved ones, healthcare providers, and others living with diabetes – so many of the really critical decisions are ours and ours alone, and no two patients are the same. That may explain why organizations like the ADA have made such a big deal of individualized care in the last few years. In fact, diabetes is itself made up primarily of two very different diseases – type 1 and type 2 – that differ in their causes, management, and experiences. I can't help but wonder whether that individualistic streak, so crucial to managing diabetes, is part of the reason that our community still hasn't formed a unified advocacy movement that can effect real, lasting change.

Don't just take my word for it – that was the assessment of the diabetes community offered by longtime HIV/AIDS activist Michael Manganiello at the recent Friends For Life Conference in Orlando. When we think of advocacy, we immediately think of getting the attention of politicians and regulators, often through petitions and writing letters. But that is only the first of the five steps that comprise Mr. Manganiello's Back to Basics approach (attention, knowledge and solutions, community, accountability, and leadership). Indeed, he emphasized that it's critical to come to places like FDA and NIH armed with knowledge and even ideas on potential solutions. Saying we need "better research" is one thing, but actually telling policy makers what that better research should be is quite another. We also need to ensure accountability, particularly from politicians who are always going to have more "important" things – winning reelection, mostly! – to distract them.

Aside from those three steps, however, what we may be missing the most is a unified community. Everyone may manage their disease differently, but we must find common ground (like feeling stigmatized, as we discuss in this issue's learning curve) to come together and demand real, specific change. We're also going to need leadership that coordinates action. We have plenty of leaders in diabetes, but much of the work is siloed, with specific organizational agendas that often don't overlap.

Perhaps most important of all, we need motivated people who don't want to sit on the sidelines – those who cannot stand the status quo and want to do something about it. Diabetes may be all about self-management, but this is the kind of issue that we must all manage together.

very best,



quotable quotes

"I had a patient with an A1c of 6.7%. She asked me if she can have a piece of chocolate. I said, 'Sure!' Within minutes, this was on Facebook. 'Battelino allows chocolate.' I had everyone asking me for chocolate. This is the power of social media."

–Dr. Tadej Battelino (University Children's Hospital, Ljubljana, Slovenia) on the power of social media at Keystone 2014.

"I am having so much fun, and the Bionic Pancreas is doing good!"

–Elise Cunha, the first six-year old to ever try the bionic pancreas, on her first days in the Clara Barton Camp outpatient study.

"Instead of telling people not to drink sugary beverages, [we're making] the 'default choice' to drink more water…We're using a strategy that emphasizes the positive changes rather than beating down on people for what they are doing wrongly."

– Dr. James Gavin (Emory University, Atlanta) at the ICE/ENDO conference on efforts by the Partnership for a Healthier America to positively influence food culture in America.

"If we're going to be relevant as an organization, we're not only going to help see these products succeed scientifically, but also that they succeed in the regulatory process and that they are available in an affordable way."

– Derek Rapp (CEO, JDRF) on the organization's mission to see therapies go from the research setting to commercialization, during his interview with diaTribe – which was his first interview as CEO with the diaTribe *team.*

fingersticks

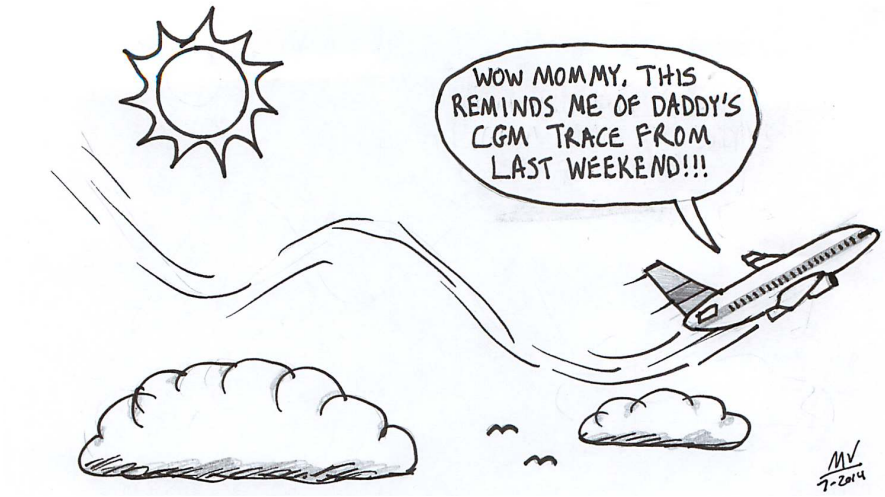
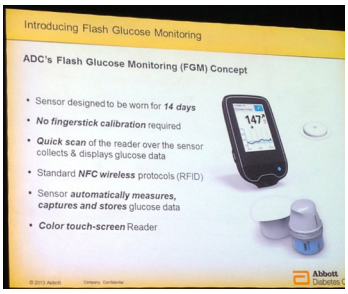


Illustration by Manu Venkat

new now next



Abbott will hold a symposium in September 15 at this year's EASD to introduce the Freestyle Libre to a wider audience.

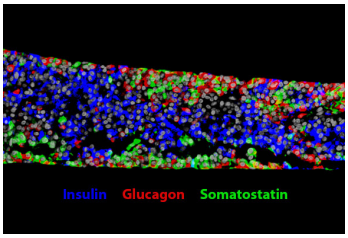
T1/2 Abbott's Novel Glucose Sensing Technology, the "Freestyle Libre," is Set To Release Later this Year

Twitter Summary: Free from fingersticks? Abbott names its first Flash Glucose Monitor the Freestyle Libre, set to launch in EU by end of 2014

On July 16, Abbott announced that its first flash glucose monitoring product will be named "Freestyle Libre," which means "the state of being free." That seems appropriate given that one of the device's major benefits is freedom from using fingersticks. Freestyle Libre is set to launch in Europe later this year, though no timeline is currently set for the U.S. Abbott plans to launch several models within the line of Flash Glucose Monitoring products in the future.

The novel glucose sensing technology was first presented at last year's EASD conference, the biggest annual European diabetes meeting globally – it's intended to overcome some of the limitations of both traditional blood glucose monitoring (pain, incomplete data) and current CGM devices (cost, alarm fatigue). Flash Glucose Monitoring consists of a glucose sensor worn under the skin (similar to current CGM) for 14 days. Connected to the sensor will be an on-body patch the size of a one-dollar coin. Users will take a dedicated touchscreen reader device, scan it over the patch, and in less than one second, will be able to see their real-time glucose value, a glucose trend arrow, and a trend graph showing the last eight hours of data. The sensor patch can be scanned through clothing, allowing for discretion. And unlike current CGM, FreeStyle Libre will be factory calibrated, meaning it will not need any fingerstick values.

Abbott will hold a symposium on September 15 at this year's EASD to introduce the Freestyle Libre to a wider audience. Anyone can register to watch this symposium online. Abbott is also currently enrolling participants for a Freestyle Libre trial in Europe. For any EU resident interested in enrolling, please read our trial watch. We cannot wait to try the technology and hope that it will eventually make its way to the U.S. *–AJW*



T1 Novel Stem-Cell Therapy for a Type 1 Diabetes Cure Seeks FDA Approval for Clinical Trials

Twitter Summary: Viacyte seeks approval from FDA for first human studies of novel encapsulation stem-cell therapy for #t1D

On July 17, Viacyte filed applications with the FDA to conduct the first human studies of VC-01, a novel cell replacement therapy for type 1 diabetes. The approach takes pancreatic progenitor (parent) cells and encases them in Viacyte's "Encaptra" device (to protect them from immune attack), which is roughly 1 x 3 inches in size. Encaptra is then implanted under the skin, allowing the cells to mature into insulin-producing beta cells. In theory, they will mature to regulate blood glucose in a similar (if not identical) manner to natural pancreatic cells. After implantation, these cells can be easily monitored and readily removed in case of an emergency.

Pending FDA approval of the applications, the early phase 1/2 clinical trial of VC-01 will enroll about 40 type 1 participants over a two-year period. The trial will primarily measure VC-01's effect on C-peptide, a biomarker for insulin pro-

duction. If all goes well, Viacyte hopes to bring this therapy to market by 2020. However, there are several major questions that Viacyte will need to answer from this early-stage study – Could VC-01 cause tumor growth? How glucose-sensitive will the implanted cells be? How many cells should be implanted for optimal results, and for how long can they be implanted? Will the cells also be able to affect glucagon levels?

While the start of clinical trials are still pending FDA approval, it's exciting to see a new therapy for type 1 diabetes in the works, as there have been a number of disappointments in the last few years on the cure front. The work of Viacyte has been supported largely by JDRF, and this makes it the first company projected to bring a cell replacement therapy for type 1 diabetes into human testing. *–AJW/AB*

T2 FDA Approves Jardiance as the Third SGLT-2 Inhibitor for Type 2 Diabetes in the US

Twitter summary: FDA approves Jardiance as third SGLT-2 inhibitor for #T2D, joins Invokana and Farxiga and potential future for #T1D

FDA approves Jardiance as the third SGLT-2 inhibitor for type 2 diabetes.

On August 1, the FDA announced approval of Boehringer Ingelheim (BI) and Lilly's SGLT-2 inhibitor Jardiance (empagliflozin). SGLT-2 inhibitors cause the kidneys to excrete excess glucose through the urine, which lowers A1c and can even cause patients to lose weight. After a delay related to manufacturing issues, Jardiance is now the third approved SGLT-2 inhibitor in the US, following Janssen's Invokana and AstraZeneca's Farxiga. Jardiance comes as an oral, once-daily tablet, to be taken as an addition to diet and exercise for adults with type 2 diabetes. Jardiance can either be taken alone or in combination with other drugs (e.g., DPP-4 inhibitors, metformin, etc.).

As with other SGLT-2 inhibitors, Jardiance's main side effects are genital tract infections (6% of people with type 2 diabetes on Jardiance developed a genital infection, compared to 2% of those on placebo). However, many experts say these infections are typically easily managed if they do occur. While SGLT-2 inhibitors are currently only approved for type 2 diabetes, several studies are also exploring the potential benefits for type 1, and some clinics already prescribe them "off-label" for people with type 1. We expect to see multiple SGLT-2 inhibitors approved for type 1 diabetes in the next few years. *-AJW*

T1 FDA approves three-month at-home trial of artificial pancreas

Twitter Summary: FDA approves three-month at home #artificialpancreas trial of DiAs system

On June 6, the FDA approved a three-month, at-home artificial pancreas study testing the University of Virginia (UVA)'s DiAs system. Participants will wear the system (a Dexcom CGM, Roche Accu-Chek insulin pump, and a cell phone with the DiAs algorithm) unsupervised over an 11-14 week period for 24 hours per day at home – this represents the longest such US trial of this type of automated insulin delivery device. The device monitors blood glucose (via CGM) and adjusts insulin automatically at all hours, though participants must still handle mealtime bolusing themselves (what some call a "hybrid closed-loop"). Editor-in-

Artificial pancreas systems have progressed enormously in the past two years - studies outside the hospital are the norma rather than the exception.

chief Kelly Close wrote a test drive earlier this year on her experience in the UVA overnight closed-loop trial with the DiAs system. The study is not yet recruiting participants, and we plan on following this research closely – please stay tuned for more information in trial watch.

Artificial pancreas systems have progressed enormously in the past two years – studies outside the hospital are the norm rather than the exception now, and it's only been two years since the first such study was reported at the Advanced Technologies and Treatments for Diabetes conference (ATTD) in 2012. Though there are still many questions related to automating insulin delivery (cost, number of devices to carry, whether an academic group will commercialize the devices, etc.), it's clear that they have enormous potential to improve the management of type 1 diabetes. *–AJW/AB*

T1/2 Recent Efforts from the ENDO Society and ADA Aim to Address Diabetes Care for Young Adults

Twitter summary: Growing up with #diabetes can be complicated. What Drs. Peters and Laffel recommend, and how it relates to a new ENDO toolkit

On July 29, the Endocrine Society released a toolkit to ease the transition from pediatric to adult diabetes care – a time that Dr. Lori Laffel (Joslin Diabetes Center) and Dr. Anne Peters (University of Southern California) say is related to higher rates of hospitalization, decreased satisfaction with care, and decreased healthcare provider visits. This toolkit provides educational resources and information checklists for both young adults and health care providers – including a "Provider Assessment of Patient Skill Set," "Self-Assessment of Worries, Concerns, or Burdens," and "Patient Fact Sheets" covering topics such as alcohol, sex and pregnancy, and college life with diabetes.

Diabetes is not a do-it-yourself condition at any age.

At ADA this June, Drs. Laffel and Peters spoke on the issue of transitioning to adult care (they had previously co-written a position statement on diabetes care for emerging adults with the ADA). According to Dr. Laffel, "Diabetes is not a do-it-yourself condition at any age." Whether it's a loved one, a healthcare provider, or friends and family, she emphasized the importance of keeping a supportive community around you. Some centers have seen success with full-time "transition coordinators" that can assess when a young adult is ready to transition, help schedule and reschedule missed appointments, locate an appropriate adult care provider, and provide a constant source of support throughout this transition.

Drs. Laffel and Peters also highlighted the need for young people to manage their diabetes independently – this means down to the last detail, including making their own appointments, attending hospital visits alone, ordering and picking up their own diabetes supplies, sending in requested data uploads from meters/CGM/pumps, and more. Knowing how to do these practical tasks can be key to a successful transition, a topic the toolkit also emphasizes. *-AJW/NL*

T1 Lexicon and JDRF Team Up to Test a Type 2 Diabetes Drug for Type 1

Twitter summary: Using a #T2D therapy for #T1D, Lexicon & JDRF partner up for phase 2 trial of SGLT-2/SGLT-1 dual inhibitor drug

On July 9, Lexicon announced a collaboration with JDRF on a phase 2 trial of the SGLT-1/SGLT-2 dual inhibitor LX4211, focusing on young adults with type 1 diabetes. LX4211 'inhibits' both SGLT-2 and SGLT-1 proteins, which are found in the kidney and gut, where they work to keep glucose in the body. By preventing both proteins from doing their job, the oral drug will cause excess glucose to leave the body through urine. SGLT inhibitors only work when blood glucose is high, which brings a low risk of hypoglycemia and makes them particularly useful after meals (because they stop working before blood glucose goes too low). By reducing insulin needs and getting rid of excess glucose in the urine – and thus excess calories – they can also contribute to weight loss.

The trial will enroll up to 76 people between the ages of 18 and 30 years with type 1 diabetes and a high A1c level above 9%. The trial's main goal is to reduce A1c, although researchers will also study "time in zone" using CGM (a more patient-friendly measure, in our view) and decreased insulin needs. A previous phase 2 trial in type 1 diabetes showed promising results; compared to a placebo, LX4211 reduced A1c, caused a 12% increase in time-in-zone, had weight loss benefits (~4 lbs. lost versus ~1 lb. gained on placebo), and reduced bolus insulin use by ~26% over just 4 weeks. There are many questions for future trials, especially safety in young patients, the risk of side effects in this drug class, and guidelines for reducing insulin. We are hopeful that many current type 2 therapies may come to market for type 1 diabetes in the next few years, including Victoza (liraglutide), Jardiance (empagliflozin), Invokana (canagliflozin), and Farxiga (dapagliflozin). *–AJW/NL*

T2 Novo Nordisk's GLP-1/insulin combination, Xultophy, Moves One Step Closer to Approval in Europe

Twitter Summary: Novo Nordisk's Xultophy gets positive recommendation in Europe, full approval to hopefully come soon!

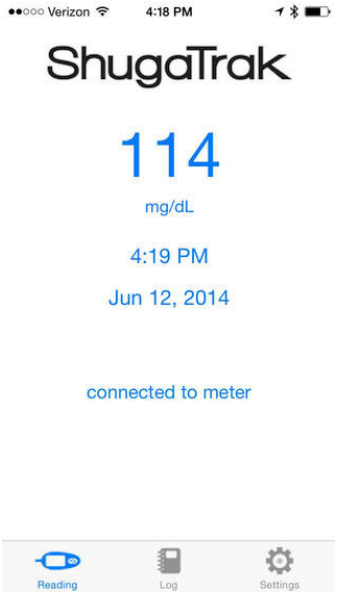
On July 25, Novo Nordisk announced that the European Medicines Agency had given a positive recommendation for IDegLira, a combination of Tresiba (long-acting basal insulin degludec) and Victoza (GLP-1 agonist liraglutide). While this announcement doesn't automatically secure IDegLira's European approval, it definitely brings it one step closer to market. If approved, the drug should be available in Europe within the first half of 2015 under the brand name Xultophy.

Xultophy will be a once-daily injection taken independently of mealtimes.

Xultophy will be a once-daily injection taken independently of mealtimes. The combination therapy merges the blood glucose lowering effects of using Tresiba or Victoza alone, while Victoza's weight loss advantages help counteract the weight gain typically seen with insulin. The promising trial results for Xultophy received a lot of attention from experts at last year's ADA conference. Recent results demonstrated that participants with type 2 already on insulin who took Xultophy achieved an average A1c reduction of 1.9%, compared to a 0.9% reduction from taking Tresiba alone. Xultophy was also better than Tresiba alone in terms of weight – people treated with Xultophy had a mean weight loss of 2.7 kg (6 lbs) compared to no change in those on Tresiba.

Despite impressive trial results, Xultophy has experienced difficulties in the US because of FDA concerns with the cardiovascular safety of Tresiba (the FDA rejected Tresiba in February 2013, further delaying the Xultophy combination). A

cardiovascular safety trial is currently underway for Tresiba, and data for analysis may be ready earlier than expected so it can hopefully be resubmitted to the FDA in the first half of 2015. Xultophy has to hold out for Tresiba's approval until it can be submitted to the FDA, but in the meantime its potential approval in Europe would be a huge win for patients there. *-AJW*



T1/2 ShugaTrak App Helps Parents Monitor Their Child's Diabetes

Twitter Summary: The ShugaTrak app sends updates on child's BGM to parents in real time – currently available for Android phones

At this year's Friends for Life Conference, we had the opportunity to use the ShugaTrak device and smartphone app, which provides a convenient way for families to stay updated on their loved one's diabetes management. Using a Bluetooth adaptor that plugs into the glucose meter, the ShugaTrak app automatically receives blood glucose readings and then sends that information to designated individuals (parents, caregivers, etc.) through texts or e-mails. Once the Bluetooth adaptor is plugged in to the meter, there are no extra steps needed when checking blood sugar levels in order for ShugaTrak to work.

ShugaTrak is only available for certain glucose meters and Android phones, though the team is working on releasing the app for iPhone soon (you can pre-order the iPhone app here). ShugaTrak is available in the U.S. – the Bluetooth adaptor costs $19.95 (plus $6.95 for shipping/handling), and the app itself costs $4.99 per month.

Hopefully, ShugaTrak can alleviate the stress that parents often experience when their child with diabetes is out of their care. Dexcom's Share is another promising device that will transmit glucose data (in this case, from a CGM) automatically to loved ones – as we've noted before, the G4 Platinum receiver will plug into the Dexcom Share docking cradle. The Share cradle (plugged into a power outlet) will both charge the receiver and transmit CGM data every five minutes to a nearby iPhone or iPod touch via Bluetooth. The Dexcom Share app on a nearby smartphone will receive the CGM data and send it up to the Internet. Once there, the data can be shared with up to five people. Dexcom's Share was submitted to the FDA in July 2013, and approval is expected very soon. – *AJW/NL*

T1/2 Will Upcoming Microsoft and Apple Smart Watches Monitor Glucose Levels?

Twitter Summary: Glucose info right on your wrist? Microsoft/Apple rumored smart watches might make that a reality

Other well-known technology companies like Apple and Microsoft may also enter the diabetes market.

We first wrote about Google's venture into the diabetes world in January, when the company announced plans to develop a smart contact lens to continuously monitor blood glucose levels. Most recently, this included a partnership with drug company Novartis to bring this product to market. Now, there are rumors that other well-known technology companies like Apple and Microsoft may also enter the diabetes market. Technology watchers have written that both companies plan on launching "smart watches" by the end of the year, which could potentially include glucose-monitoring technology. Allegedly, Apple's "iWatch" is awaiting FDA approval, though some reports speculate that the glucose-monitoring tech-

nology will not be ready for the first generation model of the iWatch. Meanwhile, Microsoft filed a patent for its own smart watch device, which cryptically mentions an "optical sensor" that measures an unspecified "biometric parameter."

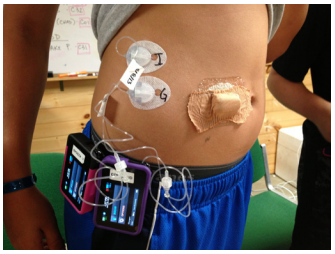
Both companies have reportedly hired many sensor experts, including some that have specialized in glucose monitoring. Neither Apple nor Microsoft has made an official statement confirming the details of these products or expected release dates, so there's not much to say beyond, "Stay tuned." Minimally invasive glucose monitoring has been a dream for many years, and it's great to see non-traditional medical device companies bringing their electronic and consumer expertise to the field. *–AJW*

T1/2 Tour de Cure Women's Series Empowers Women to Cycle for Diabetes

Twitter Summary: ADA's Tour de Cure Women Series events kickoff this fall on the west coast, help ride to stop #diabetes

A special note for Bay Area readers or anyone with friends here! On Saturday, September 13, and Sunday, October 26, the ADA will bring the Tour de Cure Women's Series to Santa Barbara and the San Francisco Bay Area. This is an offshoot of the Tour de Cure Series; the ADA will host its first Women's Series to foster confidence among women touched by diabetes. The event encourages women of all ages and abilities to take part (though men can also ride), and participants will include celebrities such as Robin Farina (President of the Women's Cycling Association and 2012 Olympic team member). For both locations, the registration fee is $15, with a fundraising minimum of $200. The Santa Barbara event offers 8, 20, 37, and 67-mile routes, and the San Francisco Bay Area event has 15, 36, and 66 mile options. For more information about registration, please see the individual registration pages for Santa Barbara and San Francisco Bay Area. Alternatively, for those interested in participating but who can't make it out to California, try locating a Tour de Cure event closer to home. *–SL*

test drive



T1 diaTribe Visits the "Bio-Panky" Kid Trials at Camp Joslin

by Alexander J. Wolf, Geoffrey Martello, and Adam Brown

Twitter summary: *Our visit to bionic pancreas camp – this time for its youngest users yet in 6-11 year olds!*

Short summary: *diaTribe visits summer camp at Camp Joslin, which doubles as the site of Drs. Damiano and Russell's bionic pancreas trial among 6-11 year olds. We take an insider look at the trial, speak with campers and counselors on the new technology, and look at the road ahead of the upcoming trials in 2015 and beyond.*

diaTribe is just back from its visit (or revisit, actually – see our coverage of last summer's camp trial) to Camp Joslin, a summer camp for boys with diabetes that doubles as the site of a Bionic Pancreas clinical trial. Compared to last summer's trial that fo-

cused on 12-20 year olds, this year the spotlight was on Joslin's youngest kids of ages 6-11. The closed loop device uses a Dexcom G4 CGM and a control algorithm running on an iPhone to automatically deliver insulin and glucagon from two Tandem t:slim pumps, without requiring pre-meal boluses. Led by Drs. Steven Russell and Edward Damiano, the Bionic Pancreas team operates out of the camp's infirmary – right between the dining hall and the cabins. The boys' trial had just kicked off the day before we arrived, and the same exact trial for girls, located down the road at Clara Barton Camp, had just wrapped up (see our test drive for six year old Elise Cunha's experience on the Bionic Pancreas). While the team enrolled a solid thirteen girls, it was only able to enroll six boys for the trial. There were fewer eligible boys than girls enrolled for the two-week camp session, yet the boys' camp was nearly full, which limited the team's ability to recruit additional boys. Nonetheless, the trial enrolled 19 of the desired 24 subjects, and preliminary data from the girls' trial suggests this will be more than enough to achieve statistically significant results. During the trials, as we saw during our visit, the kids could play lacrosse, throw frisbees, eat sloppy Joes, and do anything else the other campers could do, all while using the Bionic Pancreas.

An Insider Look at the Girls' Trial

Sitting down with Drs. Russell and Damiano, we got an insider look into the progress of the trials. From what we learned, the results from the girls' trial have been consistent with those of the previous teen and adult trials in terms of reduced mean blood glucose, less hypoglycemia, and increased time in range. While some participants occasionally ran high blood sugars, the team believes that these instances occurred mainly due to infusion set failures, not because of an inherent flaw in the device's algorithm or design. Regardless, it's quite the achievement that the same device can safely dose insulin and glucagon both to a six year old and a seventy-six year old, as well as to a person needing a total daily dose of insulin of only 15 units per day and another needing almost 10 times that much at ~145 units per day.

Dr. Russell also pointed out that this year they have been carefully documenting negative side effects such as nausea in the control groups in addition to the Bionic Pancreas groups. This has led to the interesting observation that there was no more nausea in the Bionic Pancreas group than the control group, despite the use of glucagon in the Bionic Pancreas. The device also newly features a "glucagon microburst" feature, where people have the option to dose themselves with small amounts of glucagon when they are about to disconnect from the system and think they could go low in the near future. Before swimming, for example, kids could have a microburst of glucagon to protect them from lows while the Bionic Pancreas was disconnected (it can't go in the water - it's part iPhone, after all). These glucagon microbursts may be more popular for adults; the kids typically preferred having a tasty Lorna Doone snack instead.

What did Campers and Counselors Have to Say?

Most memorable from the visit may have been the interaction with the kids themselves. We've already heard how exciting the Bionic Pancreas can be from Editor in Chief Kelly Close's own test drive with the device last year, and it was great to see that this enthusiasm carried over to its newest and youngest users. One boy in the trial, proud to show us his custom Tallygear.com belt with the Bionic Pancreas in place, was clearly pleased with his "bio panky," as some kids called it. Most touching were

some of his last words to us, including, "I'm going to cry on Friday when I have to give it up." This sentiment seemed universal, even with the drawbacks in its size or the need for daily infusion site changes (glucagon requires a new site each day). According to a counselor from Clara Barton Camp, "The girls loved being on it and were counting down the days when the real thing is released. They really didn't even notice wearing all the pumps, no matter the activity."

The Road Ahead – Updates on Bionic Pancreas Trials in 2015:
We also learned more about the team's plan for trials in 2015. In addition to the multi-center outpatient study on track to end May 2015, there are four additional studies lined up for next year:
A study in adults without diabetes testing the long-term effects of glucagon
A study on the effect of alcohol on the response to glucagon
A set point study to determine the effect of changing the blood glucose level target on the mean glucose, time < 60 mg/dl, and insulin and glucagon usage (wow!)
One more pediatric outpatient study next summer

These studies aim to address some of the remaining concerns with the Bionic Pancreas design and hope to set the device up for a successful pivotal trial in 2016, which will enroll hundreds of participants for several months on the device. This pivotal trial will have two endpoints: proving superiority in both mean blood glucose and hypoglycemia. The data from this trial will be submitted to the FDA for market approval. If approved, Dr. Russell believes that the device could significantly reduce the cost of diabetes, given it will greatly decrease the frequency of hospitalizations – the most expensive aspect of diabetes management.

GO BIONIC

Before the pivotal trial, the team plans to build its final design of the Bionic Pancreas, a single device with two chambers – one for insulin and one for glucagon – along with an embedded control algorithm and integrated CGM. For their final design to be a reality, the team is looking for further funding support to drive their efforts. To take the "Bionic Challenge" and be a part of this effort, please see the group's donation page – so far hundreds of families have helped. While this is certainly experimental research, we have been very glad to see this research drive forward lots of different efforts to automate insulin delivery and as a mission-driven organization, diaTribe is thrilled to watch the progress on this front in the diabetes community.

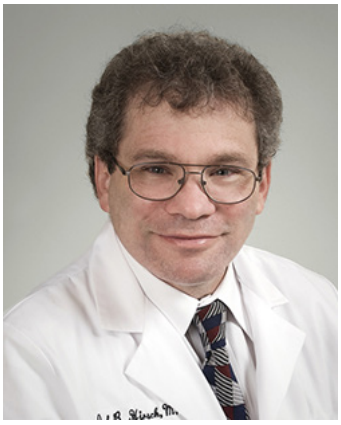
conference pearls

T1/2 Top Eight Tips for Managing Diabetes on an Affordable Budget

by Connor Keane and Alexander J. Wolf

Twitter summary: *Expert Dr. Irl Hirsch shares eight tips to optimizing #diabetes management on a budget*

Short summary: *At Keystone 2014, we heard from diabetes expert (and fellow type 1!) Dr. Irl Hirsch on optimizing diabetes management on a budget. To cut costs, he suggested that patients consider buying generic brands; buying from bulk suppliers for discount deals; looking for different prices at local pharmacies; using companies' financial assistance programs; reconsidering the type of insulin; and sensibly re-using supplies. He also shared several areas where cutting costs could*



Dr. Irl Hirsch gives us eight tips on managing diabetes on a budget.

be dangerous: prolonging infusion set life to more than three days, using "off-shore" blood glucose meters that may have issues with accuracy, reducing the frequency of blood glucose monitoring and fingersticks, and using NPH insulin without frequent testing.

1. **Generic brands provide a cheaper alternative.** Though "generic" insulin analogs are not yet available, many pills for type 2 diabetes are available as generic brands. For example, a bottle of 60 tablets of 500 mg branded Glucophage tablets costs about $80, while the same amount of generic metformin (same active ingredient) costs as little as $10.

2. **Bulk suppliers can offer great discount deals.** Essential supplies, including test strips, lancets, and syringes, can be bought in bulk for relatively low prices from suppliers such as ebay.com or Amazon.com. For example, a year's supply of Freestyle Lite strips from the store costs around $2,190 (cash price) when using four strips/day; buying from bulk suppliers can cut this cost to less than $1,000 per year. Insulin and other medications can also be bought in bulk for modest savings from online suppliers like ebay, Amazon, ADW Diabetes, Health Warehouse, or USMED, although it's important to be particularly careful about counterfeit products, making sure medications are within the expiration dates, and other issues with buying from third-party suppliers.

3. **Different vendors sell the same medications at lower prices.** Websites like goodrx.com provide a convenient way to find the cheapest pharmacy in your area. Prices vary substantially across pharmacies, so it is worth checking up on different pharmacies in your area. In general, stores like Walmart and Costco have the least expensive pharmacies. Reputable online pharmacies can also provide a cost effective way to get the medications you need. Insulin analogs like Lantus, typically costing in the range of $400 per bottle, can be found for as little as $150 per bottle online (these should always be shipped refrigerated!).

4. **Many pharmaceutical companies provide financial assistance programs.** Nearly all of the major suppliers of diabetes medications and supplies, which include Novo Nordisk, Eli Lilly, and Sanofi, among others, offer assistance programs to help those with and without insurance gain access to essential medications. Check the websites of the producers of your diabetes supplies or ask your healthcare provider to find information on applying to these programs.

There are now many different types of insulin available for both type 1 and type 2 diabetes.

5. **Different insulin types have varying cost/benefit ratios.** There are now many different types of insulin available for both type 1 and type 2 diabetes. Human insulins, such as Humulin or Novolin, can drastically lower the cost of diabetes treatment compared to analog insulins. Despite the sarcastic moniker assigned to NPH by some frustrated people with diabetes – "Not Particularly Helpful" – Dr. Hirsch explained that NPH is a possible alternative for those on a tight budget who are not as concerned about hypoglycemia. He also pointed out that analog insulins reduce hypoglycemia in type 1 diabetes by about 25%, but with the added cost of around $4,920 per year vs. using human insulin. If you have insurance, this may well be worth the cost, although we understand it can be a difficult expense for those without coverage.

Some people choose to wear their CGM sensors past the recommended dat of seven days and see no drop in accuracy or reliability.

6. **Some supplies can be reused.** This is one tip to be extra careful with, but reusing or extending supplies can help stretch their lifetime of use as far as they are needed. For example, some people choose to wear their CGM sensors past the recommended date of seven days and see no drop in accuracy or reliability. Lancets are another item that patients typically reuse (instead of using a new lancet for each fingerstick). This is of course dependent on your individual situation and comfort level.

7. **There are "bad places" to try to save money that can be dangerous to your health.** Dr. Hirsch highlighted several "bad places" to try to cut back on spending: prolonging infusion set life to more than three days, using "off-shore" blood glucose meters that may have issues with accuracy, reducing the frequency of blood glucose monitoring and fingersticks, or using NPH insulin without frequent testing to prevent hypoglycemia.

8. **Diligently monitoring and managing blood glucose can help prevent the major costs of hypoglycemia.** Well-managed blood glucose may prevent a whole host of potentially expensive complications. Severe hypoglycemic events are also costly, with an average cost of $17,564 for an inpatient admission and $1,387 for an emergency department visit. As with anything, prevention is the surest way to avoid dangerous or costly situations. Multiple management strategies exist, so please discuss what strategy works best for your management and your budget with your health care provider. Also, check out our Patient Guide to Individualizing Therapy for advice on how to discuss your diabetes plan with your health care provider, and read last issue's Adam's Corner on four game-changing strategies for improving blood glucose levels, which are almost all doable on a tight budget.

diaTribe dialogue

David Panzirer (left) and Dana Ball (right) are the forces behind the influential HCT and T1D Exchange.

T1 What can diabetes advocates learn from the successes of the HIV/AIDs movement?

by Adam Brown, Hannah Deming, Nancy Liu, and Kelly Close

twitter summary: *Dana Ball of @T1DExchange delves into his past as an HIV/AIDS advocate and gives insight on what people in #diabetes can learn*

short summary: *We had a wide-ranging interview with two of the pioneers of the Helmsley Charitable Trust's (HCT) Type 1 Diabetes (T1D) program (which gives $50 million a year to type 1 research, treatment, and services): HCT trustee David Panzirer and T1D Exchange CEO Dana Ball. In part five of our interview, Dana delves into his impressive work as a patient advocate in the HIV/AIDS campaign and David and Dana share what we in diabetes can do to become better advocates.*

Part 1. How The Helmsley Charitable Trust became one of the most important players in diabetes, and the funding needs and challenges in type 1

Part 2. The Future of the Type 1 Diabetes Field – what challenges and promises lie

ahead?

Part 3. Debates in Diabetes: Technology, Debates, and the "Cure"

Part 4. The T1D Exchange: A story of David and Dana's drive to accelerate innovative type 1 diabetes research.

Part 5. What can diabetes advocates learn from successes of the HIV/AIDs movement?

"From a very early age, I saw windows and not wall. I think this is what makes me different."

KELLY CLOSE: Dana, you have had an amazing career in advocacy that started with the AIDS movement. Can you tell us more about that?

DANA BALL: I grew up in poverty in a highly dysfunctional family in southern Maine, where no one had a college education and most people did not do well. But somehow, I knew I was different and I knew by the time I was six or seven that I had to get out of that family because I saw the world in a very different way.

And so from a very early age, I saw windows and not walls. I think this is what makes me different – it served me well in the HIV/AIDS era and in type 1 diabetes with the Exchange. It's because of this, I see opportunities and I see solutions. That started as a small child. I left my family when I was 14.

Fast forward. I was 23 years old and I had a nice life in southern New Hampshire. I will never forget the day a friend of mine said, "Have you read this?" and handed me a Newsweek magazine. It was about HIV. I put down that magazine and I thought, "I must have this virus. I will be dead in a few years. You can't test for it and there's nothing you can do." And the whole world changed. And so I did what everyone else does: I became a patient advocate.

Fast forward to 1990. In seven years, some of my close friends had died and many were HIV-positive and getting sick. Research was moving forward. A lot of the ACT UP community was out demanding solutions, fighting for rights, fighting for access to whatever therapies existed.

Then in 1996, the cocktail came and it was remarkable. This was just 13 years from 1983 to 1996, from an unknown disease to the cocktail going into the patient population. These beautiful young people were dying. They got very thin and it was a horrible death. What was remarkable was when the cocktail came to market, these people started gaining weight and it all went away.

"If I had to choose today between HIV and type 1 diabetes, I would choose HIV..."

ADAM BROWN: It's like when insulin came out in 1922...

DANA: It just stopped, right? And it's unbelievable to think in 13 years, we went from a potential pandemic to a controlled chronic disease and most of those people are doing well today. I say this whenever I talk to someone, "If I had to choose today between HIV and type 1 diabetes, I would choose HIV because it's two pills at bed time and you can live your life, no testing, monitoring blood sugars, or dosing insulin 24/7/365."

KELLY: How do you look back at being really involved in advocacy? How easy or hard was it to be raising money, given the discrimination and the stigma?

"Whether it's type 1 diabetes, HIV, or any other disease, there's the same psychological process that people go through and there are stigmas."

DANA: Whether it's type 1 diabetes, HIV, or any other disease, there's the same psychological process that people go through and there are stigmas. There's the initial shock of the diagnosis and then it's somehow trying to learn everything you can about how you're going to deal with it. You eventually get through the process to acceptance. You manage disease.

I think you have to really appreciate that the person who gets a disease is still that person, whether you're a professional runner or a pianist or an engineer. You just also happen to have HIV or cancer or type 1 diabetes and you learn to accept it. I think most people get to acceptance, but you also have to have hope – I think hope is part of medicine. It helps keep you going. It gives you the ability on those down days to hopefully find a place that says, "There are people working on this problem and I can be part of the solution."

KELLY: What do you think that all of us as diabetes advocates can learn from the HIV/AIDS movement?

DANA: With HIV, it's easy to romanticize about something that happened a long time ago. I think it was a once-in-a-lifetime phenomenon. The gay pride movement was just starting, but growing quickly. The community was really starting to come together and there was more acceptance and less fear. It was an important time in the history of the gay community. The disease came and they got really mad. This disease came and started killing them at a critical time when suddenly they thought the future was very bright. They were well-educated, they were successful people, and they got really angry and they didn't have to worry about family constraints; there were no children and they were freer to get involved and demand action. I think getting involved and demanding action is the common thread for diabetes advocates. Type 1 diabetes can't be a spectator disease.

"The world has changed a lot. I think it was about survival as a community and the disease became the mechanism to activate the community."

KELLY: So was the AIDS movement just unique? Or are there any lessons to be learned that we can apply to diabetes? People say to me, "Why aren't you guys marching on Washington?" In reality, it's a lot tougher.

DANA: It really was a unique situation. I mean, if it happened a decade later, I don't think there would have been as big a response. It was just the perfect storm: acceptance was slowly increasing and the gay community saw that this was going to push them back in the closet. They said, "This is not okay. We need to deal with this and no one is going to do this but us." With diabetes, there are other people that kind of do things for the community. I'm afraid our constituents may think advocacy is someone else's job. The world has changed a lot. I think it was about survival as a community and the disease became the mechanism to activate the community.

KELLY: I almost think that there's that urgency happening in diabetes. People are dying, and we have government institutions that think diabetes is not a dangerous disease. It is a dangerous disease, not exactly in the same way, but maybe there are some parallels. If we need some urgency, perhaps it makes sense to share data from the T1D Exchange on things like death from severe hypoglycemia.

DANA: I don't think that the severe hypoglycemia death data is enough alone. You can't compare HIV/AIDS and death without therapy to anything, including diabetes. It's impossible. With AIDS, it was about a community going backwards. It was also

an important time in the history of the gay community; Rock Hudson and celebrities had the virus and they suddenly came out. The government didn't care about this population. The country didn't care about the population. No one was helping them, so they lit the world on fire. We were relentless about getting drugs moving forward, getting the companies involved, and getting the NIH involved to support the studies and test the therapies.

DAVID PANZIRER: I agree that there isn't a sense of urgency amongst those with type 1 diabetes. It seems like those with the sense of urgency are the parents of children living with type 1. The fact is we need to do more about the perception that type 1 is a safe and managed disease – because it is not. We have a large population of people who have type 1 diabetes who are no longer engaged in their own disease. I can't tell you how many adults with type 1 say they were told there would be a cure in five years. This kind of hype has caused people to tune things out, and, in my opinion, this makes it worse. A lot of people just do what they do to get by, paying very little attention to new tools and devices that could make their lives easier. We need to figure out how to reengage these people and get them to try a pump or CGM or smart pen, which will ultimately drive more dollars to fund more innovative solutions.

"The fact is we need to do more about the perception that type 1 is a safe and managed disease - because it is not."

KELLY: If you had the power, how would you change diabetes advocacy as you see it today?

DANA: One of the most important components of the successful HIV/AIDS effort was that everyone was on the same team. There was one message, and there was a leading group that was highly organized, highly educated, highly strategic, and highly effective. Contrast that with diabetes – two different primary public charities. JDRF is handling type 1 and ADA is predominately working on type 2.

None of us are surprised when we hear of the type 1 diagnosis and people say, "Oh, so you just have to stop eating sugar?" This country has failed at educating our citizens on what diabetes really is – there is an acute chronic form of diabetes and a chronic form of diabetes. And that's really where it starts. If I was king of the world, I would bring everyone together and create one big national campaign that says, "This is diabetes." I would educate people about the differences between type 1 and type 2 and about the importance of testing and learning about prediabetes.

What if we talked about blood sugars? What if every single person knew what their blood sugar was? I think I know when I'm going a little bit low even though I don't have diabetes. I'm shaky, I'm cranky, my head's foggy, I don't write as well, I can't work as fast, and I don't feel good. And if I eat too much sugar, I know I'm shaky and I'm miserable and I'm going to rip your head off. What if the community could think of a different story? What if everyone wore a CGM? You'd actually get to know what happens with your body. That's why I'm such a big supporter of CGM. It's almost impossible to have a conversation with someone about something they can't see.

"What if the community could think of a different story? What if everyone wore a CGM?"

KELLY: What about stigma? I think parents often have guilt with type 1 diabetes: "I'm not doing nearly enough."

DANA: In HIV/AIDS we had a lot of guilt and shame; patient guilt, survivor guilt, and even family guilt. Shame in type 1 may be that "my A1c is not good enough." We have all these measures and we have all these metrics that we're supposed to meet. I worry that often in type 1 diabetes, once the shock is over and the management starts,

"This is Morgan's disease and our job is to help her and equip her with all the knowledge so that when she leaves our house she can make the right decisions."

the person can disappear and it becomes about managing their diabetes. Whether it's a spouse or a parent or a caregiver or friends, suddenly it's "Kelly, what's your number? Kelly, where's your meter? Kelly, what are you eating?" And I see it with parents and kids. When the kid walks through the door, the first thing isn't, "How was your day, honey? How was sports and how was everything?" You're not my child anymore; you're my diabetic child, "Did you test? What was your blood sugar?"

DAVID: As a parent, I think finding the balance of helping and being too involved is the hardest thing. As my wife Karen told me, "This is Morgan's disease and our job is to help her and equip her with all of the knowledge so that when she leaves our house she can make the right decisions." This concept is very tough to accept from a parent perspective, but as with any child, they take their cues from those closest to them. If I set a good example for my children by taking care of myself – by working out, eating right, etc. – the chances increase that my children will do the same.

To learn more about diabetes stigma, please read our learning curve on a new 5,000-patient study conducted by dQ&A.

To learn more about our thoughts on what would make an effective diabetes advocacy movement, please read this issue's letter from the editor from Kelly Close.

[Disclosure: diaTribe is supported in part by a generous grant from the Helmsley Charitable Trust.]

learning curve

T1/2 The Numbers of Shame and Blame: How Stigma Affects Patients and Diabetes Management

by Alexander J. Wolf and Nancy Liu

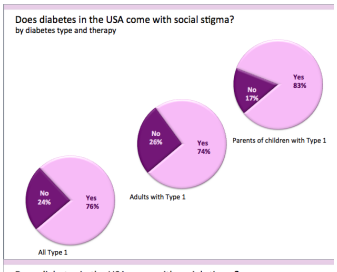
Twitter summary: *What's the impact of #dstigma on people w/ #diabetes? A survey of 5,000 patients finds stigma is real 4 majority+impacts management*

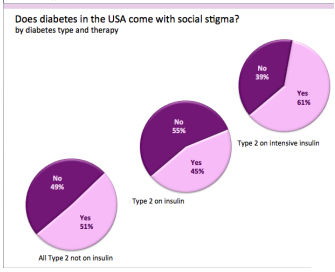
Short summary: *In a survey of over 5,000 people with type 1 and type 2 diabetes, the market research company dQ&A found that stigma affects a majority of patients. Find out which groups of people feel the most stigmatized, the feelings and experiences of stigma, and how it can affect the ability of people to manage their care.*

Several therapies exist for coping with diabetes distress; people need to find the one that works for them.

Does diabetes come with a social stigma? For many type 1 or type 2 patients, the unfortunate answer is "yes." Arguably, only a few diseases carry the same feelings of shame and blame as diabetes, and these negative emotions can affect the way people view their disease and approach their management. And yet, for such an important topic, there has been little research done to understand the matter. Recently, the market research company dQ&A ("Diabetes Questions and Answers") asked patients how stigma affects their diabetes management. The results were presented at ADA and at this year's Friends for Life conference. dQ&A surveyed 5,410 people with diabetes (~30% with type 1 and ~70% with type 2) – many of them readers of diaTribe – and the study results were eye opening.

Does diabetes come with social stigma? Social stigma is described as a set of negative beliefs or a mark of disapproval that society has for a certain group or dis-

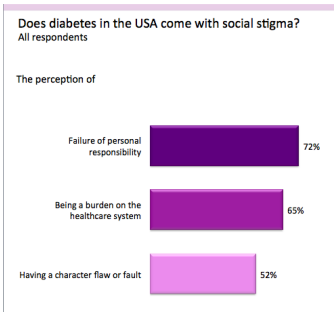




ease. The study affirmed what many people touched by diabetes have said for years: Stigma is real, and it affects the majority of people living with diabetes.

Overall, type 1 patients reported experiencing more stigma than people with type 2. Parents of children with type 1 diabetes reported the most stigma of all, and stigma tended to increase with more intense or visible management..

- 76% of people with type 1 said they felt stigmatized, compared to 52% of people with type 2.
- 83% of parents of children with type 1 reported feeling stigmatized, much higher than the 74% for type 1 adults. This may seem surprising, as many parents reported feeling blamed for "causing" their child's diabetes – a major example of public misperceptions about diabetes.
- 61% of people with type 2 diabetes on intensive insulin therapies (i.e., using multiple daily injections or an insulin pump) reported feeling stigmatized, compared to just 51% of people taking pills only. The finding that stigma increased with more intensive therapy may be due in part to the therapy's more visible nature: fingersticks, shots, CGMs, and pumps are all part of the mix, though the public may not fully understand they are important for proper care.



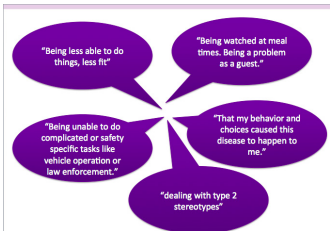
What forms of stigma do people with diabetes face, and what feelings have they experienced? Of those who responded that diabetes does come with a stigma, most perceived a sense of failure of personal responsibility. Many respondents also felt that diabetes was perceived as a burden on the healthcare system or diabetes was seen as a character flaw. These perceptions can in turn lead people to feel "guilt, shame, embarrassment, isolation or blame."

The media certainly play a role in these perceptions: For example, a recent New York Times article blamed rising healthcare costs in part on the price of diabetes innovation, with a particular focus on patients who buy unnecessary features for their devices.

Many people also expressed frustration that society perceived diabetes as not a big deal, that it's something that can be completely managed by lifestyle choices, or that individuals were at blame for causing their disease. This stigma applied to both type 1 and type 2 patients. Type 1, of course, has no relationship to lifestyle choices, and type 2 is heavily influenced by genetics, societal risk factors, and aging as well as lifestyle factors.

How are the lives of people with diabetes affected by other people's perceptions? An important takeaway from this study was not only that people with diabetes feel stigmatized, but also that this stigma affects their personal relationships and disease management.

What does this all mean? The survey results indicate the need for more education and awareness in the public about diabetes and the challenges of disease management. Many testimonials from patients demonstrated the frustrations of dealing with the many misconceptions the public has about diabetes, from not understanding the differences between type 1 and type 2, thinking management should be easy, or that individuals should blamed for having the disease. However, there is reason to believe that these changes can happen. Diabetes stigma has diminished over time from the days where kids with type 1 diabetes couldn't attend summer camps, go on field trips,



or were denied certain foods, and adults feared losing their jobs and desperately tried to hide their condition. With these gains in mind, we can think of stigma as an evolving story – where one day it will no longer be yet another challenge to improving management and living a happier and healthier life.

For more information on diabetes stigma, please see the full stigma poster presented at ADA at diaTribe.org/stigmaposter and the #dstigma conversation on Twitter. And if you want to share your story with us about how stigma has impacted your life, please email us and let us know about your experiences.

[Disclosure: diaTribe is supported in part by donations from participants in dQ&A surveys.]

SUM musings

T1/2 Making Sense of Medicare, CGMs, and Why It Matters

by Kerri Sparling

Twitter summary: *Why #MedicareCoverCGM is critical – support coverage & reimbursement of CGMs for the elderly*

Short summary: *Medicare does not cover CGM for those over 65, and this means that many people successfully using CGM are suddenly taken off this life-enhancing technology. The issue is especially critical because elderly patients are at the highest risk for severe hypoglycemia, and CGM can help avoid these events. Why we can't let this happen and what you can do about it – sign a petition and send letters to your congressional representatives to advocate for Medicare CGM coverage.*

I've used a Dexcom CGM (from the three-day STS system to the G4 Platinum) since 2006, and the positive influence it has had on my diabetes management and overall quality of life is undeniable. During my pregnancy, my CGM helped protect me from the intense and often symptom-free lows of the first trimester. When I travel on my own, my CGM is the safety net on my bedside table, ready to alarm should my blood sugar go out of range while I'm sleeping. But as it stands now, Medicare will not cover CGM for anyone.

Why should I care that Medicare doesn't cover continuous glucose monitoring?

Whether you are a senior with diabetes, a new adult with diabetes, or the parent of a child with diabetes, this issue matters because diabetes doesn't disappear at age 65. If your goal is to live a long and healthy life, this issue matters because it helps ensure your safety and wellbeing as you age.

Why are CGMs important?

Lynn Wickwire, Consumer Advocate at the Joslin Diabetes Center and a Joslin 50 Year Medalist, was diagnosed with type 1 at the age of four-and-a-half and will mark his 70th year with the disease in the coming months. As he says, "I have been on a CGM for probably ten years, dating from the first time Abbott came out with their

CGMs are important for people with diabetes because they provide a crucial and much-appreciated safety net.

trials for the Navigator. Prior to going on the Navigator, my wife was having to give me glucagon almost once a month or every other month because of [hypoglycemia] events when I was unconscious or unable to function. My quality of life - and my wife's and children's - improved immeasurably because of the CGM. There was no longer the worry that I would end up in the hospital because of an accident or worse. Since going on the CGM, my wife has not had to give me glucagon once because of a low blood glucose."

Low blood sugars can be crippling and terrifying in both their immediacy and lasting impact, with the threat multiplied if you experience hypoglycemia unawareness. Even the best, tightest, and most well-controlled diabetes still comes with the threat of lows or highs. This is why CGMs are important for people with diabetes because they provide a crucial and much-appreciated safety net for people with diabetes and their families.

If I'm not on Medicare, how does this affect me?

What good is a CGM if you can't afford it? Technology is amazing and life-saving, but it's expensive, and the cost can be highly prohibitive for patients. In order for patients to be able to get their hands on a CGM, insurance companies need to start reimbursing for it. The trouble is, the Centers for Medicaid & Medicare Services (CMS) will not pay for CGMs. This is a problem because even if you aren't on Medicare, private insurance companies often look to Medicare to determine what is, and isn't, medically necessary.

So what's the trickle-down, in terms of the artificial pancreas? If CMS won't cover a CGM, it definitely won't cover a CGM/pump closed loop system. If CMS covers a CGM, that helps pave the way for coverage for upcoming artificial pancreas systems.

What can I do right this second?

The JDRF has taken the lead on creating a petition and it takes all of 30 seconds to sign (maybe a full minute if you go the extra mile of sharing it with your circles). The petition is titled "Tell Medicare to Cover Continuous Glucose Monitors for People with Diabetes" and by signing, you are adding your voice to the thousands of people who think this issue is important.

You can share your personal story as to how and why continuous glucose monitoring is important to your diabetes care.

Also, you can share your personal story as to how and why continuous glucose monitoring is important to your diabetes care. I know it can sound self-serving, but real stories from real people matter when it comes to making issues personal. You can use the #MedicareCoverCGM hashtag to help thread these stories through social media like Facebook and Twitter.

Diabetes will be part of my life when I turn 80, but by investing in my future now, my good health and independence can be as lifelong as diabetes. It's not a matter of wanting the newest and shiniest diabetes toy; it's about staying as healthy I can for as long as I can.

trial watch

Will an experimental drug improve blood glucose and body weight?

T2 **Effects of Canagliflozin on Renal and Cardiovascular Outcomes (CREDENCE)**

ClinicalTrials.gov Identifier: NCT02065791

http://clinicaltrials.gov/ct2/show/record/NCT02065791

Johnson & Johnson/Janssen is researching the effects of Invokana (canagliflozin) to determine its effects on kidney and heart health in patients with type 2 diabetes with stage two or three chronic kidney disease and macroalbuminuria (protein in the urine). Invokana is an SGLT-2 inhibitor, which works to lower blood glucose by excreting excess glucose through urine. Treatment is a once-daily pill taken over the course of up to 66 months. Participants should be over 29 years old and have type 2 diabetes with an A1c between 6.5% and 10.5%, among other criteria. The study will enroll around 3,600 subjects at hundred s of sites in the United States and Canada. Interested parties should visit the trial website to determine eligibility. More information can be located at ClinicalTrials.gov or by contacting JNJ.CT@sylogent.com. *– BH*

Can a type 2 diabetes drug work for type 1?

T1 **Imatinib Treatment on Recent Onset Type 1 Diabetes**

ClinicalTrials.gov Identifier: NCT01781975

http://clinicaltrials.gov/ct2/show/NCT01781975

Type 1 diabetes stems from autoimmune destruction of beta cells, and many therapies are under investigation to stop or reverse this process. The cancer drug imantinib (Gleevec) is being tested by the University of California, San Francisco as a type 1 diabetes treatment. The belief is that Gleevec, a tyrosine kinase inhibitor, may be able to preserve beta cell function in patients recently diagnosed with diabetes. The study will assess insulin production, immune system function, and other health factors over a two-year course of treatment. Potential participants must be over 18, have had type 1 diabetes diagnosed in the past 100 days, and must agree to use birth control for the duration of the study, among other requirements. The study is located in the United States. To learn more, visit ClinicalTrial.gov or email sgitelma@peds.ucsf.edu and jbluest@diabetes.ucsf.edu. *-BH*