

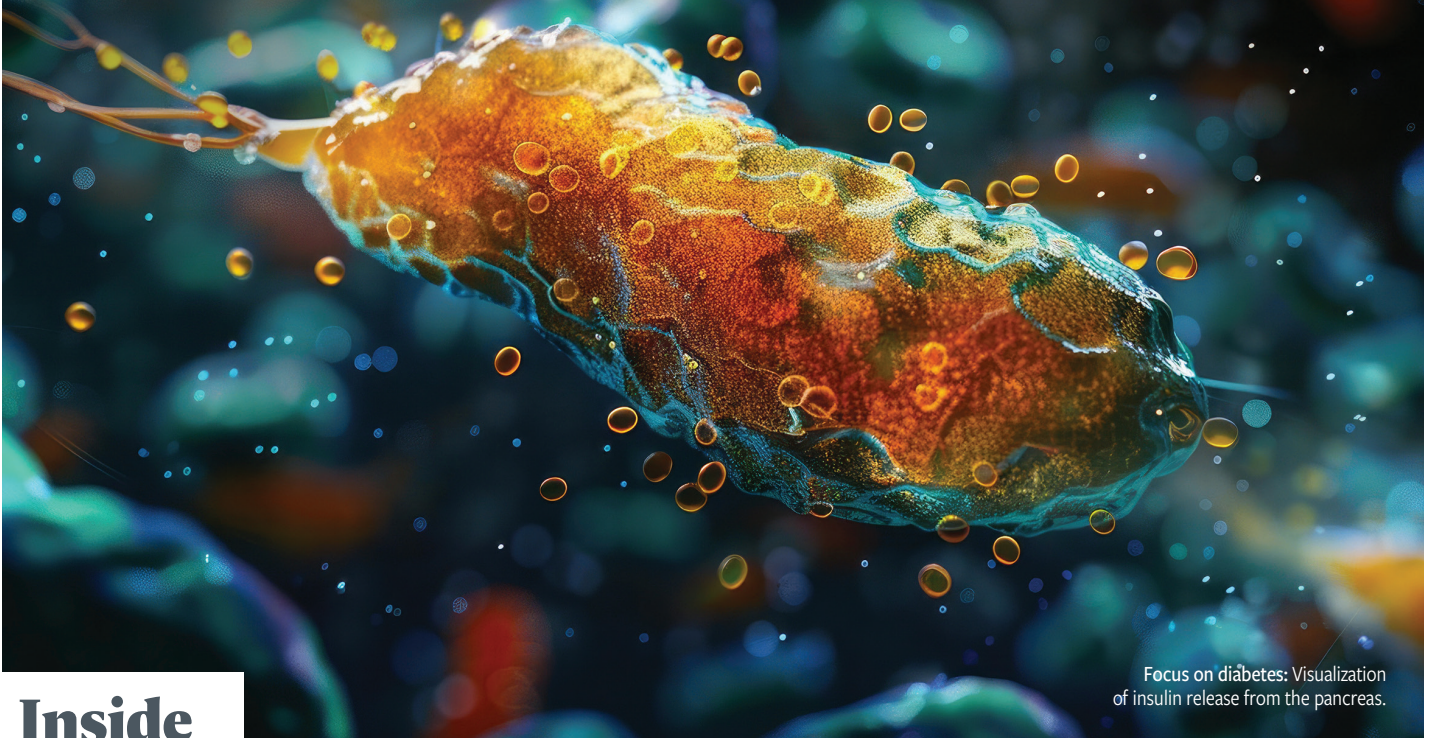
Patient Care[®]

PRESENTED BY

Medical Economics

DIABETES

**Focus on screening, treatment
and management**



Focus on diabetes: Visualization of insulin release from the pancreas.

Inside

University of California, San Diego
Empowering Early Intervention
Navigating Treatments
to Delay Type 1 Diabetes

The Utilization of Continuous
Glucose Monitoring in the
Primary Care Setting

Geriatric Diabetes Care
Optimizing Type 2
Diabetes Management

EMPOWERING EARLY INTERVENTION: **Navigating Treatments to Delay Type 1 Diabetes**

In this episode of the *Patient Care Institutional Insights* program titled “Empowering Early Intervention: Navigating Treatments for Delaying Type 1 Diabetes,” Jennifer D. Goldman, PharmD, RPh, CDCES, BC-ADM, engaged diabetes experts in a discussion about advances in the management of individuals with type 1 diabetes. The discussion topics included the importance of screening relatives of individuals with type 1 diabetes, the stages of type 1 diabetes and their significance to treatment, understanding antibody testing, and teplizumab, (Tzield; Sanofi) which is a new drug indicated to slow the progression of stage II type 1 diabetes to stage III, or frank type 1 diabetes. The following transcript has been edited for length and clarity.

MODERATOR

Jennifer D. Goldman, PharmD, RPh, CDCES, BC-ADM

Professor of Pharmacy Practice
Massachusetts College of Pharmacy and Health Sciences
Clinical Pharmacist and Director, Cardiometabolic Program
Well Life Medical
Boston, MA

PANELISTS

Steven Edelman, MD

Professor of Medicine, Division of Endocrinology, Diabetes, and Metabolism
University of California, San Diego
Director, San Diego VA Medical Center Diabetes Care Clinic
Founder and Director
Taking Control of Your Diabetes
San Diego, CA

Schafer Boeder, MD

Assistant Professor of Medicine
University of California, San Diego
San Diego, CA

Andrea Stallings, PA

UC San Diego Health
San Diego, CA

By *Grace Halsey Senior Editor*

Jennifer D. Goldman, PharmD, RPh, CDCES, BC-ADM: I’ll start by asking you about the profile of the patients you have diagnosed with type 1 diabetes in your practice.

Steven Edelman, MD: I’ll just start off with a reminder that type 1 diabetes can develop at any age; it’s not just teenagers and kids. In fact, 60% of patients who get type 1 diabetes are 20 years or older. All 3 of us have seen people in their 60s, 70s, and—believe it or not—80s who develop the condition. You don’t have to have a family member with type 1 diabetes to be diagnosed, but a family history increases the risk by 15-fold.

Schafer Boeder, MD: That’s true, yet one of the burdens of living with type 1 diabetes for many people is they don’t know anybody else who has it. We know it’s less commonly associated with other family members. About 85% of people with type 1 diabetes don’t have relatives with type 1 diabetes, but that means around 15% of people do.

Goldman: Let’s get a little deeper since we didn’t used to focus on this. Boeder, what are the 3 stages of type 1 diabetes?

Boeder: Even in our endocrinology training we didn’t spend time on the stages of type 1 diabetes. We knew diabetes was progressive, but we didn’t focus on the fact that there are well-defined stages, in part because we have never had any mechanism to intervene, so the stages haven’t been clinically relevant. We also haven’t talked a lot about screening for type 1 diabetes. We didn’t know a person had diabetes until the final stage, which is when we have to say, “You need insulin. You have stage III type 1 diabetes.”

Technically, there are 3 stages based on the presence of autoantibodies. The antibodies reflect an autoimmune response, so the body’s immune system is attacking its own pancreatic β cells. The presence of



2 or more positive antibodies with blood glucose in the normal range reflects stage I type 1 diabetes, [which is] the earliest stage. There is no dysglycemia and no reason for treatment. As the disease advances, β cells are dying and becoming less effective at making insulin. In stage II type 1 diabetes, there are still at least 2 autoantibodies present, but the hallmark of stage II is dysglycemia. It's not frank hyperglycemia; there is no need for insulin yet, but if you use a continuous glucose monitor or perform an oral glucose tolerance test, you will definitely see abnormal responses to glyce-mic load. Stage I and stage II are asymptomatic. Finally, stage III type 1 diabetes is the classic clinical diagnosis of type 1 diabetes. We see extreme hyperglycemia, sometimes diabetic ketoacidosis (DKA), and insulin is required to maintain a safe blood glucose level. Most, if not all, β -cell function has been lost.

Goldman: How do we use understanding about those stages to try to delay that progression, or that threat of DKA that Boeder referred to?

Edelman: Most people are diagnosed with type 1 in DKA, and because most don't have a family history, it's a total surprise. One day, a person is eating at home and enjoying life. There might be some symptoms like thirst, weight loss, and frequent urination. But then the next day, that person is in the intensive care unit, and the doctors are telling them how to prick [their] finger, how to do injections, and how to eat. It turns a family upside down. Life will never be the same again. By screening to see where a person is in the progression of the disease, we may have some time to educate them on what to expect and what will be required when they get that ultimate diagnosis. Even if we can delay the progression to stage III type 1 diabetes by just 2 to 3 years, that is like an eternity for a family and the person to get prepared.

“Even if we can delay the progression to stage III type 1 diabetes by just 2 to 3 years, that is like an eternity for a family and the person to get prepared.”

Goldman: Backing up a little, who should be screened for type 1 diabetes in primary care? Andrea, would you talk about risk factors?

Andrea Stallings, PA: Type 1 diabetes is an autoimmune disease, and autoimmune diseases tend to cluster, so people with other autoimmune diseases would be at increased risk for having type 1 diabetes. Some screening centers do combination autoimmune screening for type 1 diabetes, [as well as] for celiac disease or Hashimoto thyroiditis. If we screen someone now and they don't have those antibodies, they could have them later. Now this person is on the radar as at increased risk and for rescreening, especially if they are a first-degree relative.

Goldman: Schafer, would you review the antibodies that the American Diabetes Association says to look for?

Boeder: There are 4 antibodies we order to screen for type 1 diabetes, which may be different based on the order set at your local lab. The glutamic acid decarboxylase autoantibody is the most common in adults [with] type 1 diabetes, and the insulin autoantibody is very common in children. The zinc transporter 8 antibody and insulinoma-associated 2 antibody are the others that are commonly included in a panel for antibodies. For the best picture of individual risk, you want to get all 4. If the person has 2 or more, the lifetime risk of eventually reaching stage III type 1 diabetes approaches

100%. It may not happen tomorrow, but it is heading there eventually. If a patient has 1 positive antibody, the picture is not as clear, but the risk is certainly higher than the general population. It's critical to remember that children with 2 antibodies are going to progress to stage III, and 50% or more of them will progress within 5 years.

Goldman: Andrea, when would you recommend that we rescreen a child or an adult with 2 positive antibodies?

Stallings: From that point, we are checking for dysglycemia, and the recommendation is to recheck children every 3 to 6 months. We don't have as much information about adults, but we should rescreen them once a year at minimum. We should also educate them and give them opportunities to check their blood glucose.

Goldman: Now that we're talking about dysglycemia as a sign, let's talk about teplizumab. This is the first FDA-approved drug for delaying the onset of stage III type 1 diabetes. Can we talk about mechanism of action?

Edelman: There's an event that triggers the development of these antigens, and we don't know what that is. The antigens lead to autoimmune markers and to autoreactive T cells, which attack and destroy β cells. Over time, the number of β cells destroyed affects the degree of glucose intolerance, so there's always a balance between T regulatory cells and the autoreactive killer

T cells. The markers don't cause the damage, but they do lead to the production of these killer T cells. The killer T cells don't destroy the or cells or the pancreatic enzyme cells, just the β cells. We're trying to slow down that destruction.

Goldman: Schafer, would you highlight the TrialNet-10 study (TN-10; NCT01030861), which was the foundational research for approval of teplizumab?

Boeder: The TN-10 study participants were first-degree relatives of a person with type 1 diabetes, aged 8 years or older, who were screened for antibodies. The people with 2 positive antibodies were evaluated for dysglycemia. So, the participants didn't have full-on stage III type 1 diabetes yet. They weren't on insulin, but they were not in the earliest stage I, either. They were randomly assigned to receive either the 14-day infusion of teplizumab or a placebo infusion and were followed for several years.

Edelman: The outcome was development of type 1 diabetes. They looked at the median point for diagnosis. In the first analysis, the difference in the time was 2 years between the placebo and the treatment group. In the extended analysis, there was a delay of 2.7 years. After the extension study, they continued to follow participants. For some, the delay in onset of stage III type 1 diabetes was almost 5 years. As we said earlier,

there is high variability in the rate of progression, especially in adults.

Boeder: After the initial study, almost half of the people receiving teplizumab had yet to progress to stage III type 1 diabetes compared with only about 22% of the people in the placebo group. Some of the participants still haven't progressed to stage III, even today.

Goldman: Let's talk about the adverse effects with teplizumab, because the incidence of lymphopenia was 73% in TN-10, which is concerning. What has your experience been?

Edelman: We have one patient at day 9 of infusion. You start with a low dose and then increase sequentially, essentially doubling the dose per day up until day 5. It's a 30-minute infusion. Lymphopenia is something we expect to see. You see a nadir in about 6 to 8 days after starting teplizumab, but it's back up to the baseline value by week 5 or 6. Teplizumab is very well tolerated. These patients are followed closely for signs of infection, headache, inflammation, things like that. For our patient, I get a call every day with a lymphocyte count. It got down to 300/ μ L, and today it was 500/ μ L. So, just as we expected, it started to rebound quickly.

Goldman: What about prophylactic measures to reduce the risk of other adverse events?

Stallings: Most infusion protocols call for prophylactic

treatment about 30 minutes before the infusion with acetaminophen or another nonsteroidal anti-inflammatory drug and anti-nausea medication. For pediatric patients, they use diphenhydramine. We can mitigate some of these potential adverse effects, even the more common ones.

Goldman: Steve, would you do a quick review of the infusion process and what to expect?

Edelman: The way it works at infusion centers is they'll have the protocol and there will be a pharmacist onsite who knows the process. It's a 2-week commitment, with titrating the dose upward for days 1 to 5. By day 5, you have reached the maximum dose for the patient, then it's the same dose through day 14. You'll monitor complete blood count, lymphocyte count, and hepatic function to head off any serious adverse events. You'll also have regularly scheduled follow-ups with the patient. The infusion center also can assign a support person for the patient.

Goldman: I'm just going to summarize who is eligible for treatment with teplizumab. The indication is for adults and for children as young as 8 years with a diagnosis of stage II type 1 diabetes; that is 2 or more positive autoantibodies and evidence of dysglycemia. Steve, would you finish us up?

Edelman: We've been dealing with type 1 diabetes since the discovery of insulin 100 years ago. Teplizumab is the first disease-modifying drug we can use to delay the progression, and maybe even prevent it in some. For the cost of 1 blood test, we can tell someone [whether] they're at risk for getting type 1 diabetes in the next few years. I would like to challenge everyone to screen your patients, at least those with a family history of type 1 diabetes or other autoimmune conditions. Delay is priceless. ■



MORE ONLINE

To see graphics, visit:

URL



MORE ONLINE

To watch the entire discussion with Goldman, Edelman, Boeder, and Stallings, visit:

<https://www.patientcareonline.com/institutional-insights/empowering-early-intervention-navigating-treatments-for-delaying-t1d-progression>

The Utilization of Continuous Glucose Monitoring in the Primary Care Setting

During a recent episode of the ConsultantLive® program titled “The Utilization of Continuous Glucose Monitoring in the Primary Care Setting,” 2 well-known diabetes experts sat down to discuss the significant role that continuous glucose monitoring (CGM) plays in improving control of hyperglycemia in people with both type 1 and type 2 diabetes. The conversation included how CGM data provide a complete 24-hour glycemic profile, how the real-time feedback from glucose monitoring helps patients modify their behavior, and which populations with diabetes are best suited to the benefits of CGM. They also touched on the CGM products available and their attributes. The transcript that follows has been edited for length and clarity.

PARTICIPANTS

Jennifer D. Goldman, PharmD, RPh, CDCES, BC-ADM

Professor of Pharmacy Practice
Massachusetts College of Pharmacy and Health Sciences, Boston, MA
Clinical Pharmacist and Director,
Cardiometabolic Program
Well Life Medical, Peabody, MA

Guillermo E. Umpierrez, MD, CDCES

Professor of Medicine, Division of
Endocrinology
Emory University School of Medicine
Atlanta, Georgia

By *Grace Halsey Senior Editor*

Jennifer D. Goldman, RPh, PharmD, CDCES, BC-ADM:

Let’s talk first about the importance of CGM in primary care.

Guillermo E. Umpierrez, MD, CDCES: Why do we care about CGM? There is a very large body of evidence documenting the superior tracking of blood glucose with CGM compared with the traditional self-monitoring of blood glucose (SMBG) using a finger stick for blood from capillaries in the fingertips. A finger stick measures BG levels only at a single point in time. CGM measures glucose every 1 to 5 minutes and records it every 5 to 15 minutes, all day and all night. CGMs have alarms to warn when blood glucose is trending low or going too high so patients are able to better understand glucose excursions at any time. And I don’t know about your patients, but mine always forget to bring the glucose logbook anyway, mostly because they don’t like doing finger sticks so the logbook isn’t up to date. So for patients who require multiple finger sticks a day such as those with type 1 diabetes (T1D), the use of CGM is tremendously helpful and well received by our patients.

Goldman: Would you talk a bit more about the limitations of SMBG?

Umpierrez: This illustration

shows exactly what we miss with SMBG (**Figure 1**). You can do 3 or 4 spot glucose tests during the day but you’re going to miss significant numbers, including hypoglycemia and hyperglycemia. Remember that about 45% to 50% of hypoglycemic events, which is a BG level of less than 70 mg/dL, are asymptomatic. Hypoglycemia usually occurs during the night when the physiologic symptoms don’t happen and so we could miss that—and miss an opportunity to adjust insulin dose. So with 4 spot checks in a day you can miss the high and low BG levels and you also have no idea of the direction of change of glucose levels in between finger stick readings. You also can’t know how rapidly changes may be happening. These are reasons why we want to use CGM in those patients who require multiple daily injections (MDIs) of insulin and those who have difficulty managing hypoglycemia.

Goldman: What about the 3 different types of CGMs? Would you review those?

Umpierrez: The real-time CGM delivers continuous sensor glucose values, glucose trends, and alerts to either a CGM receiver or to a compatible smartphone. The intermittent or “flash” CGM provides glucose values and trends only when the sensor is scanned with a receiver

or a smartphone—but the same amount of data is being collected. We have patients who just don't want to have 24/7 blood glucose information. In my practice, we prefer to use real time—it's more accurate—but intermittent scanning is fair for those who don't want to have that continuous information. We do recommend that patients who use intermittent monitoring scan the sensor at least every 8 hours but more often if possible. And there is also professional CGM that collects blood glucose level data but has a blinded sensor, so the patient doesn't have access to the data. A clinician might recommend this after initiating insulin to provide an idea of how blood glucose levels are responding. The physician would scan the sensor for the retrospective review of the data.

Goldman: Let's talk a little bit more about the CGM options for our patients.

Umpierrez: There are about 6 or 7 options available, and the features vary. The Dexcom G6 and G7 have integration with closed-loop systems, and so do the Libre 2 and the Guardian. Neither the Libre 3 nor Eversense has integration with insulin pumps, which is very important because of the increases in the number of people, especially those with T1D, who use a closed-loop system. Except for the Libre 2, which is an intermittently scanned CGM, the rest all provide real-time CGM. The longest maximum wear time is 180 days for Eversense, which is a small sensor implanted subcutaneously

and the transmitter sits on top of it. The shortest wear time for the sensor is 7 days for the Guardian Connect. We see that the warm-up time—how long it takes after the sensor is placed for information to be available—varies. You can get some false readings if it's too early, but after the warm-up period, they are all quite accurate. Most of the statistics show accuracy of about 98% compared with finger sticks. Calibration is mostly not required any longer, but the Guardian and the Eversense still do need it. For water depth and function, you can go to the swimming pool, not a big deal. And all the data from any CGM is stored in a version of the cloud and so can be shared. The FDA-approved sites for insertion are the upper arm for most of these, the abdomen for the G6 and the Guardian, and then several are approved for the upper buttocks. We could even have CGMs soon

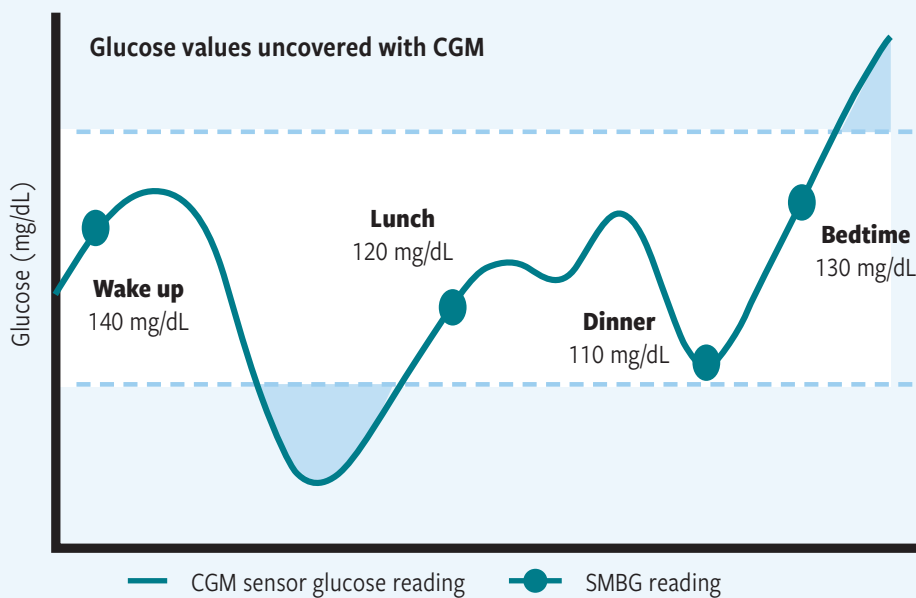
with extended use of up to 1 to 2 years—it's pretty remarkable.

I was thinking as I was reviewing all of these, you know, in the past, we used to titrate basal insulin doses according to the fasting plasma glucose level and we got that from the finger stick in the morning. If that's high over time, you increase the dose. If it's low, you decrease the dose. But now we can see when the excursions are happening; we have a 24-hour profile. We can check pre- and postprandial blood glucose levels. We can use these results to collaborate with patients to identify specific factors that may be influencing glucose levels. That helps guide decisions about treatment, like adjustments in medication or in the patient's behavior.

Goldman: Would you talk more about the benefits of the real-time feedback for our patients?

Umpierrez: The use of CGM

FIGURE 1. Limitations of SMBG



SMBG, self-monitored blood glucose; CGM, continuous glucose monitoring. Adapted from ADCES Practice Paper.¹



not only helps us improve glycemic control and reduce hemoglobin A1C (HbA_{1C}) but it's also a tool to help with behavioral change. There is a lot of research to support that, so in 1 analysis of 11 studies, the researchers compared real-time CGM to SMBG to help motivate adults with poorly controlled type 2 diabetes (T2D). There were 5542 participants across the studies, and they had an average age between 51.7 years and 60 years. There was a wide range of duration of T2D, from 2.1 years to 19.2 years. And they found a positive impact of CGM on quite a few variables compared with SMBG. HbA_{1C} reductions were greater and so were reductions in body weight and calorie intake. The CGM group had more physical activity and were more successful at sticking with a personal eating plan. They also found high adherence with wear time of the CGMs and with calibration of the devices. Other good examples of how the

People with T1D especially can become hypo with exercise. Using CGM for them is just incredible. They can monitor BG levels very closely and make adjustments.

real-time feedback helps: for people who are prone to hypoglycemia or are afraid of going too low, and some of them are afraid of exercising. People with T1D especially can become hypo with exercise. Using CGM for them is just incredible. They can monitor BG levels very closely and make adjustments. And, all the CGMs have alarms or alerts that will warn them if the BG is trending low—so before they reach a dangerous point.

Goldman: Let's wrap up with some discussion of the populations that are ideal for use of CGM (**Figure 2**).

Umpierrez: First, most professional organizations, including the American Diabetes Association (ADA), have recommended that everybody with type 1 diabetes use a CGM. The majority of these patients take MDI insulin, and they're more prone to hypoglycemia. The ADA also says that anyone

FIGURE 2. Patient Selection for CGM Therapy

International Consensus ²	American Association of Clinical Endocrinology ³	American Diabetes Association ⁴
<ul style="list-style-type: none"> All patients with type 1 diabetes Type 2 diabetes on multiple daily injections not meeting goals Problematic hypoglycemia 	<ul style="list-style-type: none"> All patients with diabetes treated with intensive insulin therapy A Problematic hypoglycemia A Pregnancy/gestational diabetes on insulin therapy A* 	<ul style="list-style-type: none"> rtCGM A or isCGM B for adults with diabetes on MDI or insulin pump therapy rtCGM A or isCGM C can be used in adults with diabetes on basal insulin As an adjunct to pre-/postprandial blood glucose monitoring in pregnancy B

A—Clear evidence from well-conducted, generalizable randomized controlled trials that are adequately powered

B—Supportive evidence from well-conducted cohort studies

C—Supportive evidence from poorly controlled or uncontrolled studies

*Intermediate-high strength of evidence

Using CGM we not only see the changes, but we can see the magnitude and the velocity of the change and can modify treatment when necessary.

using basal insulin is a candidate for CGM. The International Consensus on use of CGM recommends use of CGM by individuals with T2D on MDI who are not meeting their blood glucose level goals.

Then, anyone who experiences hypoglycemia should be using CGM. Older adults with diabetes are an ideal population for use of CGM because, as we mentioned earlier, they tend to be more susceptible to hypoglycemia and also to be more unaware of having it. We have increasing data on the benefit of CGM during pregnancy for people with preexisting T1D and we are using CGM more often during pregnancy for patients with T2D who are on insulin therapy. For individuals with T2D, whether they are insulin- or non-insulin dependent, CGM is indicated for people who are taking oral medications but still have suboptimal glucose control or who frequently have postprandial spikes in glucose. For women with gestational diabetes, CGM can help with tighter glucose control and that is critical to prevent poor outcomes, such as macrosomia, the more

likely complication of gestational diabetes.

Goldman: Dr Umpierrez, what do we have in terms of the level of evidence for use of CGM in these populations you've just outlined?

Umpierrez: For patients with T1D who are on a basal-bolus insulin regimen, the evidence for the value of CGM is strong and comes from a large number of studies. Prospective randomized studies have shown that you should expect a reduction in HbA_{1c} of 0.4% to 0.5% and to have a reduction in hypoglycemia episodes. There is also very strong evidence for patients with insulin pumps or automated insulin delivery (AID) systems that connecting the pump with the CGM really helps. I'm sure that one day in the near future we're going to have most of our patients on one of these AIDs. The evidence is moderate for CGM use by patients with T2D on basal alone or basal-bolus insulin.

Now if you are on an oral agent, is there a benefit to using CGM? The level of evidence to support CGM there is only weak, as it is, too, for CGM use for patients

taking a glucagon-like peptide-1 receptor agonist. Yes, it can help with information about the effect of meals, of exercise, but it hasn't been shown to help much with reducing HbA_{1c}.

Goldman: How would you summarize what we've covered here today?

Umpierrez: We have been pricking fingers for 50 years now and before that we were monitoring urine. We now have a way to assess blood glucose control with a complete ongoing picture of glycemic status, including overnight. Using CGM we not only see the changes, but we can see the magnitude and the velocity of the change and can modify treatment when necessary. Plus, CGM alarms have been shown to reduce the risk of hypoglycemia and severe hyperglycemia. We can anticipate problems and reduce recurrent ones. ■

REFERENCES

1. ADCES Practice Paper. Association of Diabetes Care & Education Specialists. Updated March 2021. Accessed April 11, 2024. <https://www.diabeteseducator.org/docs/default-source/practice/practice-documents/practice-papers/the-diabetes-educator-role-in-continuous-glucose-monitoring.pdf>
2. Danne T, Nimri R, Battelino T, et al. International Consensus on Use of Continuous Glucose Monitoring. *Diabetes Care*. 2017;40(12):1631-1640. doi:10.2337/dc17-1600
3. Grunberger G, Sherr J, Allende M, et al. American Association of Clinical Endocrinology Clinical Practice Guideline: The use of advanced technology in the management of persons with diabetes mellitus. *Endocr Pract*. 2021;27(6):505-537. doi:10.1016/j.eprac.2021.04.008
4. American Diabetes Association Professional Practice Committee; 6. Glycemic Targets: *Standards of Medical Care in Diabetes—2022*. *Diabetes Care* 1 January 2022; 45 (Supplement_1): S83-S96. <https://doi.org/10.2337/dc22-5006>



MORE ONLINE

To watch the entire discussion with Goldman and Umpierrez, visit

<https://www.patientcareonline.com/consultantlive/the-utilization-of-continuous-glucose-monitoring-in-the-primary-care-setting>

GERIATRIC DIABETES CARE:

Optimizing Type 2 Diabetes Management

In a recent *Patient Care ConsultantLive* program titled “Geriatric Diabetes Care: Optimizing Type 2 Diabetes Management,” Medha Munshi, MD, director of the Geriatrics Diabetes Program at the Beth Israel Lahey Health Joslin Diabetes Center and associate professor of medicine at Harvard Medical School in Boston, Massachusetts; and Javier Morales, MD, clinical assistant professor at the Donald and Barbara Zucker School of Medicine at Hofstra/Northwell in Hempstead, New York, discussed the challenges of ensuring safe and effective care for older adults with type 2 diabetes. Topics included the physiologic changes associated with aging, appropriate medication choices and glycemic goals, and the unique impact of geriatric syndromes on older patients’ ability to tolerate treatment and care for themselves appropriately. The following transcript has been edited for length and clarity.

PARTICIPANTS

Medha Munshi, MD

Director
Geriatrics Diabetes Program
Beth Israel Lahey Health Joslin Diabetes Center
Associate Professor of Medicine
Harvard Medical School
Boston, MA

Javier Morales, MD

Clinical Assistant Professor
Donald and Barbara Zucker School of Medicine at Hofstra/
Northwell
Vice President, Principal Clinical Trial Investigator
Advanced Internal Medicine Group, PC
East Hills, NY

By **Grace Halsey** Senior Editor

Medha Munshi, MD: I am going to start out with an interesting fact to set the stage for our discussion of older adults with diabetes. We know the population is aging; and in fact, approximately 10,000 people turn 65 years old every day. That’s the baby boomers for you. So, it doesn’t matter what type of practice you are in, you will be seeing more older adults. Dr Morales, what percentage of the adult population in your practice would you consider to be older?

Javier Morales, MD: Every practice is a little bit different. I think that most people who come to my clinical practice on a regular basis tend to be of the Medicare age or slightly younger. I would say maybe more than 50% of the patients I treat may be over 65 years old.

Munshi: Then I’m sure you are familiar with the concept of the geriatric syndrome.

Morales: Use of that term as appropriate terminology has been increasing, and it is complex. The fact that our patients are living longer because of technology and because we have these newer agents to better manage our patients with diabetes makes geriatric syndrome a very relevant topic of discussion.

The challenges in managing older adults with type 2 diabetes are different than for younger adults. When you’re younger, there is less potential for a negative legacy effect of poor glycemic control. It’s easier and less risky to intensively treat our younger adults to minimize the risk for type 2 diabetes complications. But for the older population, managing diabetes becomes a challenge for many reasons, including that some of the very agents that we’ve been familiar with and using for many years may not be the safest anymore. This population is more likely to already have the macrovascular complications we try to avoid in younger patients and be at higher risk for a cardiovascular event. Of course, we may now be dealing with age-related impairments that make

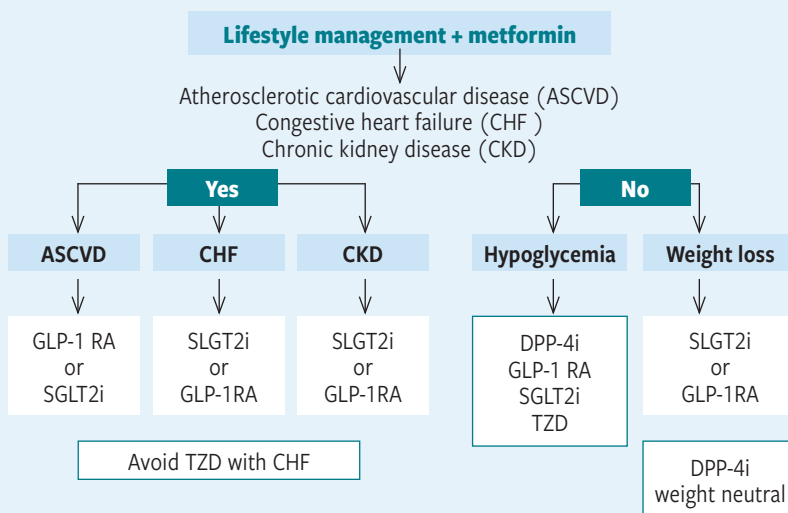
self-management more difficult.

Munshi: I should back up and ask the question: Who exactly is an older adult? You might have 2 people of the same older age but who require very different approaches to care. They may both be 85 years old, but one might still appear to be 65. Does that appearance change how we should approach treatment? The message is that even if an older adult looks healthy, we have to remember that the ability to recover from any type of stress to the overall system is still diminishing. The technical term for this is *homeostasis*—a gradual decline in the physiologic reserve that allows us to maintain homeostasis under stress. The reserve is narrowing. The stress could be anything—a urinary tract infection, emotional trauma, or a fall. Older adults can't "bounce back" like they could 20 years ago. For older patients with type 2 diabetes, a hypoglycemic episode could have a long-term effect.

That takes us right back to the geriatric syndrome, which refers to health conditions that are specific to the older population and don't fall into an organ-specific category. The prominent ones are conditions such as cognitive dysfunction, depression, physical disability, and polypharmacy. We should be talking about these because we may not intuitively think about them when we see our patients with diabetes. We're focused on macrovascular and microvascular disease but not on these conditions. The effects can be pretty subtle, so you may not recognize them if you don't look for them. But as you've said, they do impact the person's ability to take care of their diabetes.

Morales: I can't tell you how important loss of cognitive function is. Often, this lack of ability to concentrate can lead to medication mix-ups. If someone is not on a

FIGURE 1. Simplified Treatment Algorithm for Type 2 Diabetes



Adapted from ADA Professional Practice Committee¹
DPP-4i, dipeptidyl peptidase-4 inhibitor; GLP-1 RA, glucagon-like peptide-1 receptor agonist; HF, heart failure;
SGLT2i, sodium-glucose cotransporter-2 inhibitor; TZD, thiazolidinedione.

complex regimen, then those mix-ups might go unnoticed. The problem with a complex insulin regimen is that it's very unforgiving. One mix-up, 1 severe hypoglycemia episode, and 1 hip fracture can significantly impact the patient's quality of life. Also, when cognitive abilities are reduced, it affects the person's ability to take medications on a timely basis. And it's not just about the medication issues. Is this person eating well? Are they skipping meals, going out without eating, and then not recognizing the symptoms of hypoglycemia? Or maybe [they're] not remembering how to treat it properly if they do know the symptoms.

Munshi: Also, how many of our patients actually knowingly skip insulin doses because of, let's say, financial challenges? Or, as we've said, they just forget. I would say probably about half of patients on insulin therapy are forgetting at least 1 injection of insulin per their regimen. On the other hand, how

many patients take their prandial insulin and then take another dose thinking that they haven't yet, so they might be overdosing their insulin?

Morales: I want to add to our discussion of hypoglycemia that I'm glad to see some of the older medications that can produce hypoglycemia are used less often. That's very important because some of the secretagogues and sulfonylureas often are affected by kidney dysfunction, which we know is very common in the older population. As a result, the pharmacokinetics of these agents wind up being altered and further increasing that risk. We know how expensive that is physically, and to the health care system.

Munshi: Because we're talking about choices of medications and older ones and newer ones, we have seen a change in how we can make decisions about treatment. How do you select a glucose-lowering medication for your older

patients with type 2 diabetes?

Morales: You're right about the changes in our choices of medications. With these new classes of drugs, we are fortunate to be able to consider the disease-specific effect of the drug class. I like the simplified algorithm (**Figure 1**). You look at the disease factors first, then the patient-specific factors—whether the patient has atherosclerotic cardiovascular disease (CVD) or congestive heart failure, or whether you're worried about progression of chronic kidney disease or what the impact of the estimated glomerular filtration rate is going to be on the drug. Those are the other things I would consider as I choose a class of drug. We know the glucagon-like peptide-1 receptor agonists (GLP-1 RAs) and sodium-glucose cotransporter 2 (SGLT2) inhibitors have benefits in those with a history of CVD. You probably want to stay away from pioglitazone if the patient has history of congestive heart failure, but SGLT2 inhibitors have shown significant benefit both in reducing hospitalization for heart failure and in mortality. Now with the GLP-1 RAs, we have an approval for reduction of cardiovascular risk in adults with obesity who have CVD.

Munshi: I'm going to switch gears now from making the initial medication choices to the decisions we have to make for our older [patients with] diabetes when the effects of aging—of the geriatric syndrome—begin to make treatment more difficult. That's when we have to start considering deprescribing (**Figure 2**). This is a topic close to my heart. All the algorithms in diabetes are about what else you can add. But what if you have a patient who has been doing very well, then starts to have difficulty with a regimen they've been taking for many years? The next step could be deprescribing, and that doesn't always mean

I would say probably about half of patients on insulin therapy are forgetting at least 1 injection of insulin per their regimen.

On the other hand, how many patients take their prandial insulin and then take another dose thinking that they haven't yet, so they might be overdosing their insulin?

stopping a drug; it could mean modifying the dosing schedule or simplifying the regimen. When you are deprescribing, you are targeting a problem that is specific to that patient, a problem that is affecting their care or quality of life. You are trying to make treatment safer.

Munshi: What do you perceive as the most significant challenge when it comes to the concept of deprescribing medications in older people with diabetes?

Morales: The fact that there's no clear guidance, in my opinion, ends up being really important. But patients do welcome it because it decreases the pill burden and the cost of caring for themselves. For the older population, it also makes it easier for the caretakers and the institutions. For type 2 diabetes, we often think about combination therapies, and nonessential

treatments should really go by the wayside.

Munshi: Maybe a few examples will help better illustrate this concept.

Patient 1 (**Figure 3a**) is 89 years old with multiple comorbidities. He lives alone, is on a basal-bolus regimen, and he falls. He says, "I'm fine," but the finger stick log readings are 80 to 150 mg/dL, and his hemoglobin A_{1C} (HbA_{1C}) is 7.1%. There are a lot of red flags here. He is living alone and has had recent falls. Was it hypoglycemia? Is he eating well? What is his cognitive function like? We can consider deprescribing by changing the regimen 1 of 3 different ways: liberalize, deintensify, or simplify. This patient might do well with liberalization. In this case, that could mean setting higher HbA_{1C} or glucose goals for

FIGURE 2. Deprescribing Medication in Older Adults

Deprescribing is the planned and supervised process of reducing a dose or stopping medication that might be causing harm or no longer be of benefit. The goal is to reduce medication burden or harm while improving quality of life.

When older Adults Are Unable to Keep Up With Complex Regimens

Liberalize

Deintensify

Simplify

Adapted from Munshi and Neumiller.²

FIGURE 3A

Patient 1

- 89 years old with CAD, CHF, ESRF, and recent falls
- Lives alone
- Prescribed basal-bolus regimen due to contraindications to all other medications
- Finger stick glucose, 80-150 mg/dL; HbA_{1c}, 7.1%

Consider liberalization

- Raise HbA_{1c} or glucose goals for patients who will not benefit from tighter control and may be harmed.

For this patient: Liberalize the goal BG 100-200 mg/dL

CAD, coronary artery disease; CHF, congestive heart failure; ESRF, end-stage renal failure.

FIGURE 3B

Patient 2

- 89 years old taking 3 antihypertensive and 2 lipid-lowering medications
- Diabetes medications: metformin BID, glipizide BID, GLP-1 RA QD
 - Forgets 2-3 doses of medications per week

Consider deintensification

- To decrease the burden of therapy
- To decrease polypharmacy, nonadherence, difficulty coping, adverse effects; consider end-of-life care
- Discontinue nonessential medications; use long-acting formulations

For this patient: add insulin, take away glipizide and add GLP-1 RA, use ER form

ER, extended release; GLP-1 RA, glucagon-like peptide-1 receptor agonist.

FIGURE 3C

Patient 3

- 84 years old with type 2 diabetes on basal-bolus insulin for past 15 years
- Recently hospitalized for stroke, unable to self-monitor with finger sticks or manage multiple injections
- Lives with working husband who is unavailable all day to help manage medications

Consider liberalization

- Simplify strategy to match patient's coping ability
- Following medication regimens consistently is difficult when they are overly complex
- Change to strategy that is easier for patients or caregiver

For this patient: Basal insulin plus noninsulin agent

someone who is not going to benefit from tighter control and could be harmed. Does he really need an HbA_{1c} level of 7.1% or a glucose level below 80 mg/dL?

For patient 2 (**Figure 3b**), who says she is missing a few doses per week but could be forgetting even more...it's probably a good idea to consider deintensifying her regimen. I would add insulin and take away the glipizide and GLP-1 RA.

Patient 3 (**Figure 3c**) is not suited to self-care at this point; she was doing fine on the basal-bolus insulin, but a new comorbidity has limited her ability to cope; the

regimen is now too complex for her to follow consistently. A good strategy would be to keep the basal insulin but add a noninsulin injectable—a GLP-1 RA.

Morales: Now that GLP-1 RAs have become so commonplace as a substitution for prandial insulin, incretin-based therapies tend to make a lot of sense. Even if you want to avoid an injectable therapy, a DPP4 inhibitor could offer some benefit by shutting down the excess glucagon to some degree. But I think the simplification process of considering a GLP-1

RA makes a lot of sense as a potential substitution for prandial insulin. ■

REFERENCES

1. American Diabetes Association Professional Practice Committee. 13. Older adults: Standards of Care in Diabetes-2024. *Diabetes Care*. 2024;47(Suppl 1):S244-S257. doi:10.2337/dc24-S013
2. Munshi M, Neumiller JJ. Liberalisation, deintensification, and simplification in diabetes management: words matter. *Lancet Diabetes Endocrinol*. 2020;8(2):95-97. doi:10.1016/S2213-8587(19)30379-1



MORE ONLINE

To watch the entire discussion with Munshi and Morales, visit:

<https://www.patientcareonline.com/consultantlive/geriatric-diabetes-care-optimizing-type-2-diabetes-management-javier>