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ADCES

IN PRACTICE

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Telehealth in Rural Communities

In this issue:

- The role of telehealth, specifically in rural communities, can increase overall improvement in quality of life and national recommendations should include ongoing remote glucose monitoring as well as telehealth or telephone calls as an adjunct to diabetes self-management.
- Inhaled insulin can be a useful tool for diabetes care and diabetes care and education specialists should maintain competencies in its use.
- Using the FIIT principle (frequency, intensity, time, type) allows for individualized exercise recommendations and can be aligned to reduce glycemic variability.
- CKM Syndrome is becoming more prevalent and the DCES should maintain competency in its risk factors, education strategies and pharmacologic therapies.

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ADCES' podcast **"The Huddle: Conversations with the diabetes care team"**, provides perspectives, issues and updates in diabetes care. Featuring episodes covering advances in diabetes technology, how to recognize and address bias, the importance of personalizing care, and much more, this podcast aims to help inform your practice and elevate your role. New episodes are available twice a month on our website, Simplecast, Apple Podcasts, Spotify, Amazon Music and YouTube. Make sure to follow the show on your platform of choice to stay up to date!

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ADCES7 TOPIC AREAS

ADCES PRACTICE PAPER SUMMARY

Also in This Issue

ADCES in Practice is a journal of ideas. It's a platform for diabetes care and education specialists and other health professionals to share innovations, challenges, successes, and hopes with colleagues. That's why we are excited to dedicate this page to you, our readers.

We invite you to write to us with your thoughts and impressions about articles we've published. We welcome your reactions and questions about what you've read in these pages. We call on you to comment or expand on the concepts and strategies put forth. We ask that you support or challenge our authors' words, as you see fit, and to give them the opportunity to hear and respond to you.

Our hope is for open and honest discourse that leads to improved care and outcomes for our patients. You may send your comments to adcesinpractice@gmail.com.

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Learn Something New Every Day

Reflections on Diabetes Care and Education

AMY HESS-FISCHL, MS, RDN, LDN, BC-ADM, CDCES

It is hard to believe that another year has come and gone. With my first year as editor of *AIP* under my belt, I have to say I have learned so much and continue to learn, which makes me incredibly happy. Why, do you ask? And my answer is, why not? Our brains are never going to be completely full, so let's keep adding to the experiences that make life joyful. I was having a conversation with a "seasoned" (like me) nurse practitioner colleague from the southern United States yesterday, and we were commenting on how important it is for all of us to always be learning, taking the stance of trying to learn at least 1 new concept/idea/nugget of truth every day. I have had patients ask me, "What there is left to learn after doing my job for over 26 years?" I have to remind them that there is ALWAYS something new to learn; in fact, if we do not seek out something new every day, we stagnate, and that is what makes the job become monotonous and the joy gone. In the world of diabetes, new medications, technology, and meal planning recommendations are coming at us fast and furious. Learning all of this makes us more equipped to have meaningful conversations with the people with diabetes we work with, solidifying our value to them on an ongoing basis. Granted, I have so many amazing patients who bring new information to me, which prompts me to dig a little deeper, investigate the research or journal articles and case studies that may be available, helping to distinguish between fact and fallacy. But this helps create that relationship to have a bigger discussion with our patients about their wants, needs, hopes, and fears and identify what this new information can or cannot do for them. Building that trust with people with diabetes is crucial in order to strengthen the idea that we are experts in diabetes care and education—but only if we continue to grow our knowledge, skills, and competencies. When was the last time you took a spin through the ADCES Practice Competencies? They are not just for new DCESs looking to become a CDCES or BC-ADM. For all the registered dietitian nutritionists (RDNs) out there, have you seen the revised Scope and Standards or Practice for RDNs in Diabetes Care? I encourage all of you to review these documents and use them annually to asses your personal growth to better collaborate with people with diabetes and continue to strengthen the role of the DCES as a crucial member of the diabetes care team in every medical setting.

If you feel compelled, I would love to hear from you: Please share with me what gets you out of bed every morning, how you learn something new every day, and any other thoughts you may have on why working with people with diabetes is the most fulfilling job for you.

I would be remiss if I did not give a big thanks to the authors and reviewers in 2025. It has been a pleasure, and I am so grateful for your time and expertise. I also could never have done it without the ADCES Staff Liaisons and Content Editors, Diana Pihos, MA, and Danielle McNary-Moran, and newly joined Sloane Fisher, MPS. I so appreciate everything you do, and I really enjoy working with you!

And to you, ADCES member and DCES, thank you for all you do for people with diabetes. May your journey learning something new every day bring you joy so you can keep on keepin' on.

Be well. ■

Take a Ride With Me on My Highway of Adventures

President

KATHERINE S. O'NEAL, PHARMD, MBA, BCACP, CDCES, BC-ADM, AE-C, CLS, FADCES , FAPHA

As a car enthusiast, I have always been drawn to the title of Tom Cochran's song, "Life Is a Highway." Each turn, twist, stop, and the new people I meet on my highway of life has shaped who I am today. If you had asked me at one of the earlier "pitstops" of my journey, I would have told you that I never would have imagined I would be here today, serving as your President of the Association of Diabetes Care and Education Specialists (ADCES). Thank you for entrusting me to help lead our Association over the next year.

I'd like to share my journey of how I got here, starting at my arrival to an intersection on my highway and what I describe as my "Reflection Stop." At that stop, I was doing something completely different than health care. I worked in the area of information technology and project management. Although I enjoyed what I did, I kept having the cliché yearning of "I want to help people." With that, I packed my bags, figuratively, took a left turn at the intersection and started on my next journey . . . pharmacy school! With my foot on the pedal, I was moving full speed ahead toward my destination—inpatient pediatric pharmacy.

It was during my second year of pharmacy school that I slammed on the breaks. I hit a significant speed bump that redirected my journey yet again. I'll call this speed bump my "Lightbulb Stop." My aunt, who I was very close to, was diagnosed with type 2 diabetes. What I didn't share earlier is that my family is Korean, and I am Korean-American. My aunt's staple food item was rice, and I observed how my family took every word from her provider literally. For many months, my family would not let her eat rice. You can imagine the emotional distress and decreased quality of life it then caused her. As I was learning about diabetes in school, I excitedly went to my family to apply the concepts I learned towards my aunt's medication regimen and to teach her everything I was learning about lifestyle modifications. I wanted to run back to her yelling, "You *can* still eat rice!" I vowed to myself that I would do everything in my power to learn all I could about diabetes so that I could then provide education and resources for people with diabetes to better self-manage their diabetes.

I stayed on this journey until I passed the "Just Go Stop," and I haven't looked in my rearview mirror since. I entered postgraduate training with the goal of obtaining more diabetes experiences and earning hours to take, at the time, the certified diabetes educator exam. I had this vision of opening my own community pharmacy with an education center built inside, where I would have the opportunity to teach my patients all about diabetes. Although I am not taking over the world of community pharmacy, I am incredibly honored that I am where I am today. I am a professor at the University of Oklahoma College of Pharmacy in Oklahoma City, OK. I am also a CDCES and

BC-ADM working in an academic general internal medicine primary care clinic, where I have the privilege of working with people with diabetes and the opportunity to share information with colleagues and students. I have so much fun working with and empowering my patients, and it's moments where patients tell me, "In God's heart, you are special," that remind me that the turn I made on the highway several years ago was the "right" turn.

The journey on my highway of adventures along with my personal experiences during pharmacy school and my aunt's diagnosis are what made me fall in love with patient care, principles of health literacy and cultural sensitivity, and the concept of patient empowerment. My goal over the next year is to build on the messages that past Presidents Jane Dickinson and Veronica Brady shared on language and implicit bias, respectively. I want to raise awareness and understanding of cultural competence and health literacy. "Culture competence has been defined by the American Psychological Association (APA) as "the ability to understand, appreciate and interact with people from cultures or belief systems different from one's own." Similarly, health literacy is defined by the Centers for Disease Control and Prevention as "the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others." As diabetes care and education specialists, we work with people from many diverse backgrounds. We have a responsibility to do our part to understand and respect that our patients' practices may be different from our own and that that is okay (e.g., my Korean aunt eating rice). We also must recognize that our "cultural" language as health care professionals may be viewed as a foreign language to our patients (eg, rotating an injection site is not rotating the insulin pen after injecting it). I'm sure we each have many similar stories that we can share. That's the point. It's time to change the narrative. Let's start this next journey with a pact to ourselves to learn and understand these concepts so that we may better empower our patients to be successful with their diabetes management.■

Navigating the CKM Conundrum

An Integrated Approach to Cardiovascular, Kidney, and Metabolic Health

LOURDES V. CROSS, PHARMD, BCACP, CDCES, CATHERINE EICHLER, PHARMD, EMILY JONES, PHARMD, BCPS, AND LINDSEY MCDANIEL, PHARMD CANDIDATE

Cardiovascular-kidney-metabolic (CKM) syndrome has been recently introduced by the American Heart Association (AHA) as an intersection between the well-documented cardiorenal syndrome and cardiometabolic disease. In a 2023 Presidential Advisory, the AHA defines CKM syndrome as "a systemic disorder characterized by pathophysiological interactions among metabolic risk factors, chronic kidney disease (CKD), and the cardiovascular system leading to multiorgan dysfunction and a high rate of adverse cardiovascular outcomes." The term "syndrome" was specifically chosen over "disease" to emphasize that CKM is not a formal diagnosis but, rather, a collection of signs and symptoms driven by a common underlying pathophysiology. Therefore, it best reflects the multiple factors that affect CKM health and the range of severity within possible CKM outcomes.

The potential clinical implications of poor CKM health include premature mortality, excess morbidity, multiorgan disease, and high health care expenditures. The interplay of risk factors across body systems emphasizes the need for holistic patient care. In addition, the high prevalence of poor CKM health necessitates interdisciplinary collaboration and a high continuity of care to best manage CKM risk factors.

Clinical Manifestations and Diagnosis

The AHA has created a staging system (Table 1) that follows CKM syndrome progression as indicated by current evidence. CKM syndrome most commonly begins earlier in life with the exposure to biological, social, and environmental factors that lead to excess and/or dysfunctional adipose tissue. A key pathophysiological mechanism underlying CKM syndrome is insulin resistance (IR), characterized by diminished response of insulin-sensitive tissues to insulin signaling, resulting in hyperglycemia and compensatory hyperinsulinemia. Through multiple interconnected pathways, IR promotes chronic low-grade inflammation, oxidative stress, and endothelial dysfunction. These changes

Table 1 Staging and Management of CKM Syndrome. (Chart continues on page 10)

Stage	Description	Recommended Approach and Treatment
Stage 0	No risk factors	• Maintain optimal anthropometric, glycemia, blood pressure, and lipid profiles
Stage 1	Excess/ dysfunctional adipose tissue	• Systematic screening for SDOH • Intensive lifestyle intervention • Pharmacotherapies (BMI ≥30 kg/m2 without comorbidities) • Bariatric surgery (BMI ≥40 kg/m2 without comorbidities)
Stage 2	Metabolic risk factors and CKD	• Systematic screening for SDOH • Use of CKM coordinator and interdisciplinary team **CKD** • With albuminuria (UACR >30 mg/g), consider ACEi/ ARB • With eGFR >20 mL/min/1.73m2, consider SGLT2i • With diabetes and albuminuria (UACR >30 mg/g), consider finerenone **Diabetes** • Lifestyle modifications • Moderate- to high-intensity statin • For high-risk, consider ezetimibe • BMI ≥35 kg/m2, consider GLP-1RA • A1C ≥9% or high insulin dose, consider GLP-1RA • CKD, consider SGLT2i • If A1C ≥7.5% or on insulin, consider coadministration of metformin **HTN** • Lifestyle modifications • Pharmacotherapy for patients with diabetes, CKD, age ≥65, or ≥10% CVD risk • Achieve a BP <130/<80 mmHg • With diabetes and albuminuria, prioritize ACEi/ARB • With CKD, prioritize ACEi/ARB **Hypertriglyceridemia** • Lifestyle modifications • In intermediate- or high-risk ASCVD, maximize statin therapy • TG ≥500 mg/dL, consider fibrates • TG 135-499 + diabetes + additional risk factors, consider eicosapentaenoic acid
Stage 3	Subclinical CVD in CKM syndrome	• Systematic screening for SDOH • Use of CKM coordinator and interdisciplinary team **Subclinical ASCVD** • CAC >0, consider statin use in intermediate risk • CAC >100, consider aspirin use if there is a low bleeding risk or use of other agents based on the CKM profile (PCSK9i, GLP-1RA, icosapent ethyl) **Subclinical HF** • EF <40%, consider ACEi/ARB, beta blocker • In diabetes, consider an SGLT2i to decrease risk for HF incident **CVD risk equivalents for CKM** • Very high-risk CKD • High predicted CVD risk per the risk calculator

Stage	Description	Recommended Approach and Treatment
Stage 4	Existing CVD in CKM syndrome	• Systematic screening for SDOH • Use of CKM coordinator and interdisciplinary team **ASCVD** • Aspirin and high-intensity statin for all patients • In high risk, consider the addition of ezetimibe and PCSK9i based on the LDL levels/goals **HF** • GDMT (beta blocker, ARNi, MRAs, SGLT2i) for all patients **CVD + CKD** • With albuminuria (UACR >30 mg/g), consider ACEi/ARB • ARNi is preferred in HFrEF • With or without diabetes, consider SGLT2i • With DKD and residual albuminuria (UACR >30 mg/g) on ACEi/ARB, consider finerenone **CVD + diabetes** • Lifestyle modifications • Use of metformin with cardioprotective antihyperglycemic agents if A1C ≥7.5% **CVD + HTN** • Lifestyle modifications • Achieve BP <130/80 mmHg • With diabetes/CKD, consider ACEi/ARB; in resistant HTN, consider a steroidal MRA • Avoid use of CCB in HFrEF • In African American patients with HFrEF, consider hydralazine + isosorbide dinitrate after GDMT **CVD + hypertriglyceridemia** • Lifestyle modifications in addition to statin therapy • If TG ≥500 mg/dL, consider fibrates • TG 135-499 + diabetes + additional risk factors, consider eicosapentaenoic acid **CVD + obesity** • STOP Obesity Alliance tool kit • Intensive lifestyle intervention • Pharmacotherapies (BMI ≥27 kg/m2 without comorbidities) • Bariatric surgery (BMI ≥35 kg/m2 without comorbidities) • Consider incretin analogues, which can induce >15% weight loss • Consider metformin in persistent/progressive IGT even when lifestyle modifications have been attempted

Abbreviations: ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; ARNi, angiotensin-receptor neprilysin inhibitor; ASCVD, atherosclerotic cardiovascular disease; BMI, body mass index; BP, blood pressure; CAC, coronary artery calcium; CCB, calcium channel blocker; CKD, chronic kidney disease; CKM, cardiovascular-kidney-metabolic; CVD, cardiovascular disease; DKD, diabetes-related kidney disease; EF, ejection fraction; eGFR, estimated glomerular filtration rate; GDMT, guideline-directed medical therapy; GLP-1RA, glucagon-like peptide 1 receptor agonist; HF, heart failure; HFrEF, heart failure with reduced ejection fraction; HTN, hypertension; IGT, impaired glucose tolerance; LDL, low-density lipoprotein; MRA, mineralocorticoid receptor antagonist; PCSK9i, proprotein convertase subtilisin/kexin type 9 inhibitor; SDOH, social determinants of health; SGLT2i, sodium-glucose cotransporter 2 inhibitor; TG, triglycerides; UACR, urine albumin-creatinine ratio.

can lead to metabolic risk factors, with patients potentially developing early, subtle signs of heart and kidney damage before experiencing obvious clinical symptoms. Notably, even in patients without diabetes, IR has been established as an independent risk factor for cardiovascular events, highlighting its central role in CKM syndrome progression.

Metabolic

The metabolic components of CKM syndrome include excess adipose tissue, dysfunctional adipose tissue, or both. Excess adipose tissue is described as weight or abdominal obesity, which is defined as a body mass index (BMI) ≥25 kg/m^2 (or ≥23 kg/m^2 if Asian descent) and/or waist circumference ≥88 cm for women and ≥102 cm for men (or ≥80 cm for women and ≥90 cm for men of Asian descent). Dysfunctional adipose tissue is described as impaired glucose tolerance and hyperglycemia, with criteria including fasting blood glucose ≥100-124 mg/dL or A1C 5.7%-6.4%. Stage 1 CKM syndrome is the presence of any of the aforementioned criteria without additional metabolic risk factors or CKD.

Metabolic risk factors (Table 2) include hypertriglyceridemia, hypertension, metabolic syndrome, and type 2 diabetes (T2D). Hypertension is included as a metabolic risk factor because it is often caused by metabolic factors. Although some cases of hypertension stem from nonmetabolic origins, the treatment approach remains similar regardless of the underlying cause. The presence of one or more of these metabolic risk factors is a component of CKM syndrome stages 2 through 4.

Kidney

CKM syndrome guidance recommends the Kidney Disease Improving Global Outcomes heat map to assess a patient's CKD risk using glomerular filtration rate and albuminuria categories.

- Stage 2: Moderate- to very high-risk CKD with metabolic risk factors but without cardiovascular disease (CVD)
- Stage 3: Moderate- to high-risk CKD with

metabolic risk factors and subclinical CVD/ high predicted 10-year CVD risk

- Stage 4: Moderate- to very high-risk CKD with metabolic risk factors and clinical CVD; this stage is further subdivided based on the presence or absence of kidney failure

Cardiovascular

High risk for or presence of CVD with metabolic risk factors and/or CKD indicate a CKM syndrome stage of 3 or 4. Stage 3 includes subclinical CVD and high predicted CVD risk with the presence of excess/dysfunctional adiposity, metabolic risk factors, or CKD. Subclinical CVD is defined as subclinical atherosclerotic cardiovascular disease (ASCVD), subclinical heart failure, or abnormal cardiovascular structure/function on myocardial imaging without clinical symptoms (Table 3). Stage 4 is clinical CVD with excess/ dysfunctional adiposity, metabolic risk factors, or CKD. Clinical CVD includes ischemic heart disease, cerebrovascular and peripheral artery disease, arrhythmias (eg, atrial fibrillation), and heart failure.

Management Strategies

To facilitate a comprehensive approach to CKM syndrome management, a care model framework guides clinicians through the process of assessment, staging, and intervention (Figure 1).

Prevention and Early Intervention

In addressing CKM syndrome, prevention and early intervention strategies are critical. Two tools created by the AHA have emerged to guide health care professionals and patients: Life's Essential 8 and the PREVENT calculator. These resources work in tandem to promote comprehensive health and assess cardiovascular risk more accurately.

AHA's Life's Essential 8

Life's Essential 8 evolved from the 2010 Life's Simple 7, expanding in 2022 to focus on health optimization across the entire life span. This updated framework provides a holistic approach to cardiovascular health, encompassing 8 key areas:

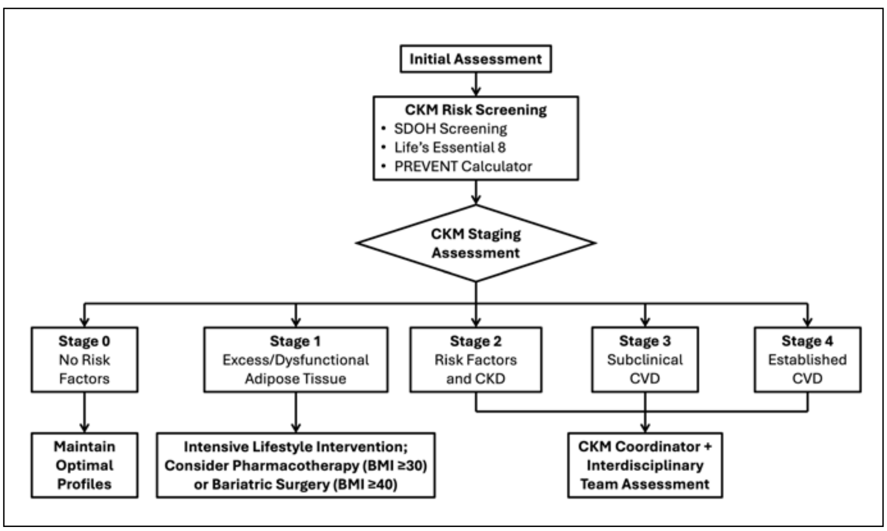
Table 2 Definitions of Metabolic Risk Factors.

Metabolic Risk Factor	Definition
Hypertriglyceridemia	Triglycerides ≥135 mg/dL
Hypertension	Blood pressure ≥130/≥80 mmHg
Metabolic syndrome (MetS)	≥3 of the following criteria: • Waist circumference ≥88 cm for women and ≥102 cm for men (or ≥80/90 cm for women/men if Asian descent) • HDL cholesterol <50 mcg/dL for women and <40 mcg/dL for men • Triglycerides ≥150 mg/dL • Systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥80 mmHg and/or use of antihypertensive medications • Fasting blood glucose ≥100 mg/dL
Type 2 diabetes	Type 2 diabetes was not defined by the AHA Presidential Advisory; defer to existing guidelines for diagnostic criteria

Abbreviation: AHA, American Heart Association; HDL, high-density lipoprotein.

Table 3 Definitions of Subclinical Cardiovascular Disease.

Component	Definition
Subclinical atherosclerotic cardiovascular disease	Increased coronary artery calcium score, nonobstructive coronary artery disease, subclinical peripheral artery disease
Subclinical heart failure	Elevated cardiac biomarkers: • B-type natriuretic peptide • N-terminal pro-B-type natriuretic peptide • High-sensitivity cardiac troponins



Abbreviations: BMI, body mass index; CKD, chronic kidney disease; CKM, cardiovascular-kidney-metabolic; CVD, cardiovascular disease; SDOH, social determinants of health.

Figure 1. Care model framework for CKM syndrome: integrated approach to patient assessment, risk screening, and intervention pathways.

1. Healthy sleep: 7 to 9 hours for adults
2. Healthy diet: DASH- and Mediterranean-style eating patterns (focusing on whole foods, fruits and vegetables, lean proteins, nuts, seeds, and heart-healthy oils)
3. Physical activity: ≥150 minutes of moderate or 75 minutes of vigorous activity weekly
4. Nicotine avoidance: including exposure to e-cigarettes and secondhand smoke
5. Weight management: BMI target between 18.5 kg/m^2 and 25 kg/m^2
6. Normal cholesterol: non-HDL cholesterol <130 mg/dL
7. Normal blood glucose: fasting glucose <100 mg/dL or A1C <5.7%
8. Normal blood pressure: <120/<80 mm Hg.

This comprehensive approach underscores the interconnectedness of lifestyle factors and physiological markers, aiming to reduce cardiovascular risk and enhance overall quality of life.

Risk Assessment: PREVENT Calculator

Whereas the Life's Essential 8 construct provides a framework for maintaining cardiovascular health, accurate risk assessment can aid in tailoring interventions. The AHA's 2023 introduction of the PREVENT calculator represents an advancement in this field. PREVENT succeeds the widely used 2013 American College of Cardiology (ACC)/AHA calculator, which has been the primary tool for estimating ASCVD risk and guiding statin initiation in primary prevention. PREVENT improves on the 2013 tool by incorporating a larger, more recent, and more diverse data set. PREVENT excludes race from its risk calculation model, reflecting the view that race is a social construct rather than a biological factor. However, PREVENT does offer the option to include a zip code to factor in social determinants of health (SDOH). This new tool also expands risk factor considerations to include BMI, A1C, estimated glomerular filtration rate, and urinary albumin-to-creatinine ratio.

PREVENT provides a more refined analysis by presenting 10-year risk estimates for people ages 30 to 79 and 30-year projections for those ages 30 to 59, separately addressing overall cardiovascular disease, ASCVD, and heart failure. Notably, PREVENT would result in a major shift toward lower risk categories for ASCVD in the US adult population compared to the 2013 ACC/AHA calculator. It would reclassify 53% as lower risk and only 0.41% as higher risk, reducing the number of individuals meeting thresholds for statin therapy by approximately 17 million. Although clinicians have the option to use either calculator to guide management strategies, the ACC and AHA guidelines have not been updated to formally adopt PREVENT as the new standard. As the field of CKM syndrome risk assessment continues to evolve, health providers should remain attentive of emerging data on the relative strengths and limitations of available tools.

Diabetes Management and Lifestyle Coaching

The presence of diabetes significantly impacts CKM syndrome progression and management strategies. Although pharmacological interventions are important, evidence increasingly supports the value of structured lifestyle interventions and diabetes coaching programs. Studies have shown that intensive lifestyle modification programs can reduce incidence of diabetes and improve cardiovascular risk factors. When delivered by diabetes care and education specialists, health coaching enhances medication persistence, reduces metabolic risk factors, and improves overall self-management behaviors. Diabetes prevention programs have proven particularly effective for individuals with prediabetes or early metabolic dysfunction, leading to 5% to 7% weight loss, improved blood pressure and lipid profiles, and a 58% reduction in progression to T2D.

CKM management requires a tailored approach based on glycemic status. Those with optimal glucose levels benefit from preventive lifestyle modifications, and individuals with prediabetes need more intensive lifestyle interventions. For those with established diabetes, management involves a comprehensive strategy that combines lifestyle coaching with targeted pharmacotherapy, carefully selecting medications based on individual risk factors and comorbidities.

Pharmacological Therapies

A comprehensive strategy addressing multiple aspects of CKM syndrome is essential for optimizing patient care and outcomes. Recent large-scale clinical trials have demonstrated that several novel drug classes improve important cardiovascular, kidney, and metabolic targets. Recommended approaches and pharmacologic therapies tailored to various patient profiles are summarized in Table 1.

Sodium-glucose cotransporter 2 (SGLT2) inhibitors have emerged as a cornerstone in CKM syndrome management. These agents have demonstrated remarkable cardioprotective and renoprotective effects, which appear to be largely independent of their glucose-lowering action. SGLT2 inhibitors have shown efficacy in reducing heart failure hospitalizations and CKD progression, even in individuals without diabetes. Although their glucose-lowering capacity may diminish with declining kidney function, their cardiorenal protective effects persist. This makes them valuable even in advanced stages of CKD. When considering SGLT2 inhibitors, they should be prioritized for patients with CKD or high heart failure risk.

Glucagon-like peptide 1 receptor agonists (GLP-1 RAs) represent another important class of medications for the management of CKM syndrome. Although their cardiovascular benefits have been primarily demonstrated in patients with diabetes, GLP-1 RAs offer significant advantages in glycemic management and weight management. The impact on glycemic levels appears to be a key predictor of their end-organ protective effects. GLP-1 RAs may be preferred for patients with obesity or marked hyperglycemia due to their potent impact on weight loss and stronger glycemic lowering effects compared to SGLT2 inhibitors.

Finerenone, a selective nonsteroidal mineralocorticoid receptor antagonist, offers an additional avenue for protection in patients with T2D and CKD. Its mechanism involves suppressing the overactivation of mineralocorticoid receptors, which play a role in promoting inflammation and fibrosis in cardiorenal diseases. Finerenone may be considered as an add-on therapy, particularly in those with albuminuria.

When selecting therapies for patients with CKM syndrome, a personalized approach is important. In patients with multiple CKM risk factors, using combinations of these drug classes may be beneficial, allowing for complementary pharmacological effects and simultaneous targeting of comorbid conditions. By carefully considering patient characteristics, comorbidities, and the unique properties of each drug class, health professionals can develop individualized treatment plans that address the multifaceted nature of CKM syndrome.

Interdisciplinary Care Models

The 2023 AHA Presidential Advisory highlighted the importance of interdisciplinary care and incorporating SDOH into CKM syndrome management. These elements are key for both prevention and treatment, as demonstrated in the advisory's treatment algorithms. A multidisciplinary CKM team is recommended to provide guidance alongside primary care clinicians for patients with ≥2 CKM conditions. The team should include representation from primary care, applicable subspecialists (eg, nephrology, cardiology, endocrinology), pharmacy, nursing, social workers, and community health workers. The role of diabetes care and education specialists is particularly important in the interdisciplinary team. They can provide detailed self-management education and lifestyle coaching and help coordinate care between team members. Regular visits with a diabetes care and education specialist have been associated with improved glycemic management, reduced cardiovascular events, and cost-effect care. Importantly, the team should have a designated CKM coordinator who helps organize

Table 4 Interdisciplinary Care Model Volume-Based Care Referral Thresholds.

Specialty	Suggested Criteria
Nephrology	Patients with higher KDIGO risk: G3a (A3, especially if unresponsive to ACEi/ARB), G3b (A2/A3), G4, and G5
Endocrinology	Patients with diabetes with poor glycemic control (A1C >9%) or microvascular disease and/or end-organ damage
Cardiology	Patients with prevalent CVD; can consider for high-risk subclinical CVD (eg, markedly elevated CAC score[a] or combination of elevated cardiac biomarker and echocardiography abnormality)

Abbreviations: ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; CAC, coronary artery calcium; CKM, cardiovascular-kidney-metabolic; CVD, cardiovascular disease; KDIGO, Kidney Disease Improving Global Outcomes.
[a]CAC score ≥300 in men <65 years of age or women <75 years of age and/or those with multiple CKM risk factors or CAC score ≥1000.

the team and facilitate communication between all the professionals involved.

The creation of the team, associated roles, and facilitated communication is part of a "value-based" interdisciplinary care strategy outlined by the Advisory. The Advisory also addresses a "volume-based" strategy that includes targeted referrals of high-risk patients to subspecialists to help further optimize care. Suggested specific thresholds for nephrology, endocrinology, and cardiology referrals are defined in Table 4 as recommended by the Advisory. In this strategy, the CKM coordinator also assists with patient navigation among specialists. This interdisciplinary care model requires a shift in the structure of existing reimbursement models and support at a systems level with policies and acceptance of all involved.

Although the referral thresholds presented in Table 4 reflect current expert consensus from the 2023 AHA Presidential Advisory, it is important to acknowledge that these thresholds may evolve as more evidence accumulates regarding the benefits of earlier specialist intervention. Moreover, SDOH must be carefully considered, potentially allowing for more flexible referral criteria. For patients with significant social needs that may complicate their condition management, lower thresholds might be appropriate. Future research focusing on outcomes of earlier referrals in specific at-risk populations will be important in refining these recommendations and developing more personalized referral strategies.

Social Determinants of Health

Healthy People 2030 define SDOH as "the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality of life outcomes and risks." These are further grouped into 5 categories: economic stability, education access and quality, health care access and quality, environment, and social context. Adverse SDOH are associated with disparities in cardiovascular health behaviors, CKD development, obesity, diabetes, and subsequent complications from these conditions. As such, incidence of CKM among patients with adverse SDOH is high. The 2023 Presidential Advisory recommends screening for not only biological factors related to CKM but also SDOH.

Numerous screening tools exist to survey SDOH, with many focusing on mental health measures, financial strain, education, and personal safety. Some tools may be self-administered versus created for use within an electronic health record (EHR). The Advisory recommends that screening tools be incorporated into the clinical workflow and EHR for efficient implementation and cohesive interdisciplinary collaboration. Examples of existing tools that have numerous desired factors include the Oregon Community Health Information Network tool and the Centers for Medicare & Medicaid Services tool. In addition to screening tools, existing community resources should be identified and utilized to address social needs discovered. Interdisciplinary team members can help connect patients to these resources that protect against adverse social condition outcomes.

Several obstacles exist for SDOH integration, including lack of standardized screening tools and insufficient training on how to collect, code, and use SDOH data. Further complicating matters is the limited connection between many SDOH factors and ICD-10 codes, with some determinants, such as lack of transportation, having no corresponding codes at all. Although some obstacles may require advocacy efforts at a national level, such as ICD-10 code integration, others may be easier to address at a systems level, including education and training on SDOH data. Continual awareness regarding SDOH barriers and efforts to integrate SDOH promotion is vital in the comprehensive approach to CKM care.

Conclusion

CKM syndrome represents a complex relationship of metabolic, kidney, and cardiovascular factors that significantly impact patient health. The AHA's staging system and management recommendations provide a framework for addressing this condition. Key strategies include early prevention through lifestyle modifications, accurate risk assessment, targeted pharmacological interventions, and interdisciplinary care models. The incorporation of social determinants of health into CKM management is important for addressing health disparities and providing comprehensive care. Moving forward, ongoing research and clinical experience will be essential to refine the approach to CKM syndrome and improve patient outcomes across diverse populations. ■

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Lourdes V. Cross, Catherine Eichler, Emily Jones, and Lindsey McDanie researched data, wrote the manuscript, and reviewed/edited the manuscript.

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Dr. Lourdes Cross is the guarantor of this work and, as such, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Optimizing Glycemic Management *Through* EXERCISE

Beyond Weight Loss

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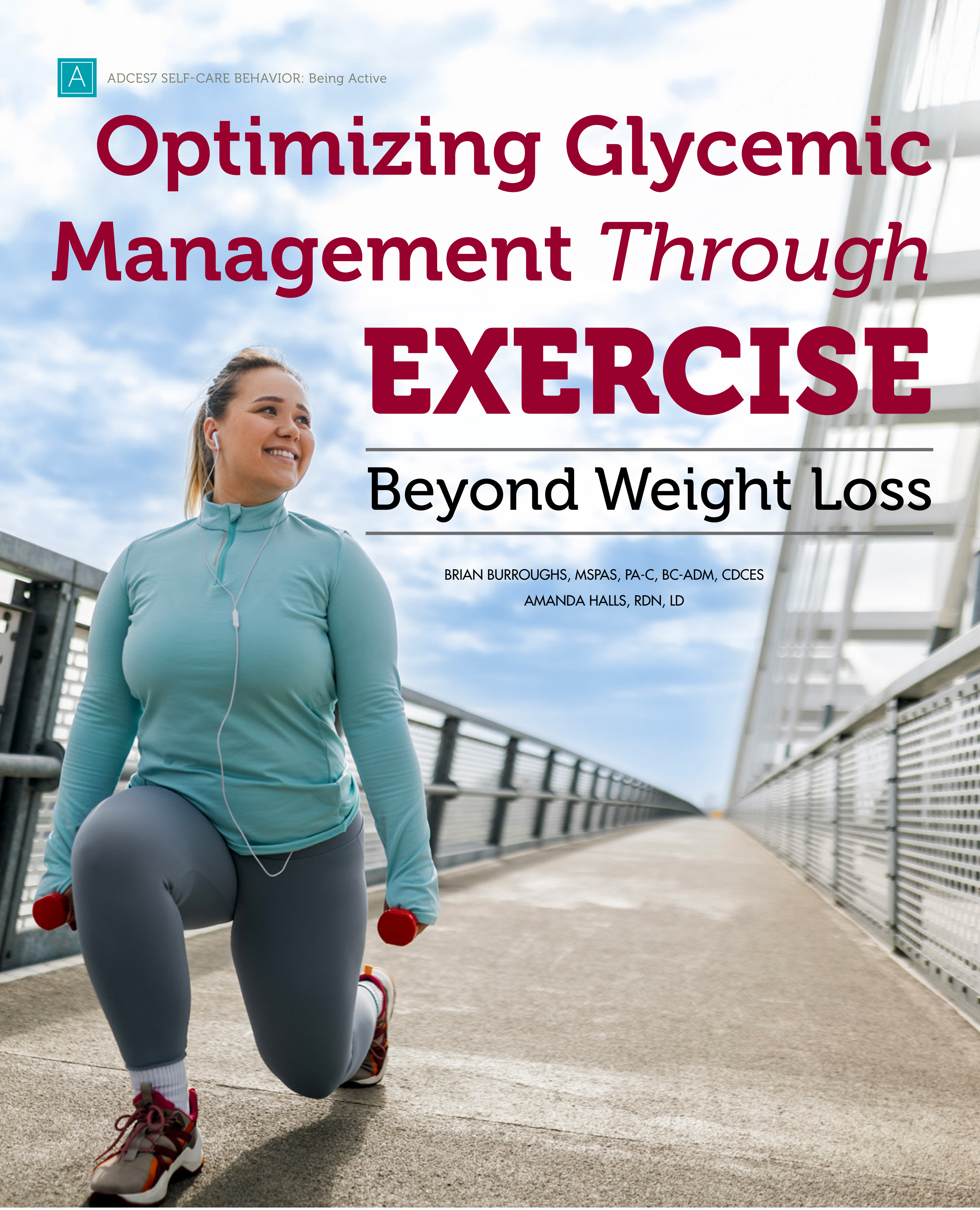

The relationship between physical activity and improved glycemic management in individuals with type 2 diabetes is well documented. Interestingly, research shows that these benefits can be achieved independently of weight loss, a crucial yet often overlooked component of diabetes management. For diabetes care and education specialists (DCESs) and their patients, understanding this concept can transform treatment approaches, particularly for individuals who find weight loss difficult to achieve or maintain (Jakicic & Powell 2019; Riddell & Gallen 2020).

Mechanisms Behind Improved Glycemic Management

Exercise enhances glycemic management management through several physiological mechanisms that do not require weight loss. Primarily, it increases insulin sensitivity, enabling the body to use insulin more efficiently. Exercise triggers muscle contractions that increase glucose transporter translocation to the cell membrane, facilitating glucose uptake even without insulin stimulation. Because skeletal muscle tissue is responsible for a significant portion of glucose disposal, this mechanism is critical (Colberg et al 2019).

Additionally, exercise has both immediate and long-term effects on blood glucose levels. During exercise, muscles utilize glucose as fuel, reducing circulating blood sugar. Over time, regular exercise improves insulin signaling pathways, enhancing the body's ability to regulate glucose. These benefits apply to both aerobic and resistance training, making exercise a versatile tool for diabetes management. A systematic review found that aerobic and resistance exercise significantly reduces A1C levels by 0.6% to 1% on average, even without weight loss (Jakicic & Powell 2019).

Types of Exercise and Their Benefits

Aerobic Versus Resistance Training

Large-scale randomized controlled trials have shown that both aerobic (eg, 45 minutes at 75% heart rate [HR] max) and resistance training (eg, 2-3 sets of 7 exercises at 80% 1-rep max) improve A1C levels over a 22-week intervention (Marcotte-Chenard & Little 2023). Given individual differences in preferences, physical limitations, and time constraints, it is important to emphasize that both anaerobic and aerobic exercise provide glycemic benefits.

- Aerobic exercise includes rhythmic activities, such as walking, cycling, or swimming, that increase heart rate. Moderate intensity corresponds to a perceived exertion of 4 to 7 on a 1 to 10 scale.
- Resistance training involves short bursts of high-intensity activity to build muscle, such as weightlifting or bodyweight exercises.

A 12-week aerobic exercise program (60 minutes, 5 times per week, at 60%-90% HR reserve) improved beta-cell responsiveness in patients newly diagnosed with type 2 diabetes (Marcotte-Chenard & Little 2023). Similarly, 30 minutes daily or 60 minutes every other day of cycling at 50% maximal workload capacity significantly reduced hyperglycemia prevalence. Even a single session of moderate-intensity aerobic exercise can lower 24-hour glucose values compared to a nonexercise day (Marcotte-Chenard & Little 2023).

High-Intensity Interval Training

Several meta-analyses have found that high-intensity interval training (HIIT) elicits greater A1C improvements compared to moderate-intensity continuous training. HIIT offers similar benefits in less time, making it a valuable option for individuals with busy schedules (Marcotte-Chenard & Little 2023).

Reducing Visceral Fat and Inflammation

Beyond direct effects on insulin sensitivity and glucose uptake, exercise significantly reduces visceral fat and chronic inflammation—2 major contributors to insulin resistance. Unlike subcutaneous fat, visceral fat surrounds internal organs and is strongly associated with type 2 diabetes and cardiovascular disease. Regular aerobic and resistance training mobilizes these fat stores, decreasing the secretion of pro-inflammatory cytokines (TNF-α, IL-6) that impair insulin signaling (Engin 2017; Ryan et al 2023).

Although both exercise modalities improve metabolic health, they offer distinct advantages:

- Aerobic exercise enhances postexercise glucose uptake and insulin sensitivity (Francois & Little 2021).
- Resistance training increases lean body mass, enhancing resting energy expenditure and glucose metabolism (Colberg et al 2022).

Using the FITT principle (frequency, intensity, time, type) allows for tailored exercise prescriptions. For example, individuals with postprandial hyperglycemia may benefit from moderate-intensity aerobic sessions after meals, whereas those with sarcopenia may require progressive resistance training to improve muscle mass and glucose metabolism (Rynders et al 2024).

Psychological and Behavioral Benefits

Understanding that exercise benefits glycemic management regardless of weight loss can be empowering. Many individuals struggle with weight management, and focusing solely on weight loss may be discouraging. DCESs can shift the emphasis to achievable health outcomes, such as better glucose management and increased energy, promoting sustained exercise routines (Riddell & Gallen 2020).

Exercise also improves mental health, reducing depression and anxiety—common comorbidities in diabetes. Enhanced psychological well-being supports medication-taking, dietary recommendations, and glucose monitoring, underscoring the comprehensive role of exercise in diabetes care (Streeter et al 2021).

Practical Recommendations for DCESs

DCES professionals are crucial in integrating exercise into individualized diabetes care plans. Because many DCES professionals (e.g., RNs, RDNs) may lack formal training in exercise physiology, recommendations should be practical and accessible.

- American Diabetes Association (ADA) guidelines: The ADA (2024) recommends at least 150 minutes of moderate-intensity aerobic exercise weekly plus resistance training twice per week.
- Intensity measurement: The Rating of Perceived Exertion Scale (moderate intensity = 11-14 on a 6-20 scale or 4-7 on a 1-10 scale) helps patients self-monitor their activity (Ross et al 2024).
- Functional strength exercises: Sit-to-stands, deadlifts, and farmer's carries enhance strength, balance, and mobility, making them ideal for individuals with diabetes (Mancilla et al 2022).
- Daily activity accumulation: Walking after meals, taking stairs, or engaging in household chores provides measurable glycemic benefits (ADA 2024).

Overcoming Common Barriers

Time constraints, physical limitations, and lack of motivation often hinder regular exercise. DCESs should help patients identify enjoyable and accessible activities. For those with joint pain, low-impact options such as swimming or cycling may be more suitable (Schellenberg et al 2020).

Additionally, reframing exercise as a way to increase energy and reduce stress—rather than solely a weight-loss tool—can foster a more positive mindset and encourage participation.

Conclusion

The evidence supporting exercise as a key component of glycemic management, independent of weight loss, is robust. This understanding empowers DCESs and their patients to focus on sustainable, achievable strategies for improving metabolic health.
By emphasizing both the physiological and psychological benefits of exercise, DCESs can inspire lifelong physical activity as a cornerstone

of diabetes management, ultimately enhancing health outcomes and quality of life. ■

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Addressing Deskilling as Automated Insulin Delivery Advances

What Is the Backup Plan?

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Insulin delivery and glucose monitoring technology in type 1 diabetes (T1D) care has rapidly advanced with the goal of improving glycemia to be closer to that of people without diabetes. Insulin pump and continuous glucose monitor (CGM) sensor integration has progressed from low-glucose and predictive low-glucose suspension of insulin delivery when sensor glucose crosses (or is predicted to cross) the low threshold level to algorithm-driven partially automated insulin delivery (AID) based on sensor readings with manual meal and correction boluses. Further advances have included autocorrection boluses, meal detection, and offering multiple target set points.[1-3] One AID system, the iLet Bionic Pancreas (BP), provides adaptive closed-loop algorithms enabling fully autonomous insulin delivery and automatically titrating all therapeutic insulin, including basal, correction, and prandial insulin. Instead of precise carbohydrate counting, the system requires qualitative meal announcements to autonomously determine prandial insulin. The user's body weight is the only input needed to initiate the system because it perpetually learns and automatically refines dosing, no longer requiring manually calculating, programming, and adjusting system settings.[4] Fully autonomous insulin dosing with meal announcements represents the next stage in AID development and is changing the paradigm for clinical management of insulin therapy in T1D care.

The ability of AID systems to improve glycemia with less effort on the part of users and to compensate for disruptions in daily routines, unplanned physical activity, carbohydrate miscalculations, or missed boluses, and so on is valued by users.[5-8] However, continued reliance on an algorithm for glycemic management could lead to forgetting how to carry out key tasks, referred to as "deskilling," for example, carbohydrate counting, giving injections, checking blood glucose, and so on. This can be a concern in the case of technology unavailability or failure. Thus, it is recommended that individuals using advanced technologies should have an adequate technical understanding of the system to be able to troubleshoot and also have a plan to revert to standard diabetes treatment (ie, nonautomated subcutaneous insulin delivery by pump or injections).[9] They and their clinical team should have remote access to their AID system data to

Table 1 Resources, References, and Guidelines for Automated Insulin Delivery Therapy.

Resource	Institution/Organization	Reference or Link
Danatech	Association of Diabetes Care and Education Specialists (ADCES)	Danatech.org[11]
PANTHERprogram	Babara Davis Diabetes Center, University of Colorado	PANTHERprogram.org[10]
"Consensus Recommendations for the Use of Automated Insulin Delivery Technologies in Clinical Practice"	Advanced Technologies and Treatments for Diabetes (ATTD)	Phillip et al[9]
"Automated Insulin Delivery: Benefits, Challenges, and Recommendations. A Consensus Report of the Joint Diabetes Technology Working Group of the European Association for the Study of Diabetes and the American Diabetes Association."	American Diabetes Association (ADA)/European Association for the Study of Diabetes (EASD)	Sherr et al[12]
"American Association of Clinical Endocrinology Clinical Practice Guideline: The Use of Advanced Technology in the Management of Persons With Diabetes Mellitus"	American Association of Clinical Endocrinology (AACE)	Grunberger et al[13]
"7. Diabetes Technology: Standards of Care in Diabetes—2025"	ADA	American Diabetes Association Professional Practice Committee[14]
"ISPAD Clinical Practice Consensus Guidelines 2024: Diabetes Technologies: Insulin Delivery"	International Society of Pediatric and Adolescent Diabetes (ISPAD)	Biester et al[15]

help in determining manual basal, mealtime, and correction doses. For a comprehensive AID comparison table, readers are encouraged to visit PANTHERprogram.org, developed and maintained by the Barbara Davis Center for Diabetes, University of Colorado Anschutz Medical Campus.[10] The ADCES danatech.org website provides comprehensive resources, information, and training on diabetes technology.[11] See Table 1 for a listing of resources and references regarding AID use in clinical practice.

It is also critical to consider the potential disruption in availability of supplies, such as glucose sensors or insulin infusion sets, as experienced during an infectious disease pandemic or natural disasters or during supply chain disruptions or interruptions in data availability. Users are vulnerable when insulin infusion sets or sensors do not last their intended duration or supply interruptions occur because insurance policies change and prior authorizations are required for the necessary AID supplies.[12] Developing backup plans (Table 2) to ensure that the skills and supplies needed for basic diabetes management in these circumstances are available is critical. This includes reverting to conventional pump therapy (in the case of semiautomatic AID systems: MiniMed 780G, t:slimX2 and Mobi Control-IQ, and Omnipod 5) or manual insulin injections, monitoring ketones, and considering whether an insulin infusion occlusion or failure has led to hyperglycemia.

There is no option for a manual mode in the fully automated iLet BP. If the BP loses communication with the CGM, it will prompt the user to enter blood glucose values periodically. As

Table 2 Backup Plan Checklist.

Component	Skills Needed	Supplies Needed
Insulin plan	Determining the long-acting (basal) insulin, mealtime and correction insulin doses based on data from the AID system Injection technique (syringe or pen)—provide clear instructions depending on the system in use	Syringe and needles with unexpired vials of long-acting and rapid-acting insulin Unexpired insulin pens, pen needles Connected insulin pen with insulin therapy settings programmed
Glucose monitoring plan	Tips for always having a backup sensor available (eg, request a sensor be shipped in the case of an early sensor failure) Blood glucose monitoring technique	Blood glucose monitor and unexpired test strips, lancets Alternate brand sensor (depending on the AID system)
Pump supplies	Knowing how to contact the AID system manufacturer customer care line or clinician to request supplies	Extra pump supplies (cartridges, tubing, infusion set, pod) Note: Having an in-warranty pump (if applicable) is critical in case pump malfunctions (due to the time it would take to get a new pump approved and available).
Power supply		Extra power cords Portable battery/power bank Batteries (as applicable) Car adapter Solar-powered charger
Glucose management	Knowing how and when to check for ketones and when to call the clinic for assistance in ketone management	Supplies to treat hypoglycemia Unexpired glucagon Unexpired ketone strips, ketone monitor Water bottle
Meal dosing	Assess carbohydrate counting or awareness skills and reeducate as needed	

Abbreviation: AID, automated insulin delivery.

long as the user enters blood glucose values into the system, it will continue to automate all insulin delivery based on the entered blood glucose values and previously stored information on the user's basal insulin needs. The BP can operate in blood glucose-run mode for up to 72 hours. Having a blood glucose meter and unexpired test strips and lancets is an important part of the backup plan for BP users. It is also recommended that the user request a replacement sensor from the manufacturer in the event of early sensor failure to assure adequate sensors are available in the event of a supply interruption or early sensor failure. In case of device malfunction, the BP generates and continuously updates backup insulin doses for injection or pump users, including total daily dose, average daily basal, and adapted mealtime doses. These data are readily available for both users and their clinical team to access on demand through the cloud.

The MiniMed 780G system will revert from the semiautomated Smart Guard mode to a safe basal mode if there is a loss of CGM communication or other interruption of CGM data or a concern about sensor accuracy. In this mode, the pump will deliver a basal rate determined by the algorithm but without glucose-dependent basal adjustments and no autocorrection boluses. The user must enter a blood glucose value into the pump before the "time to exit" expires to prevent automode exit. The low-glucose suspend will remain when the system transitions to manual mode. It will be critical to consider altering the low-glucose thresholds and predictive low alerts when not using the AID feature so that the user can manually respond to hypoglycemia.

With the Control-IQ and Control-IQ+ algorithm, there is no limited automation mode. If there is loss of CGM data for 20 minutes or more, the pump will operate in manual mode, delivering the programmed basal rate without glucose-dependent basal adjustments and no auto correction bolus.

The Omnipod 5 has an automated limited mode that will activate if there is no CGM data for 20 minutes or more or if there is an "Automated Delivery Restriction" alarm (if insulin has been suspended too long or if max delivery is too long). The Omnipod will deliver a basal rate determined by algorithm but without glucose-dependent basal adjustments until sensor data return or the user clears the alarm. The "Automate Delivery Restriction" alarm is intended to let the user know to step in and check their sensor, pod, and glucose level. The user acknowledges this alarm by switching to manual mode for 5 minutes or longer.

Contingency planning should include access to batteries, battery pack, charging cables, insulin infusion sets, reservoirs, insulin, syringes (or insulin pens and needles), a glucose meter and test strips, glucagon, ketone test strips, and a backup glucose sensor and transmitter for the CGM system.[13] Putting in place strategies for minimizing supply interruption will also be critical. In addition, a plan with clear instructions for transition to insulin injection therapy or standard pump therapy (if available) and a supply of unexpired insulin pens or vials with rapid- and long-acting insulins should be available for use until a replacement for the AID system is available. It will be important to consider the user's knowledge and skill base, which will vary depending if the user is newly diagnosed (eg, has never used a syringe or a blood glucose meter), has many years with diabetes but is new to pump therapy (eg, may not realize the pump may still work without a sensor), or has many years with pump therapy but is new to AID (eg, may have never used an insulin pen).

It is important to give users guidance about the use of their AID system during illness, when there may be temporarily increased insulin resistance and elevated glucose levels and reduction in oral intake and ketosis without elevated glucose levels. If the user requires use of steroids, the AID system may not be able to respond rapidly enough to account for the increased insulin requirements.[12] Some diabetes centers advocate for providing a connected insulin pen with programmed insulin therapy settings that are updated when changes occur not only as part of initial therapy upon diagnosis but also as part of the backup plans for AID users[16]

In the event of hyperglycemia, users may need to return to basic diabetes management with clear instruction on how to restore normoglycemia. The diabetes care and education specialist (DCES) should remind users how to recognize signs of infusion set failure: in cases of sustained hyperglycemia above 250 mg/dL and/or after a bolus insulin correction, the glucose level does not drop by at least 50 mg/dL within 1 hour of treatment.[9] The best advice is "when in doubt, switch it out." The DCES or designated member of the clinical team should discuss site rotation and regularly assess site and skin health with anyone on insulin therapy.[14]

The DCES can take the lead in establishing clinic, practice, or health care system protocols and policies regarding all aspects of backup plans for diabetes technology and advocate for inclusion in standards of care and clinical guidelines. These include the following:

- Reinforce the importance of maintaining self-management skills, including blood glucose checking, ketone checking, administering a syringe or insulin pen injection, regular review of basal insulin delivery settings or doses, calculating a correction dose of insulin in case of system malfunction, identifying diabetes emergencies, and carrying supplies to handle them.[17]
- Demonstrate and verify skills necessary for giving an injection and monitoring glucose without a sensor by return demonstration. This should be conducted at least annually or more frequently as needed.
- Automated systems often alleviate the need for precise carbohydrate counting. Assess carbohydrate counting or carbohydrate awareness skills and reeducate as needed.[18]
- Remind users how to recognize signs of infusion set failure: in cases of sustained hyperglycemia above 250 mg/dL and/or after a bolus insulin correction, the glucose level does not drop by at least 50 mg/dL within 1 hour of treatment.[9]
- Simulate emergency scenarios where patients practice managing their diabetes without technology and provide resources for emergency assistance.
- Integrate smart phrases and protocols into the electronic health record, ensuring backup plan topics are discussed and appropriate supplies are ordered on a timely basis.

Conclusion

Although advanced diabetes technologies offer substantial benefits, backup plans for addressing the associated risk of deskilling are vital. The DCES should proactively equip individuals with the skills and resources needed to manage their diabetes manually. Incorporating regular training, fostering preparedness, and emphasizing the importance of backup plans will ensure individuals relying on advanced technologies can maintain effective glycemia even in the temporary absence of technology. The DCES can lead in their place of practice by putting in place policies and procedures that assure timely backup plans as automation advances. ■

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Laura Russell and Janice MacLeod wrote the initial outline. Janice MacLeod drafted the original manuscript. Laura Russell and Kelly Postiglione Cook edited the manuscript and made substantial contributions. All authors approved the final draft of the manuscript.

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Perceptions of Barriers Preventing the Initiation and Utilization of **Continuous Glucose Monitors Among Adults With Type 2 Diabetes**

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On April 16, 2023, the Centers for Medicare and Medicaid Services (CMS) removed some restrictions to continuous glucose monitor (CGM) coverage for Medicare beneficiaries.[1] This policy change greatly expanded the number of people with diabetes who are eligible to access CGMs. Medicare eligibility includes those 65 years of age or older or with conditions such as end-stage renal disease, some disabilities, or amyotrophic lateral sclerosis. Because this population includes a sizeable group of people, it often serves as a bellwether for changes in the insurance industry. This coverage expansion was encouraging news, considering several randomized controlled trials have shown the benefits of CGM use in people with diabetes. For individuals with type 1 diabetes (T1DM), these benefits include lowering A1C and reducing hypoglycemic episodes.[2-6] For individuals with type 2 diabetes (T2DM), CGMs assist in lowering A1C, but there are mixed results on reducing episodes of hypoglycemia.[6-8] Per Martens and colleagues,[8] when CGM usage was compared to usual care among people with T2DM, CGM users had a significantly lower A1C at 8 months, with an adjusted difference of −0.4%, and a larger time in range, with an adjusted difference of 15%. These benefits can improve quality of life and assist in preventing complications associated with T2DM, which further demonstrates the importance of people with T2DM utilizing these devices.

Due to the expansion of insurance coverage and new developments in diabetes technology, one would expect that many people with T2DM who qualify for a CGM would desire to use one. However, low CGM prescribing rates (12.3%) for this population continue at some institutions.[9] Recent research has elucidated which CGM barriers often impact patients but has primarily focused on provider perspectives or patients with T1DM.[10] These barriers include cost, difficulty using the device, social stigma, patient discomfort, and alarm fatigue.[10] This study aimed to provide deeper insight into the utilization of CGMs and identify the most impactful barriers that prevent their use among people with T2DM.

Methods

This was a prospective, descriptive, cross-sectional pilot survey study that took place at internal medicine clinics at an academic health center. Researchers identified potential participants using ICD-10 codes related to T2DM and invited them to participate during their regularly scheduled provider visits. At the time of consent by a study investigator, a self-administered questionnaire to assess CGM awareness, barriers to care, and baseline knowledge was offered to potential participants through either a web-based Qualtrics survey or on paper.[11] Participants completed the survey via their preferred method at the time of their clinic visit.

Inclusion/Exclusion Criteria

Participants were included if they were 18 years of age or older, had a current diagnosis of T2DM, were an active patient within the general internal medicine clinics, and could complete the survey independently without assistance from investigators. There were no exclusion criteria in this study.

Participant Survey

The 27-item questionnaire was divided into 3 sections: demographics (items 1-8), CGM awareness (items 9-15), and CGM barriers and knowledge (items 16-27). This questionnaire was developed by drawing on previously published literature and the Glucose Monitoring Satisfaction Survey.[10,12] Questions were designed as multiple choice or statements in which participants indicated their level of agreement using a 5-point Likert-type scale. The questionnaire was written at an 8th-grade reading level verified by a calculated Flesch-Kincaid score.

Statistical Methods

Paper survey responses were inputted to the Qualtrics form by a researcher. The web-based survey responses were then exported from Qualtrics into a Microsoft Excel spreadsheet. The data were subsequently imported into IBM SPSS Statistics for Windows (version 29.0) for all analyses. Descriptive statistics were calculated for demographics and for CGM awareness, barriers, and knowledge assessment items. Participants' CGM barriers and knowledge were compared between current CGM users, past CGM users, and non-CGM users. The latter was further classified as "previously heard of CGMs from health care provider or other source" and "have not heard of CGMs." Chi-square tests were used to compare barrier and knowledge responses across CGM utilization and awareness groups. An alpha level less than 0.05 was considered statistically significant.

Results

Participant Characteristics

Participant demographics are shown in Table 1. Survey participants (n = 30) had a mean age of 61.48 years (SD 12.56, range = 32-82). The majority of respondents were female (57%) and non-Hispanic White (60%). Thirteen (45%) had public insurance, 11 (38%) had private insurance, and 2 (7%) were uninsured. Eighteen (60%) participants reported currently using insulin.

Table 1 Demographics (N = 30 Unless Otherwise Stated)

	No. (%)
Age, y (N = 29)	61.48 (12.56)a
Sex	
Male	13 (43)
Female	17 (57)
Race and ethnicity	
White, non-Hispanic	18 (60)
Black or African American, non-Hispanic	8 (27)
Hispanic/Latino	3 (10)
Other	1 (3)
Insurance (N = 29)	
Public insurance	13 (45)
Private insurance	11 (38)
Uninsured	2 (7)
Do not know or prefer not to answer	3 (10)
Education	
Graduate/postgraduate	3 (10)
Undergraduate	5 (17)
Some college or trade school	10 (33)
Trade school	4 (13)
High school	5 (17)
Elementary school	2 (7)
Other	1 (3)
Currently use insulin	
Yes	18 (60)
No	12 (40)

[a]Mean (SD).

CGM Utilization and Awareness

Twenty-six (87%) participants had heard of a CGM prior to the survey, with the majority stating they learned about the devices from either their physician or pharmacist (38%), television (23%), or a friend or family member (15%). Eighteen (60%) participants reported currently not using a CGM, and 11 (37%) reported currently using one. Nineteen (63%) participants reported a preference for using CGMs over fingerstick blood glucose, 4 (13%) reported a preference for fingerstick blood glucose, and 3 (10%) reported no preference.

CGM Barriers and Knowledge

When comparing responses between participants who had used insulin versus those who had not, those who had heard of CGMs versus no awareness, and those who currently used CGMs versus those who had used them in the past, there were no statistically significant differences; therefore, these results are presented as 1 group. From the multiple-response question asking participants which barriers they faced in utilizing CGMs, the barriers reported most often were insurance (40%) and cost (33%). Other reported barriers included concerns that the devices would not work, nervous to rely on technology, not liking having devices on their body, alarms, interfering with sleep, and not enough time in the clinic visits to learn how to use the device, each indicated by 3% of participants.

As shown in Table 2, the majority of participants who had heard of CGMS (42%) reported they neither agreed nor disagreed with finding it difficult to afford a CGM. Majorities of participants agreed or strongly agreed to being confident using applications for CGMs, that CGMs are safe and useful for managing diabetes, and that CGMs replace the need to take a blood glucose reading with a glucose meter. Additionally, most participants indicated they are not embarrassed to use these devices around other people (81%).

Table 2 Continuous Glucose Monitor Awareness, Utilization, Barriers, and Knowledge

Barriers and Knowledge (n = 26)a	Strongly Disagree, No. (%)	Disagree, No. (%)	Neither Agree nor Disagree, No. (%)	Agree, No. (%)	Strongly Agree, No. (%)	No Response, No. (%)
I find it difficult to afford a continuous glucose monitor.	5 (19)	2 (8)	11 (42)	2 (8)	3 (12)	3 (12)
I am confident in my ability to use applications on my smartphone.	2 (8)	3 (12)	4 (15)	5 (19)	9 (35)	3 (12)
I am comfortable adjusting different settings on a continuous glucose monitor application.	2 (8)	4 (15)	5 (19)	8 (31)	4 (15)	3 (12)
I am confident in my ability to use a reader for a continuous glucose monitor.	2 (8)	2 (8)	4 (15)	9 (35)	5 (19)	4 (15)
I have difficulty keeping continuous glucose monitors attached to my body.	5 (19)	4 (15)	7 (27)	5 (19)	1 (4)	4 (15)
I am or would be embarrassed to use a continuous glucose monitor around other people.	12 (46)	9 (35)	1 (4)	0 (0)	0 (0)	4 (15)
I believe continuous glucose monitors are safe to use.	1 (4)	1 (4)	3 (12)	8 (31)	11 (42)	2 (8)
Continuous glucose monitors are useful for managing blood sugar.	1 (4)	0 (0)	5 (19)	6 (23)	12 (46)	2 (8)
Continuous glucose monitors replace the need to take a blood sugar reading with a glucose meter.	1 (4)	0 (0)	4 (15)	7 (27)	10 (39)	4 (15)
A "time in range" of 80% or higher would be a good goal for blood sugar management.	1 (4)	0 (0)	5 (19)	12 (46)	3 (12)	5 (19)
Glucose management indicator (GMI) on a continuous glucose monitor report is an estimated A1C.	1 (4)	1 (4)	8 (31)	8 (31)	2 (8)	6 (23)

[a]Among participants who have heard of continuous glucose monitors (N = 26).

Discussion

In this pilot study, emphasis was placed on identifying the impact of financial barriers to using CGMs because there have been recent changes in insurance coverage regarding these devices and the availability of nonprescription (over-the-counter) CGMs. Based on these findings, it appears that the perceptions of insurance coverage and cost barriers are still regarded as the most impactful for this patient population. Although these were identified as commonly perceived barriers, these are patient perceptions and were not verified by using prescription claims or checking coverage/cost of the devices. This finding could be further explored within institutions using claims data to decipher if patients are experiencing high costs or if they are unaware of the changes in coverage that have occurred. Although over-the-counter CGMs are now available, the cost of these devices is often prohibitive, and these devices provide less information for users than their prescription counterparts.

When determining the utilization of these devices, it was an interesting finding that although most participants used insulin, a minority were currently using CGMs. Because insurance coverage is often based on insulin usage, this brings to light the need for a closer look into direct patient costs and whether providers know that this change in coverage has occurred. Because the majority of participants identified their physicians or pharmacists as the primary source of information about CGMs, this signals the importance of educating clinicians and staff on updates pertaining to insurance coverage and patient eligibility. The majority of participants were non-Hispanic White, insured, and had postsecondary education, which limit this study's generalizability to other populations.

One of the strengths of this study includes being one of the first to assess patient perspectives directly rather than indirectly through provider perspectives. Additionally, this study identifies areas to emphasize future research and resources, such as describing the true cost of these devices for people with T2DM and educating clinicians regarding the changes in coverage and CGM device availability.

Two encouraging findings from this study include participants (1) believed CGMs are safe and (2) were not embarrassed to wear CGMs. In a study assessing the barriers of CGMs in youth, many participants had reported diabetes-related stigma concerns in using these devices.[13] Although this barrier appears to be more common in youth and adolescents, it does not seem to be a primary concern among the older adults in this study.

Ways to address this perceived barrier include providing education to providers and patients about the expanding insurance coverage of these devices and developing resources to reduce CGM cost to individuals, such as coupons, free trials, and establishing financial support networks to afford these devices (Table 3). Additionally, danatech® is an online resource hosted by the Association of Diabetes Care and Education Specialists that serves as an important and useful resource to assist health care professionals with a broad array of topics related to diabetes.

Table 3 Continuous Glucose Monitor Resources[a]

Device	Resources
Freestyle Libre 3/3+	Free 15-d trial on manufacturer website Freestyle Libre coupon[b] https://www.freestyleprovider.abbott/us-en/cost-access.html
Lingo by Abbot	Subscription-based discounts https://www.hellolingo.com
Dexcom G6/G7	Dexcom coupon[b] Dexcom patient assistance program https://www.dexcom.com/savings-center
Stelo (OTC CGM)	Subscription-based discounts https://www.stelo.com/buy-stelo-monthly-subscription
Eversense	PASS program[b] https://www.eversensecgm.com/cost-and-insurance
Medtronic Guardian	Guardian 4 CGM Pharmacy Copay program[b] https://www.medtronicdiabetes.com/cgm-pharmacy-copay

Abbreviations: CGM, continuous glucose monitor; OTC, over the counter.
[a]Product availability as of June 12, 2025.
[b]Coupon or program eligibility varies depending on insurance coverage.

Specifically, there is a section related to CGMs with information on product-specific affordability programs and comparison between available devices.[14]

Future studies should further dissect the findings from this study by performing claims analyses for CGM devices, asking people with T2DM what device costs would be cost-prohibitive for using CGMs, and assessing patients' and providers' knowledge about CGM coverage and resources.

Conclusion

This study demonstrates that cost and insurance coverage remain the most significantly perceived barriers to utilizing CGMs among people with T2DM. These barriers could be addressed through educating clinicians and patients on expansions in coverage to have a greater impact on patient care.

Key Points

1. Access to continuous glucose monitors (CGMs) has been expanding as insurance eligibility requirements change.
2. People with type 2 diabetes identify cost and insurance coverage as the greatest barriers to use.
3. Safety of CGM devices and embarrassment to use them do not appear to be significant barriers for people with type 2 diabetes.

Author Contributions

Hunter Stout developed the study, collected data, wrote the manuscript, and reviewed/edited the manuscript.

Lourdes Planas developed the study, assessed data, wrote the manuscript, and reviewed/edited the manuscript.

Hayley Sewell developed the study, collected data, wrote the manuscript, and reviewed/edited the manuscript.

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Declaration of Conflicting Interests

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Ethical Approval and Informed Consent Statements

The University of Oklahoma Health Sciences Center Institutional Review Board approved our survey (approval: 16452) on January 2, 2024. Respondents gave written consent for review before starting surveys. ■

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Breathing Fresh Life Into Inhaled Insulin

Innovative Applications for an Underutilized Therapy

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Most diabetes care and education specialists are familiar with Afrezza—Mannkind Corp's inhaled insulin product approved for use in adults with diabetes. For those who are not, Afrezza is a form of human insulin that comes in dry powder form and is contained in cartridges labeled as 4, 8, and 12 "Afrezza" units. The cartridges are loaded into a whistle-like device and inhaled through the mouth and into the lungs, where it absorbs rapidly into the bloodstream.

With an onset, peak, and duration that is approximately half that of traditional "rapid acting" insulin taken subcutaneously, Afrezza is touted for its ability to minimize postmeal glucose spikes without the need to prebolus. Its rapid clearance minimizes the risk of hypoglycemia several hours after meals. Elevated glucose levels can be brought down quickly, and there is no need for multiple daily needlesticks.

On the down side, Afrezza candidates must first be screened for pulmonary issues. It is not indicated for smokers and people with chronic lung disease, and there may be a very slight decline in lung function over time. The conversion from traditional insulin units to/from Afrezza units can be confusing. A common approach is to multiply the injected/infused insulin dose by 2 and then round down to the nearest increment of 4 to determine the Afrezza dose (see Table 1).

Table 1 Afrezza Dose Conversions

Subcutaneous Units	Afrezza Units
1-3	4
4-5	8
6-7	12
8-9	16
10-11	20
12-13	24
14-15	28

The limited dosing increments can be an issue for those who are very sensitive or resistant to insulin. Basal insulin (via pump or injection) is still required when using Afrezza. The rapid peak and clearance can produce postmeal hypoglycemia and delayed hyperglycemia with slower digesting foods, requiring a "split-dose" approach. Coughing is a common side effect, and access to Afrezza may be limited in certain health insurance plans. Spirometry (FEV1) testing is required before starting Afrezza to rule out chronic lung disease, which may produce acute bronchospasm.

Since its approval in 2014, Afrezza has not been commonly prescribed or used. Fewer than 5% of people on intensive insulin therapy utilize Afrezza as their bolus insulin. However, we have discovered through treatment of a diverse patient base at our practice that a significant proportion of insulin users can benefit from Afrezza: specific populations that can use Afrezza as their primary bolus insulin and those on pump or multiple daily injection (MDI) programs who can use Afrezza as their bolus insulin in special situations.

Subpopulations Well Suited For Afrezza

Pregnancy

The use of Afrezza in pregnancy is considered off-label, so the benefit/risk ratio must be taken into account. Published studies have not shown an association between inhaled insulin and adverse fetal outcomes. There are some maternal fetal medicine experts (and endocrinologists) are using Afrezza in gestational diabetes and pregnancy with type 1 or type 2 diabetes with excellent results.

Afrezza's rapid onset and peak make it a very effective option for achieving postprandial glucose targets of <140 mg/dl at 1 hour and <120 mg/dl at 2 hours during pregnancy. Those who experience nausea in the first trimester have the luxury of taking Afrezza shortly after eating—once the quantity of carbohydrate is better known and with confidence that the food will stay down. For those with gestational or type 2 diabetes who are insulin-naive (and may be averse to the idea of taking shots), Afrezza provides a more acceptable option than MDIs.

Progression through the second and third trimesters often comes with doubling or tripling of insulin requirements. For women with type 1 diabetes who use insulin pumps, this may result in infusion site irritation and premature pump reservoir depletion. Occasional or regular use of Afrezza at mealtimes can keep infusion sites healthier and lessen the burden of frequent reservoir and infusion set changes.

Overweight/Obese

Managing blood sugar while trying to lose weight can be particularly difficult. Hypoglycemia adds to the challenge by forcing individuals to consume calories they would not have otherwise. In many cases, hypoglycemia contributes to binge eating high-calorie foods. For those trying to lose weight, frequent bouts of hypoglycemia can also be emotionally deflating. Afrezza can lend itself to weight loss due to the reduced incidence of hypoglycemia between and before meals.

Because Afrezza can be given with meals (rather than in advance), users can dose for what was eaten rather than eating to "cover" the insulin that was already taken. This allows freedom of choice with portion sizes. In addition, unless basal insulin doses are set too high, snacking between meals becomes optional when Afrezza is used to cover meals.

Impaired Renal Function

People with impaired renal function who require insulin face several challenges, including

- increased risk of hypoglycemia due to prolonged insulin clearance times
- decreased, altered, and unpredictable appetite
- potential for dehydration.

Dosing with Afrezza after meals can lower the risk of hypoglycemia caused by premeal dosing for food that was not consumed due to nausea, food aversion, or early satiety. Afrezza's direct absorption into the bloodstream via the lungs mitigates impaired subcutaneous absorption due to dehydration. Although the pharmacokinetics of Afrezza have not been studied formally in patients with renal impairment, some reports indicate that Afrezza's rapid-on, rapid-off properties can partially offset issues created by prolonged insulin clearance times.

Widespread Lipodystrophy

A key to safe and effective insulin therapy is consistent, predictable insulin absorption and action. Injecting/infusing insulin into the subcutaneous adipose tissue can create a number of issues. Insulin pharmacodynamics can be affected by the state of hydration, injection technique, depth of the injection, and even skin temperature. More significantly, we see the impact of changes to the adipose layer itself. Lipohypertrophy, a thickening or "scarring" of the adipose layer, can be caused by overuse of an area of skin for injection or infusion of insulin. As the density of adipose and connective tissue cells in the area increases, the space for fluid circulation decreases. Insulin infused into this space will not absorb consistently or predictably into the capillaries below the skin. Lipoatrophy, characterized by loss of fat tissue in areas that receive repeated insulin injections/infusions, is more rare than lipohypertrophy. However, it can also result in significant changes to insulin absorption.

Inconsistent insulin absorption can result in stubborn and frustrating periods of hyperglycemia followed by bouts of unexpected hypoglycemia. Teaching patients to "rotate" injection sites and avoid areas affected by lipodystrophy may help temporarily, but for many patients—especially those with long-term diabetes—injection site options become severely limited. We can overcome this issue by using an alternate route of insulin administration. Inhaled insulin acts with predictable speed and efficacy over the long term. This produces desired postprandial glucose and reduces the risk of "stacking" that often leads to hypoglycemia.

Hyperglycemia Anxiety

It is well understood that people with diabetes are twice as likely to experience anxiety and depression related to both acute and long-term complications. One of the acute concerns facing insulin users is the fear of high blood sugar. This fear may originate from past trauma, such as a hospitalization at diagnosis, diabetic ketoacidosis (DKA), or experiences with people who have suffered the ravages of long-term diabetes complications.

Fear often overwhelms individuals, leading to impulsivity and stacking of insulin due to impatience whenever glucose levels are elevated. The terms "angry bolus" and "rage bolus" are often used to describe this behavior. Afrezza, because of its fast action and consistent/predictable delivery, can reduce the user's perceived need to overcorrect hyperglycemia. This applies to those who take injections and those who use insulin pumps because lack of confidence in subcutaneously delivered insulin can be a source of potentially dangerous behavior.

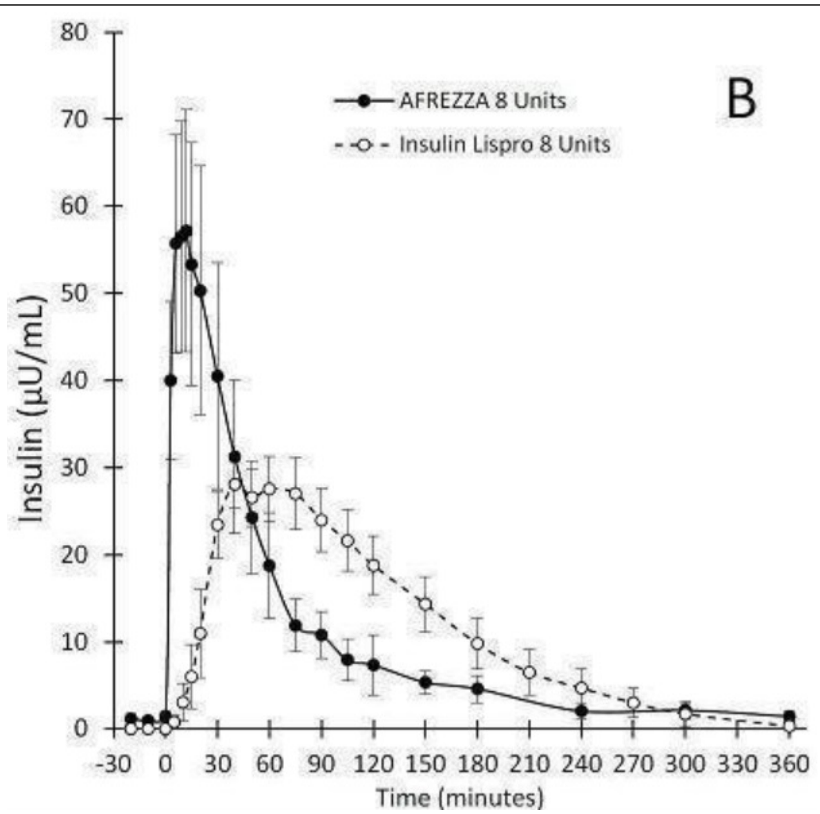

Figure 1. Onset and peak of 8 units Afrezza vs 8 units Insulin Lispro.

Needle Aversion

Approximately 10% of the general population reports a significant fear of needles. Needle phobia may delay necessary treatment with insulin due to patient resistance, or it could result in frequently missed doses. Each injection may produce a stress response that raises blood glucose levels. Any degree of needle phobia is associated with worse glucose management and greater risk of long-term complications.

Once-daily injection regimens (for basal insulin) can often be accepted and followed by those with needle phobia, whereas MDIs cannot. The use of inhaled insulin alleviates the need for frequent daily injections and allows for progression to intensive insulin therapy for patients with all forms of diabetes.

Situational Use of Afrezza

Many people are content and achieve reasonable results with their current intensive insulin program, whether it utilizes injections or pump therapy. However, there are a number of temporary situations in which users can benefit from using Afrezza as a supplement to their traditional insulin delivery method.

Acute Hyperglycemia

Due to its rapid onset, early peak, and short duration, inhaled insulin corrects acute hyperglycemic up to 70% faster than injected rapid-acting insulin (see Figure 1).

In most cases, Afrezza brings elevated glucose levels down toward normal within 90 minutes, whereas rapid-acting insulin delivered subcutaneously takes 3 to 5 hours.

For pump or injection users who prefer traditional rapid-acting insulin for covering their meals, Afrezza may be added to cover only the correction portion of their bolus. This will allow the glucose level to begin falling before the effects of the meal kick in. Use of Afrezza purely for correction dosing can significantly reduce time spent above one's target range. However, care must be given when using Afrezza to correct hyperglycemia accompanied by hyperosmolar hyperglycemic syndrome (HHS) or DKA due to the risk of other health decompensations.

If hyperglycemia is accompanied by ketone production, additional caution is required. Although Afrezza can assist with glucose lowering, it does not provide basal insulin coverage, which is essential for ketone clearance. In such cases, a subcutaneous injection of rapid-acting and long-acting insulin is typically preferred to ensure both glucose and ketone resolution.

Meals Prior to Exercise

When planning physical activity, managing mealtime insulin becomes especially important to reduce the risk of exercise-induced hypoglycemia. Afrezza offers unique pharmacokinetics that can benefit individuals with diabetes who must take insulin to cover a meal prior to exercise. Afrezza's short duration of action allows bolus insulin to (mostly) clear in time for physical activity when it is performed 1 to 2 hours after a meal.

Glucose Rises During Exercise

Afrezza may also be useful in managing adrenaline-induced hyperglycemia during high-intensity or emotionally charged physical activity. Competitive sports, high-pressure performances, or sudden bursts of anaerobic effort can trigger a surge of counterregulatory hormones, particularly adrenaline, resulting in rapid blood glucose elevations that are not always addressed by existing insulin on board. Afrezza's rapid onset and short duration make it an excellent option for correcting and preventing glucose spikes that may occur immediately prior to, during, or immediately after certain forms of exercise. However, due to heightened insulin sensitivity that takes place during and after exercise, conservative dosing and real-time continuous glucose monitoring are recommended to prevent overcorrection.

Foods High on the Glycemic Index

Afrezza's quick action pairs well with foods high on the glycemic index (GI). High-GI foods (white rice, potatoes, breads, cereals, jelly and jams, etc) tend to spike glucose levels quickly and dramatically. With traditional rapid-acting insulin, a prebolus is necessary to minimize the spike, and even that may not be enough. Afrezza offers a significant advantage over traditional insulin, especially if prebolusing is challenging or impractical. Additionally, Afrezza can be used along with subcutaneous insulin when a meal includes both slow- and fast-acting carbs.

Dehydration

In a state of dehydration, blood flow to the capillary bed below the skin surface becomes impaired. Insulin injected subcutaneously may not absorb into the bloodstream. If it does, it will likely take much longer than usual to act and may not exhibit full efficacy. If hyperglycemia is the primary cause of dehydration, it may be perpetuated due to inadequate insulin absorption.

Afrezza's unique method of absorption through the lungs is not directly affected by dehydration. Taking Afrezza during an illness, after heat exposure, after exercising in a hot/humid environment, or during times of insufficient fluid intake can work more effectively than subcutaneous insulin administration.

Nausea

Transient nausea can be caused by a number of factors, including

- gastritis
- influenza
- food poisoning
- radiation/chemotherapy
- pregnancy

- motion sickness
- overeating
- lactose/gluten intolerance
- extreme stress
- incretin mimetics.

Nausea is associated with reduced appetite and delayed/incomplete nutrient absorption. Predosing rapid-acting insulin for food when in a state of nausea can produce hypoglycemia soon after eating and up to 5 hours later. The ability to dose Afrezza after meals affords users the opportunity to more accurately match the insulin dose to the quantity of food actually consumed. When vomiting is likely, as is often the case during the first trimester of pregnancy, the user can allow a reasonable amount of time to pass after eating to make sure food will stay down before administering a dose of Afrezza.

Pump Failure

Temporary insulin pump failures due to mechanical issues, infusion set leakage, occlusion, or accidental dislodgement can lead to rapid and extreme hyperglycemia due to the absence of basal insulin delivery. In individuals with type 1 diabetes, even short interruptions in insulin delivery can result in rising glucose levels and if not addressed promptly, may progress to ketone production or DKA.

Afrezza offers a practical and flexible option for correcting hyperglycemia during insulin delivery disruptions. Because of its quick onset and short duration of action, Afrezza can be used to reduce glucose levels promptly while the user resolves the pump issue or transitions to an alternative insulin delivery method. Providers should consider educating patients on using Afrezza as part of their "pump failure plan," paying close attention to incorporating Afrezza doses into insulin-on-board estimations.

An Opportunistic Insulin

For many people, Afrezza may not be ideal for meeting all bolus requirements. Dosing increments are limited. The very rapid on/off properties are not ideal for slowly digesting foods. And it does not integrate into modern-day automated insulin delivery systems. Multiple members of our clinical team who have type 1 diabetes have tried Afrezza and struggled to use it exclusively (with basal insulin). However, that does not mean that it cannot play a valuable role in diabetes management for all insulin users.

Certain populations, as outlined previously, may benefit from making Afrezza their primary bolus insulin. And for those who use insulin pumps or prefer a traditional MDI approach, there are many situations in which Afrezza offers clear and distinct advantages over rapid-acting insulin.

As diabetes care and education specialists, it is our job to ensure our patients are equipped with the tools necessary to best manage their diabetes and teach them how to use those tools safely and effectively. We encourage you to consider Afrezza as part of the treatment plan for all insulin users. ■

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We the authors attest that all information contained here and in the article are true and represent our original work.

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Telehealth Benefits for People With Diabetes in Rural Communities

HANNA ANTLEY, MSN, APRN, FNP

Lack of access to health care in rural communities is a multifaceted challenge that often leads to unfavorable patient outcomes and impacts people with diabetes, providers, payers, and the health care system as a whole.[1] In the United States, from 1999 to 2018, approximately 20% more adults with diabetes lived in rural than in urban areas, likely contributing to increased diabetes-related complications and mortality rates in rural areas when compared to metropolitan areas.[2] Factors that led to an escalated mortality rate are a shortage of health care providers, a lack of specialty resources, and the absence of preventive screenings.[3] In recent years, access to health care in rural areas has notably declined. As of 2022, approximately 65% of all primary care shortage areas were in rural locations.

Presentation of the Significance of the Problem

An estimated 38 million Americans have diabetes, and an additional 98 million adults have prediabetes, reflecting that diabetes care is in high demand nationally.[4] When analyzing the trend between adults diagnosed with diabetes and ethnicities, American Indians and Native Alaskans led, with 13.6% of their population having been diagnosed,[5] followed by African American adults at 12.1%, Hispanic adults at 11.7%, Asian adults at 9.1%, and White adults at 6.9%. The prevalence of diabetes is slowly rising each year, with a more rapid increase found in low- and middle-income areas. Diabetes disproportionately affects low-income populations due to their inability to afford preventive health screenings and limited healthy food availability.[6] Seeing that 1.5 million deaths globally are attributed to diabetes, access to diabetes maintenance, comorbidity management, and diabetes self-management education and support are a necessity.[7]

In people with diabetes, the absence of health care is just one of many contributing factors to glycemic management not within target, increased comorbidities, and hospital visits. In addition, potential complications, such as stroke, myocardial infarction, kidney disease, and atherosclerosis, are often a result of unmanaged diabetes.[8] Therefore, it is significant to have regular diabetes care and education to ensure quality of life and decrease the risk of complications. With the declining number of rural providers, diabetes has become a common admitting diagnosis in hospitals. With over 78 million diabetes-associated hospitalizations in the United States from 2010 to 2019, diabetes is a leading component in the oversaturation of hospital emergency rooms.[9]

Recommendations for Telehealth Practice

Two recommendations to ensure high-quality telehealth visits are for the patient to have a continuous glucose monitor (CGM) device and video monitoring available for telehealth calls. These additional accessories help eliminate the geographical barrier between the physician and patient, promoting patient engagement and rapport.[10] Although these recommendations are proven to improve the quality of care for the patient, they are costly, making them difficult to obtain.

Technological advancements have allowed for additional opportunities to obtain medical care. Telemedicine has created a pivotal role in health care that offers a multitude of services via video or audio-only calls.[11] Utilizing video has many advantages, such as permitting the physician to evaluate the patient's understanding of medication administration through the teach-back method, which has proven to improve patient medication management.[12] Remarkably, 86% of physicians prefer video during telehealth so they can accurately examine patient skin, range of motion, gait, and so on.[13] Although providers prefer telehealth, it is not always feasible for the rural population due to the lack of broadband internet and insurance restrictions. In 2021, the Federal Communications Commission (FCC) estimated that a minimum of 9.3 million rural residents have inadequate broadband internet service.[14] Telemedicine utilization differs based on geographical area due to the significant difference in internet availability. It is found that metropolitan areas use telemedicine 40.2% of the time for medical visits, whereas rural areas only use telemedicine 29.7% of the time.[15] Another barrier to the use of telehealth is the lack of reimbursement and licensing/malpractice coverage and the lack of health care coverage for telehealth encounters.[16] Although these barriers exist, there is ample evidence that telehealth encounters improve glycemic management. For example, it is conferred through a meta-analysis that A1C levels improved 0.6% in patients with type 2 diabetes. Additional nonglycemic outcomes include improved blood pressure management, body weight maintenance, and improved health literacy through education.[17] A 12-month nonrandomized trial of patients with a A1C >9% was referred to the Telemedicine for Reach, Education, Access, Treatment, and Ongoing Support program, where a diabetes care and education specialist provided services through videoconferencing.[18] Through this telehealth program, 64% of participants in rural areas achieved their self-management goal, including an average A1C decrease of 0.21% every 3 months. In addition to telehealth programs, CGMs have proven to have positive outcomes for people with diabetes. A recent systematic review found that CGMs are more effective at reducing A1C than standard insulin or on-insulin therapies, with a weighted mean difference of −0.43%.[19] Additionally, CGMs also reduce hypoglycemia in older adults with diabetes.[20] This in-real-time glucose reading allows the provider to have accurate trends of the patient's blood glucose with time stamps, permitting improved glycemic management. These statistics highlight the importance of telehealth availability within rural communities to improve the outcomes in patients with diabetes.

Increasing Telehealth in Rural Areas

Although it is now established that telehealth can benefit the lives of patients with diabetes in rural areas, how do we implement telehealth in these areas of health care inequity?

For the patient, increasing telehealth in rural communities focuses on ensuring reliable internet infrastructure and having appropriate devices for telehealth visits. To begin, the patient must have reliable internet. Reliable internet enhances the patient experience by clear and uninterrupted communication. Additionally, appropriate bandwidth speed ensures accurate and timely data transmission. How does one find affordable and reliable internet? In rural areas, finding an affordable high-speed internet provider is a challenge. The Lifeline Program, an FCC program, was created with the intent of extending digital services to low-income consumers, which includes those in rural areas.[21] Through this program, the consumer is given a discount on qualifying monthly phone, internet, or bundle of services when purchased from a participating provider. Eligibility for the Lifeline program is based on the consumer's household income, which must be at or less than 135% of the federal poverty guidelines, or if they participate in federally funded assistance programs, such as the Supplemental Nutrition Assistance Program. Through this program, the digital divide can be minimized, and health care can expand. Find if you are eligible for the Lifeline program through: https://www.lifelinesupport.org/do-i-qualify/.

It is necessary to address technology difficulties by offering alternative telehealth modalities, optimizing the virtual environment, and developing clear policies and procedures. Offering different alternatives to video calls, such as audio-only calls, or messaging through an information-secure platform, such as a patient's portal, can create more opportunities to utilize telehealth by having different modalities. Audio-only telehealth visits or messaging are significant for patients who lack appropriate devices, internet availability, or technological competence.[22] Optimizing the virtual environment can be comparable to standards for in-person visits. This can consist of minimizing background noise and having optimal lighting. Additionally, testing telehealth equipment before the virtual appointment and having telehealth support on standby can be beneficial for a seamless encounter.[23] Lastly, policies and procedures for telehealth can consist of obtaining informed consent and establishing criteria for appropriate telehealth patients. Informed consent for telehealth should include limitations, advantages, disadvantages, and the possibility of internet disconnections.[24] Appropriate telehealth patient visits can include but are not limited to wellness visits, follow-ups on new medication or postprocedure, and medication refills.[25]

How People With Diabetes Can Increase Telehealth in Rural Areas	How Providers Can Increase Telehealth in Rural Areas
• Having reliable internet connection • Having appropriate devices for telehealth visits (tablet, phone, laptop, etc) • Inform the provider if the encounter will be with video or audio-only.	• Offering alternative telehealth modalities • Optimizing the virtual environment • Developing clear policies and procedures

Conclusion

The number of primary care shortage areas is expected to grow due to an estimated shortage of more than 100 000 physicians by the year 2030, which will have devastating effects especially on rural populations.[26] People with diabetes in rural areas are markedly underserved, which leads to higher mortality rates and complications than their urban counterparts.[27] The trend for telehealth gives those residing in rural areas an opportunity for diabetes self-management education and support and specialty care consultations. Increasing the recommendations for CGM use and video availability for telehealth visits create a substantial improvement, as evidenced by improved blood pressure management, weight maintenance, and improved health literacy through ongoing education. Although the benefits are notable, we must consider the barriers to these recommendations. These barriers consist mostly of financial concerns but also a lack of broadband internet availability and difficulty of reimbursement and licensing/malpractice coverage. Overall, telehealth has generated a remarkable improvement in patients with diabetes quality of life and patient awareness through modifying their diet, physical activity, stress management, and medication compliance. Over time, patient and provider efforts will coincide to improve diabetes management and the availability of care.[28] ■

Key Points

- Rural populations are medically underserved, which has resulted in unmet glycemic targets in diabetes equating to 1.5 million annual deaths globally attributed to diabetes.
- Health care disparities in rural areas are due to the lack of providers, unreliable transportation, decreased health literacy, limited healthy food availability, and financial barriers.
- Telehealth in rural locations can have a pivotal role in health care that offers a multitude of services via video or audio-only call.
- Two recommendations for high-quality telehealth visits are a continuous remote blood glucose monitoring device and video monitoring available for telehealth calls.

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Data Availability Statement

The data sets used and/or analyzed during the current study are available from the corresponding author on reasonable request

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You know the value of your services, but do others?

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ADCES

The Diabetes Care and Education Specialist Role in Insulin Pump Therapy

We are pleased to announce the newly updated and published practice paper, *The Diabetes Care and Education Specialist Role in Insulin Pump Therapy*. Below is a summary of the paper. We hope you will access the full paper on our website.

The goal of this paper is to outline the insulin pump therapy topics that should be covered by diabetes care and education specialists (DCESs) when teaching people with diabetes and their families and caregivers. The paper focuses on automated insulin delivery (AID) systems as the primary continuous subcutaneous insulin infusion system that DCESs must gain and maintain expertise in as a subspecialty in diabetes care and education.

DCESs play an essential role in supporting people with diabetes to successfully use AID systems. These technologies have been shown to improve glycemic outcomes, reduce hypoglycemia, and enhance quality of life for people with type 1 diabetes and others requiring intensive insulin management.

DCESs are uniquely positioned to provide the following:

- Support people with diabetes and caregivers in using insulin pumps and AID systems.
- Coordinate care among health care providers (HCPs), pump manufacturers, and pump trainers during initiation and follow-up of insulin pump therapy.
- Train and support HCPs, school staff, community organizations, and families/caregivers involved in the person's diabetes self-management to enhance their understanding of AID system use in real-world settings (eg, schools, workplaces, and travel).
- Stay current on new and emerging diabetes technologies, including insulin pumps, continuous glucose monitors, and FDA-approved and non-FDA-approved AID systems, such as open-source systems.
- Provide guidance that promotes safe and informed decision-making when people are using or considering unregulated systems.
- Interpret sensor and insulin pump data by analyzing patterns in glucose data; provide recommendations to user to improve glucose and diabetes self-management.
- Collaborate closely with other HCPs to recommend treatment changes based on data interpretation.

To fulfill these responsibilities, DCESs are encouraged to perform the following:

- Obtain advanced training in managing AID systems, including carbohydrate counting, insulin-to-carb ratios, correction factors, and sensor interpretation.
- Obtain certification in pump training as a certified pump trainer with each specific pump model or brand they train on, as required by the manufacturer.

- Demonstrate competence in downloading and interpreting insulin pump and continuous glucose monitoring data and using this information to enhance treatment plans.
- Commit to ongoing education, including staying informed of system updates, software upgrades, and emerging technologies.

The paper addresses the following:

- Assessing people for insulin pump therapy use
- Desired attributes of successful insulin pump users
- Person-centered insulin pump selection
- Nonautomated insulin patch pumps
- Open-source systems
- Infusion set selection
- Initial and ongoing education objectives
- Safe practices
- Cybersecurity
- Managing continuous monitoring
- Special circumstances
- Exercise
- Travel
- Insulin pumps in school and daycare settings
- Medical procedures with insulin pumps
- Insulin pump use during hospitalization
- Special populations
- Insulin pump use in older adults
- Insulin pump use in people with disabilities
- Pregnancy and insulin pump use.

The full paper can be found on the [ADCES website.](#) ■

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A Comprehensive Approach to Onboarding New DSMES Team Members

Diabetes self-management education and support (DSMES) programs have teams that may include a variety of health care professionals, some of whom are new to diabetes care and education. **Erin DaRosa, MBA, RDN, LD, CDCES**, the quality coordinator of the HealthPartners Diabetes Education Program, and her colleague **Anne Harrington, MS, RDN, LD, CDCES**, ambulatory manager of HealthPartners, share their experience creating an effective onboarding program for new diabetes care and education specialists (DCESs). Their program is part of a large integrated health system that mostly supports primary care and endocrinology, with a team of over 30 full-time and part-time staff, totaling approximately 24 full-time equivalents (FTEs).

1. Could you describe your orientation process and its structure?

Our program is intentionally designed to reflect the same self-management and empowerment approach we use with patients. Through a 12-week orientation, new DCESs build essential skills, develop safety awareness, and form strong team connections. It's not just about learning, it's about applying knowledge, reflecting on experiences, and gaining confidence in the role. The program also provides a clear roadmap for new hires, mentors, and leaders through:

1. **Weekly overview and guidance:** a clear outline of objectives for the week's learning.
2. **Resources:** selected materials such as modules, videos, or readings that support weekly skill development.
3. **Goals and skills:** specific, measurable goals and targeted skills (eg, patient assessments, continuous glucose monitor use) to strengthen each week.
4. **Reflection:** taking time daily or weekly to consider learnings, challenges, and accomplishments to deepen understanding.
5. **Collaborative tasks:** intentional assignments for new hires, mentors, and leaders to ensure accountability.
6. **Schedule alignment:** The weekly structure mirrors the new hire's future full-time schedule, which organically embeds time management skills to prepare them for the demands of their role.
7. **Touchpoints:** An intentional support system is integrated, featuring daily check-ins with leaders in the early weeks, mentor meetings, and dedicated Q&A sessions to cultivate a safe environment for questions and growth.

This approach ensures proficiency, autonomy, and readiness by week 12.

2. In your view, why is it important to have an effective onboarding process?

An effective onboarding process is critical to ensuring DCESs are equipped to meet the complex demands of their role—including clinical care, patient education, and technology integration. A well-designed onboarding experience builds competence and confidence, promotes consistency across programs, and supports safe, high-quality care. Our structured orientation goes further by providing practical tools, shared frameworks, and implementation strategies that foster ownership, accountability, and professional growth—while also encouraging autonomy and self-direction. By supporting learners in discovering how they learn best, onboarding empowers individuals to take charge of their development in a way that is both personalized and sustainable. Ultimately, strong onboarding enhances team engagement, improves retention, and elevates both individual performance and patient outcomes—advancing the DCES profession across health care.

3. What are the key goals of your orientation process?

Our orientation balances immediate proficiency with sustained growth using a self-management lens to develop new DCESs. Key goals include:

Short-term goals:

- **Establish foundational competence:** Build proficiency in clinical content, ensuring new hires can navigate diabetes care protocols and access reliable resources (eg, internal resources, American Diabetes Association (ADA) Standards of Care).
- **Promote best practices:** train staff to deliver standardized, evidence-based care for consistent, high-quality outcomes.
- **Foster a safe environment for inquiry:** Create structured opportunities, like Q&A sessions and frequent mentor touchpoints, for new hires to ask questions confidently and build trust within the team.

Long-term goals:

- **Develop problem-solving skills:** encourage independent critical thinking to handle complex patient scenarios, empowering new hires to adapt and innovate in their roles.
- **Strengthening team culture:** build collaboration and enjoyment through mentorship and team building to enhance retention.
- **Promote self-reflection and growth:** encourage self-reflection through journaling and goal setting for ongoing development.
- **Support work-life balance:** equip new hires with time management and coping strategies, integrated into a schedule that mirrors their future workload, to help them maintain a healthy balance and prevent burnout.

By aligning our orientation with these principles, we aim to produce confident, skilled DCESs who strengthen our profession, deliver exceptional patient care, and thrive in a supportive, sustainable work environment.

4. Is your process only for new DCESs or also for certified DCESs (CDCES)?

Our 12-week orientation program was initially designed for new DCESs. However, we've since tailored the program to accommodate all new hires, regardless of their experience level. Even experienced CDCESs must adapt to our organization's team culture, best practices, and processes.

The 12-week time frame remains consistent for both DCESs and CDCESs, allowing sufficient time to learn and integrate into our workflows. The program is customized to individual learning needs, ensuring that experienced professionals can focus on aligning with our standards and culture while building on their existing expertise. This approach facilitates a unified, high-quality approach to patient care.

5. What team members are involved in the process?

Our orientation process for new hires engages the entire team to advance a team-based culture and emphasize the importance of teamwork from the outset. Key team members and their roles include:

- **Interview team:** The process begins at the interview stage, where team members participate to assess fit and initiate early connections, highlighting our values of teamwork and shared purpose.
- **Entire diabetes education team:** Upon hiring, we share a fun bio and photo with the team and the new hire's clinic location to build familiarity and excitement.
- **Personal mentor:** Each new hire is assigned a dedicated mentor who provides frequent touchpoints throughout the 12-week orientation and scheduled check-ins throughout the first year for ongoing support and guidance.
- **Team shadowing:** New hires shadow all team members to observe diverse working styles, build relationships, and strengthen team cohesion.
- **Clinic leaders and primary care teams:** Clinic leaders at the primary care locations we serve guide tours of the facilities, developing connections and reinforcing the value of teamwork and shared responsibility.

This inclusive approach ensures new hires feel integrated, supported, and aligned with our team's culture and mission from day one.

6. How has your approach changed over time, and what key lessons have been learned?

Our orientation process has evolved significantly based on experience and feedback. Initially, we used a shorter, traditional approach but quickly recognized its limitations in addressing the complex demands of the DCES role. Key changes and lessons learned include:

- **Extended, structured framework:** Transitioning from a shorter orientation duration of 4 weeks to a 12-week program allowed for more intentional, structured learning while maintaining flexibility. This shift reduced long-term training efforts and improved efficiency by strengthening deeper competency and confidence.
- **Clear expectations and accountability:** Establishing defined roles and expectations for mentors, leaders, and new hires created a culture of personal accountability, ensuring consistent engagement and progress.
- **Proactive time management:** By aligning the orientation schedule with the future workload and embedding time management support, we better prepare new hires for their roles, which enhances productivity and helps to reduce stress.
- **Dedicated self-reflection time:** Adding weekly self-reflection periods proved critical for processing learning, setting personal goals, and supporting ongoing growth, which promotes self-awareness and professional growth.
- **Open dialogue for a safe learning environment:** Structured touchpoints with mentors and leaders combined with open Q&A sessions created a safe, collaborative learning environment that reinforced a team-oriented culture of support and trust.

These adaptations have strengthened our orientation, creating a more effective, supportive, and sustainable onboarding experience that aligns with our mission to empower both patients and professionals.

7. How do you ensure new DCESs are oriented to the National Standards and accreditation requirements?

Our program ensures that new DCESs are thoroughly oriented to the National Standards for DSMES and accreditation requirements. This is achieved through:

- **Competency-based training:** Core competencies embedded in the weekly curriculum align directly with National Standards, covering evidence-based practices, person-centered care, and accreditation protocols. New hires complete targeted modules and practical exercises aligned with the ADCES Diabetes Care and Education Curriculum.

- **Best practices integration:** Training emphasizes standardized, evidence-based practices aligned with accreditation requirements. New hires apply these through supervised patient interactions and case studies, with patient complexity gradually increasing each week as they master skills, ensuring consistent, high-quality care delivery
- **ADCES membership encouragement:** We promote ADCES membership for access to continuing education units (CEUs)/ continuing professional education (CPE), updated guidelines, and networking, ensuring ongoing compliance and professional growth.

By embedding these elements into the orientation, we ensure new DCESs meet the National Standards and accreditation requirements, supporting both immediate compliance and long-term professional engagement.

8. How has your onboarding process impacted your DSMES program and organization?

Our strong patient outcomes have long been driven by a highly experienced and dedicated team. When we designed our onboarding process, our goal was to preserve that clinical excellence while investing in the future of our profession. Since implementation, we've not only sustained high-quality care but also seen a notable rise in employee engagement scores and team cohesion. The clarity and consistency of our orientation help new team members feel supported and confident from the start.

Beyond strengthening individual performance, our structured onboarding has become a catalyst for broader organizational growth. It supports initiatives like the Advanced Practice Clinician (APC) Fellowship Program, where fellows rotate with our team, fostering interdepartmental collaboration and increasing referrals to our DSMES services. Additionally, adapting our program to support an 8-week rotation for a dietetic intern last year inspired us to continue finding meaningful ways to mentor and grow the next generation.

Key elements like mentorship, peer learning, and team integration are woven into the experience, building a culture of collaboration, trust, and shared purpose. Our onboarding process is now a cornerstone of how we advance both our internal team and the diabetes care profession.

9. What advice do you have for quality coordinators and DSMES team leads who are growing their teams?

Think of orientation not just as a checklist but as a launchpad for continuous development. It's an opportunity to set the tone for growth, connection, and long-term success. One of the most rewarding parts of leadership is watching your team evolve, so build a foundation that supports that journey.

Use a human-centered design approach when developing your onboarding process. Involve the people who are doing the work—they bring invaluable insights and help ensure the orientation is relevant and effective. Cocreating with your team fosters ownership and engagement from the start.

Establish a clear team mission to guide your culture and priorities, and most importantly, be ready to iterate. Feedback is a gift to refine your process and keep improving. Orientation should be dynamic, just like the people it's designed to support.

10. For programs that are smaller in size, do you have advice on how they could scale an onboarding program?

For smaller programs refining onboarding, focus on 2 key areas: time and content. Although our larger program supports extended onboarding, smaller teams may need to be more strategic. A condensed approach, like using the ADCES Core Concepts Course, can efficiently deliver foundational content with minimal staff involvement.

Even with a shorter orientation, be intentional about the complexity of patient types the new team member will be seeing. Ensure they have time to grow, learn, and collaborate. Set goals together based on reflection and open dialogue.

Revisiting the questions from this article can be a valuable exercise. It helps clarify what you're trying to achieve, how you'll do it, and most importantly, why it matters. This reflection was key in shaping our own onboarding process.

Regardless of program size, we recommend incorporating mentorship, self-reflection, and time management. These foster collaboration, trust, and continuous growth, which are essential for building a resilient, high-performing team.

Finally, don't overlook culture. Onboarding should connect new team members to your program's values and shared purpose. Even in smaller settings, fostering culture through storytelling, shared experiences, and open communication builds trust and belonging. Embedding regular feedback and evaluation reinforces this culture and keeps the process responsive to team needs.

If you would like to know more about becoming an accredited DSMES program, contact DEAP@adces.org. ■

ADCES Association of Diabetes Care & Education Specialists

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- Monthly Coffee Breaks
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Clinical Practice Pearls for the Omnipod 5 App

ADCES in Practice is spotlighting practical, ready-to-use resources from danatech, the source for diabetes technology education and support. This new, ongoing feature brings you the latest tools, clinical insights, and real-world strategies that are found on danatech.org.

Each issue of *ADCES in Practice* will highlight something you can put into action in your work as a diabetes care and education specialist.

In this issue, we highlight **Practical Clinical Practice Pearls for the Omnipod 5 app**, which were developed by expert diabetes care and education specialists and focus on the details that make a difference in daily management. To view more Practice Pearls for the Omnipod 5 apps and others, visit the Apps and Platform Section on danatech.

- Try treating a mild hypoglycemia alarm with 5-10 grams as you may not need 15 grams of fast-acting glucose as the algorithm is already decreasing insulin.
- Remember to adjust basal rates for when the individual is in manual mode.
- Review the Custom Foods link of the app – if the person with diabetes states that carb counting is challenging or they have a caregiver or school nurse who helps with their meal input and they eat the same foods often, help them create at least one custom food/meal for each meal and snack they eat.
- Speak with your patient before setting a glucose target. Do they have fears of lows at night? Are they fearful of highs? Set different glucose targets at different times.
- If the patient is having severe fluctuations, set a higher target such as 130mg/dL until the glucose levels even out.
- Turn off reverse correction for when the individual is in automated insulin delivery mode.
- Encourage the patient to connect to your office portal before they leave as it will help to save time at follow-up visits and allow you to support them between visits.

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Resolve to Make a Difference in 2026

Advocate

JANET E. BENEFIELD, MS, RDN, LD, CDCES, DENNIS J. PILLION, PHD, AND HELEN C. PERVANAS, PHARMD

Welcome to a new year full of endless expectations and possibilities! Millions of individuals start each year with resolutions to be better versions of themselves than the year before. Gym memberships increase each year in January, but by February or March, gym participation has returned to its previous level.

This year, resolve to advocate for your profession and persons with diabetes to improve access to diabetes care and education. Keep reading for advice on why to advocate, opportunities to advocate, and ways to increase your influence by joining with others who support the same goals.

What Is an Advocate, and Why Should You Become an Advocate?

An advocate is someone who supports a cause or recommends a policy in an effort to influence action. Did you know that advocacy is listed as a competency for diabetes care and education specialists (DCESs)? They advocate to make a difference for the profession and to improve the lives of persons with diabetes. ADCES is deeply committed to advocacy, and its annual advocacy priorities include advancing diabetes legislation, supporting health equity through policy, outreach to regulatory agencies, coalition involvement, member engagement, and leadership development. Collaborating with others is key. When we advocate with others, we increase our voice and influence.

Have These Advocacy Efforts Succeeded?

Yes! Advocacy is the reason we have diabetes self-management training, medical nutrition therapy, and diabetes prevention program benefits in Medicare, the $35 insulin copay cap in Medicare, strong Medicare coverage of continuous glucose monitors, and access to telehealth in Medicare. In large measure, it is our advocacy efforts that have secured ADCES and individual DCESs seats at the table when diabetes organizations are invited to advise federal and state policymakers.

Where Do You Start?

ADCES offers many resources to support members who want to become involved in advocacy. Members can join the Advocacy Forum in ADCES Connect to receive public-policy-related discussions in email format, to view policy-related blog posts, and to be the first to learn of advocacy opportunities sponsored by ADCES.

Also, the Diabetes Advocacy section of the ADCES website is available to both members and nonmembers and provides information about current bills and related policies, allows individuals to locate their state and federal elected officials, and provides opportunities to take action regarding relevant bills and policies by emailing their legislators.

If you are new to advocacy, don't worry. ADCES offers advocacy and policy training. Training opportunities include the Public Policy Forum (PPF) held in the spring addressing federal issues and the State Policy Forum held in the fall addressing state issues. PPF is followed by virtual visits to congressional offices to put advocacy into action. In addition, ADCES periodically partners with organizations such as the Academy of Nutrition and Dietetics or the Diabetes Patient Advocacy Coalition for virtual or in-person Hill Days.

Finally, ADCES offers leadership opportunities to serve as a grassroot coordinator at the state level or to serve as a member of the Advocacy Committee at the national level. Within state coordinating bodies (CBs), there are often opportunities to be part of an advocacy committee or ad hoc workgroup helping push forward a particular policy issue in your state.

How Can You Advocate Today?

There are many ways to advocate: emails, phone calls, meetings (virtual or in person), social media posts, and many others. Advocacy can be as simple as responding to an action alert or as complicated as nurturing an ongoing relationship with your legislators and their staff. Advocacy can be done individually or as part of a group effort. In the box are 5 ways you can advocate for the profession and persons with diabetes today. Take a few minutes to advocate now.

5 Ways to Advocate NOW

1. Subscribe to the ADCES Advocacy Forum on ADCES Connect to get the latest news on legislation and action alerts.
2. Learn about key diabetes legislation.
3. Read some of ADCES's recent public comments and letters to federal agencies and officials.
4. Take Action Now! The Legislative Action Center helps you email your legislators regarding key bills and issues. Send the email as is or edit it to add your story. Then, share the link with family, friends, and colleagues so they can customize and send their own emails.
5. Search the Congressional Directory and make a post to one of your state or federal legislator's social media accounts.

By completing any of the advocacy activities outlined here, you have added your voice to the voices of others with similar interests. Now that you have completed one or more advocacy actions, you have kept your New Year's resolution! It comes with a feeling of satisfaction knowing you have taken action to make a difference. Do not stop here. Share your experience with others and encourage them to become advocates as well. Take advantage of the opportunities sponsored by ADCES and make advocacy a routine and satisfying part of your professional life.

Author Contributions

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Advancing Diabetes Care Through Research

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This article concludes the "From Educators to Innovators" series, a call for diabetes care and education specialists (DCESs) to expand their influence through clinical inquiry, evidence-based quality improvement (EBQI), and now, research. In part 1, we highlighted the DCES's unique ability to ask practice-informed questions and pursue meaningful inquiry.[1] Part 2 demonstrated how DCESs can lead EBQI initiatives to systematically integrate evidence into understanding the root causes of clinical challenges, collecting and analyzing both internal and external evidence, and planning, implementing, and evaluating their impact and sustainability across the health care system.[2-5] Building on these foundations, part 3 focuses on strategies for DCESs to participate in research and align with the Association of Diabetes Care & Education Specialists (ADCES) Research Agenda.[6]

Why Research Matters for the DCES

Research is a systematic investigation aimed at developing or contributing to generalizable knowledge. This definition encompasses 2 key elements: the intention to draw conclusions with general applicability and the use of a commonly accepted scientific method. In the realm of diabetes care and education, research is essential for advancing the field and improving outcomes for people with diabetes.[7] DCESs are well positioned to engage in various research types, from case reports and clinical trials to meta-analyses.

Research is essential for progress in diabetes self-management, education, and support (DSMES) and for improving outcomes for individuals with or at risk for diabetes. As educators, clinicians, and innovators, DCESs are equipped to lead research efforts that drive improvements in care delivery, policy development, and health equity. The ADCES Research Strategy underscores the importance of DCES-led research in identifying best practices and care gaps; developing and evaluating innovative interventions; advocating for policy changes at institutional, community, and

Table 1 Overview of Research Types, Categories, and Characteristics Relevant to Diabetes Care and Education[13]

Research Strategy	Research Design[a]	Examples of Research Methods[a]	Characteristics of Research Type	Example Projects
Quantitative	Fundamental	Theoretical analysis; lab experiments; mathematical modeling	Expands understanding of basic principles; driven by curiosity; not immediately practical	Studying cellular mechanisms of insulin resistance
	Experimental	Clinical trials; field experiments	Tests the effect of an intervention under controlled conditions	Evaluating a new diabetes medication in a randomized placebo-controlled trial
	Quasi-experimental	Pre-post studies	Nonrandomized intervention study	Assessing the impact of a nutrition program in 2 clinics; studying the effect of a DCES-led CGM program on A1C changes
	Correlational	Surveys; longitudinal studies; secondary data analysis	Nonexperimental design used to identify relationships between variables	Determining if there is an association between hours of sleep and hyperglycemia
	Epidemiological	Cross-sectional studies; retrospective cohort	Studies patterns, causes, and effects of health-related events in populations	Following outcomes among people with type 1 diabetes over 10 years
	Systematic review	Meta-analysis	Applies statistical techniques to combine results from multiple studies	Evaluating effectiveness of DSMES interventions across trials
Qualitative	Grounded theory	Interviews; Content analysis	Develops theory from empirical data	Developing a theory on persistence to diabetes medications
	Phenomenological	Interviews; Focus groups	Explores lived experiences and perceptions	Studying diabetes management practices in a specific community
	Ethnographic	Interviews; observation; focus groups	Understands cultural practices, communities, and social interactions	Studying diabetes management practices in a specific community
Both quantitative and qualitative, or mixed methods	Patient-centered research	Comparative effectiveness study	Solves real-world problems collaboratively; emphasizes participation	Improving DSMES delivery through codesigned interventions with people with diabetes
	Systematic review	Thematic synthesis	Analyze and integrate findings from multiple studies to identify patterns, themes, and deeper insights; identifies research gaps; informs future practice	Synthesizing results from studies assessing the effect of GLP-1 medications on addiction-related behaviors; conducting a scoping review of toothbrushing behaviors in people with diabetes
	Observational	Case study; case report; case series	In-depth analysis of a single case or small group	Describing a clinical case of secondary diabetes caused by a rare disease
	Implementation science	Pragmatic trials; surveys; cost-effectiveness study; economic analysis	Measures effectiveness of evidence-based practices in real-world settings; evaluates processes, outcomes, and contextual factors that impact implementation	Analyzing the cost-to-benefit of integrating a DCES into a primary care practice

Abbreviations: CGM, continuous glucose monitoring; DCES, diabetes care and education specialist; DSMES, diabetes self-management, education, and support; GLP-1, glucagon-like peptide-1.
[a]Many research methods may overlap across multiple research designs, and several approaches may align with more than one research strategy. This table is intended to illustrate common types and categories of research but is not exhaustive.

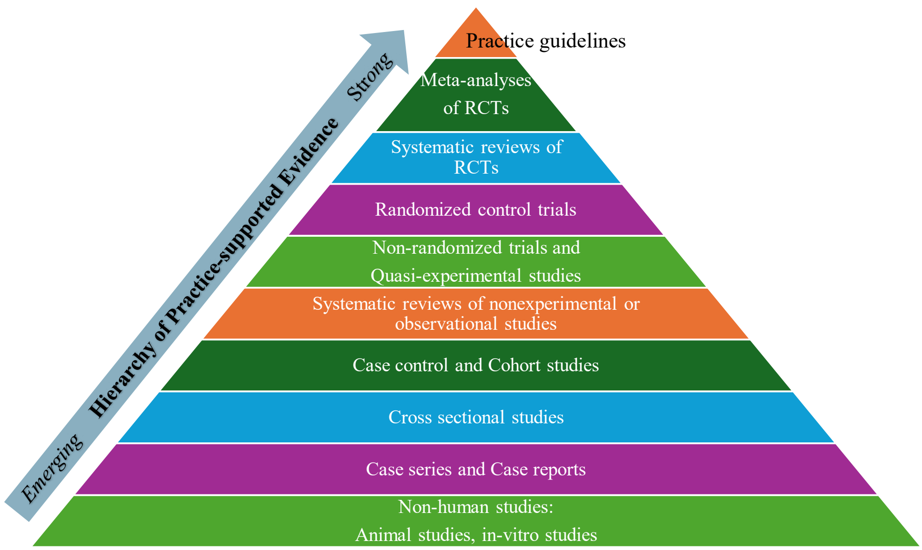
governmental levels; and elevating the visibility, advancement, and impact of the DCES specialty.[6,8]

Types of Research

Research encompasses various types, each with distinct methods and purposes, often depicted in a hierarchical pyramid (Figure 1). Studies positioned at the pyramid's base typically offer the weakest evidence and have the least relevance to real-life clinical decisions, whereas those at the top provide the strongest evidence, with the greatest relevance to such decisions.[9-12] Research can be classified into different types based on its purpose and objectives (Table 1). Understanding these classifications aids in determining the approach, methodology, and anticipated outcomes of a study.[13]

Leveraging the ADCES Research Agenda

The ADCES Research Agenda provides a framework for the DCES to identify high-impact research opportunities and leverages the 4



Abbreviations: RCTs, randomized controlled trials

Figure 1 Scale of Research Quality and Information[9,10,11,12]

ADCES vision pillars: Diversity and Equity, Health Economics and Policy, Implementation Science, and Workforce Development. By aligning with the ADCES Research Agenda—which prioritizes diabetes technology, telehealth, decision support, health equity, and innovative DSMES delivery—DCESs can influence policy at multiple levels. Research informs institutional protocols, supports local funding initiatives, guides community-based interventions, and strengthens legislative advocacy. From improving electronic health record workflows and provider training to shaping reimbursement policies and addressing social determinants of health, DCES-led research drives

Table 2 Actionable Strategies for Diabetes Care and Education Specialists to Engage in Research

Strategy	Description
Compose a case report	Document and share distinctive patient experiences that provide clinical insights. Case reports often highlight rare conditions, unique responses to treatment, or notable care challenges. Case reports may inspire future research directions.
Conduct a literature review	Investigate a topic of interest and synthesize current evidence by writing a review or meta-analysis. Common types of literature reviews include rapid, scoping, narrative/integrative, systematic, and meta-analysis, among others. Collaborate with population health experts and librarians to help determine which type is best for your research questions and for systematic review methods.
Join a research team	Collaborate with researchers in academic institutions, health care systems, or industry partners to contribute to ongoing research studies and gain experience in study design and implementation.
Pursue a research-focused role	Consider roles such as research coordinator or manager within academic centers, clinical trial organizations, or industry to anchor your career in research generation.

scalable, equitable improvements in diabetes care.[6]

- ***Research in Equity:*** addresses disparities in diabetes outcomes and access to care. DCESs can explore the impact of social determinants of health, strategies to improve access to DSMES in underserved populations, peer-to-peer support models, and culturally tailored interventions.
- ***Health Economics and Policy Research:*** demonstrates the value of DSMES, explores the cost-effectiveness of DSMES programs and technologies, builds the business case for enduring/sustainable integration of programs into care settings, and informs and advocates for policy decisions involving reimbursement and coverage of diabetes care and education services.
- ***Implementation Science:*** focuses on translating evidence into practice through a variety of strategies, for example, electronic health record-based referral strategies, decision support tools for providers and people with diabetes, and digital health strategies to enhance engagement and outcomes.
- ***Workforce Development Research:*** supports the growth and sustainability of the DCES specialty through training models in emerging technologies and care approaches, precision medicine, artificial intelligence-driven education, and evaluation of interventions in various care settings.

For DCESs who are new to research or wish to deepen their involvement, Table 2 and Table 3 offer practical strategies for engagement. Before starting any project intended for external dissemination of results, first determine if it qualifies as human subjects research, which may necessitate review and approval from your institution's or local Institutional Review Board.

Disseminating Research Through ADCES

ADCES offers a variety of platforms for DCESs to present and share their research.[14] These include:

Table 3 ADCES Research Agenda-Aligned Opportunities for the DCES

Pillar	Research Focus	Example DCES Activities
Diversity and Equity	Address disparities in diabetes outcomes and access to care	• Conduct community-based participatory research • Study peer support and culturally tailored DSMES; impact on follow-up care • Evaluate impact of social determinants of health • Analyze a DSMES redesign in a rural clinic
Health Economics and Policy	Demonstrate value and cost-effectiveness of DSMES	• Analyze cost savings from DSMES programs • Advocate for reimbursement policies • Study economic impact of diabetes technologies • Assess BGM frequency and education impact • Evaluate AID system adoption and outcomes in DSMES
Implementation Science	Translate evidence into routine practice	• Research EHR-based DSMES referral workflows • Evaluate telehealth and digital health tools • Develop decision support systems for providers and patients • Improve engagement and A1C via virtual DSMES; effects on emergency/hospital utilization • Compare professional vs personal CGM for T2D; impact on hypoglycemia in inpatient settings
Workforce Development	Support growth and sustainability of the DCES profession	• Study training models for emerging technologies • Evaluate DCES-led interventions • Explore roles in precision medicine and AI-driven care • Use chatbots for ADCES-7 behavior reminders and education • Assess impact of Lifestyle Change Program/National Diabetes Prevention Program on site/system outcomes • Evaluate the effectiveness of internal mentorship structures in supporting team development and advancing the specialty

Abbreviations: ADCES, Association of Diabetes Care & Education Specialists; AI, artificial intelligence; AID, automated insulin delivery; BGM, blood glucose monitoring; CGM, continuous glucose monitoring; DCES, diabetes care and education specialist; DSMES, diabetes self-management, education, and support; EHR, electronic health record; T2D, type 2 diabetes.

- The Huddle: Conversations with the Diabetes Care Team*:* the official ADCES podcast.
- Perspectives on Diabetes Care*:* the official ADCES blog.
- Journals*: The Science of Diabetes Self-Management and Care* serves as the official research journal of the ADCES. And this journal, *ADCES in Practice* offers practical insights to enhance diabetes programs and practices to support implementation promptly after review.
- ***Communities of Interest and State Coordinating Bodies:*** numerous groups may wish to share brief practice updates or blogs via the ADCES Connect platform, offering opportunities to present research at local or regional meetings.
- ***Annual conference:*** submit your research for presentation during the poster sessions or as part of a session presentation.

DCESs as Catalysts for Change

Research is not solely the domain of academics. It is a vital extension of the DCES role. As diabetes care evolves with new technologies, therapies, and educational models, research becomes increasingly critical to ensuring effective, equitable, and person-centered care. The ADCES Research Agenda offers a clear path forward. Whether through small practice-based inquiries or large-scale collaborations, DCESs are equipped to lead meaningful research that strengthens the evidence base and transforms outcomes.

This final installment completes the "From Educators to Innovators" series, outlining a progression from clinical inquiry to EBQI to research. Together, these approaches empower DCESs to ask questions, generate evidence to improve practice, and give rise to new knowledge. We encourage DCESs to reflect on their own practice, identify opportunities for inquiry, identify mentors and/or collaborators with clinical inquiry experience, and take part in a next step to shape the future of diabetes care and education. ■

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Glucagon-Like Peptide 1-Based Therapies

Panacea or Cautionary Tale?

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In the November 2024 issue of *Diabetes Care*, Dr Donald J. Drucker provided an insightful narrative review of the benefits and precautions associated with the use of GLP-1-based therapies in managing type 2 diabetes (T2D) and obesity (with and without diabetes).[1] The review extended beyond their role in glycemic and weight management by exploring additional advantages, emerging indications, and investigational GLP-1-based therapies.

Glucagon-like peptide 1 receptor agonists (GLP-1RA), initially approved for glucose lowering in T2D, have emerged as a revolutionary class of medications with expanded indications. At this writing, long-acting GLP-1RA have effectively proven cardiovascular (CV) and kidney risk reduction for those with T2D. Injectable semaglutide and the dual GLP-1/glucose-dependent insulinotropic polypeptide agonist tirzepatide have become central to chronic weight management. However, the widespread use of GLP-1-based therapies has sparked debate. Concerns have been raised about prescribing these medications solely based on body habitus and issues surrounding medication availability, cost, the presence of fraudulent compounded products, adverse effects, long-term safety and efficacy, and potential misuse.[2]

In recent years, GLP-1-based therapies have broadened their therapeutic applications significantly, expanding from diabetes and weight management to include several additional FDA-approved uses. Tirzepatide is now approved for treating obstructive sleep apnea in individuals with overweight or obesity. Semaglutide injection has multiple indications, including for T2D and chronic kidney disease (CKD), CV risk reduction in adults with cardiovascular disease (CVD) and overweight or obesity and in adults with T2D and CVD, and—the newest approval—metabolic-associated steatohepatitis in adults with moderate to advanced fibrosis.[3] Other recent developments include oral semaglutide showing CV benefits in adults with T2D and CVD or CKD and tirzepatide demonstrating noninferiority to dulaglutide for CV protection. As highlighted by Drucker,[1] there is ongoing research investigating GLP-1-based therapies for heart failure, osteoarthritis, dementia, Parkinson's disease, substance use disorders, and polycystic ovary syndrome.

Achieving optimal outcomes with GLP-1-based therapies depends on equitable access, medication-taking behaviors, mitigation and management of adverse effects, affordability, and preventing and correcting dosing, prescribing, and filling errors. Successful use requires not only patient motivation and empowerment but also consistent support from an interdisciplinary team to guide therapy, address barriers, provide lifestyle support, and champion long-term disease management.

More oral GLP-1 formulations would be welcome, especially for those who fear injections. Currently, there are 2 oral semaglutide formulations available for treating T2D, and a high dose (25 mg) oral formulation for chronic weight management is under FDA review. With the exception of the 2 liraglutide formulations indicated for T2D and weight loss, respectively, GLP-1-based therapies are currently only available as branded products, with list prices ranging from $349 to $1349 per month.[4,5]

Insurance coverage varies, often requiring prior authorization, and may depend on the indication for use. Many state Medicaid programs and Medicare do not cover these agents for obesity treatment, raising significant equity concerns about access for vulnerable populations who could benefit from proven therapies. Recent policy changes, such as the removal of coverage for military retirees and anticipated cuts in some commercial plans by 2026, further highlight the fragility of access in the US context.[6,7] As Drucker[1] emphasized, these challenges extend globally: Without investment in scalable manufacturing and cost-effective distribution, the transformative benefit of GLP-1-based therapies risks being limited to those who can afford them. Addressing affordability and equitable access both domestically and worldwide must be prioritized.

Table 1 The Role of Team Based Care in GLP-1 Use

Dietitians	Create personalized meal plans to mitigate GLP-1-induced gastrointestinal adverse effects, nutrient deficiencies, and muscle loss. Individuals prescribed GLP-1-based therapies should be educated to consume small, frequent meals that emphasize protein intake and low-fat, low-sugar options; avoid fried, greasy, or overly sweet foods; gradually increase fiber intake; and maintain adequate hydration.[8]
Nurses	Provide essential education on medication administration, monitor for adverse effects, and facilitate care coordination, assisting patients navigate complex treatment regimens.
Pharmacists	Optimize GLP-1RA dosing, address prescribing and medication dispensing issues, manage drug interactions and adverse effects, and support optimal medication-taking behaviors through personalized counseling.
Advanced practice practitioners	Identify patients who can benefit from GLP-1-based therapies, initiate and adjust therapy, assess for contraindications, utilize lab monitoring, and manage comorbid conditions, ensuring that GLP-1-based therapy aligns with broader clinical goals.
Healthy psychologists	Address behavioral and mental health factors that influence persistence by following the care plan, offering strategies to support long-term engagement and mental well-being, particularly in people with obesity or disordered eating.
Exercise physiologists	Design individualized physical activity programs that preserve lean body mass and enhance metabolic outcomes, complementing the pharmacologic effects of GLP-1-based therapies.

The safe and effective use of GLP-1-based therapies can be significantly enhanced through team-based care involving the coordinated efforts of diabetes care and education specialists, such as dietitians, nurses, pharmacists, advanced practice providers, health psychologists, and exercise physiologists (see Table 1).

Integrating multidisciplinary expertise through team-based care ensures that GLP-1RA therapy is not only clinically effective but also tailored to the individual's lifestyle, health goals, and overall well-being—enhancing clinical outcomes.[9,10]

Any discussion of the GLP-1-based therapies must include their adverse effects. Gastrointestinal symptoms are the most common and can often be mitigated with gradual and slow dose titration and patient education. Allergic reactions are uncommon. The verdict is still out regarding their association with pancreatitis, worsening retinopathy, and thyroid cancer.

Concerns have been raised about the impact of GLP-1-based therapies on body composition, particularly the potential for loss of lean muscle mass. Evidence to date suggests that although reductions in lean mass occur, they are proportional to fat loss, and functional impairment has not been consistently demonstrated. Nevertheless, incorporating strategies to preserve muscle strength, such as adequate protein intake and resistance exercise, remains a critical component of safe and effective long-term management.[11] For this reason, strategies to maintain muscle integrity should be part of any management regimen. Referral to a dietitian can help tailor dietary recommendations, such as increasing protein intake especially for the older adults, although optimal protein requirements remain uncertain. Another important strategy to maintain or increase muscle mass is exercise, especially resistance training. Before undertaking such a regimen, the individual must be cleared by a clinician that exercise is safe and there are no contraindications.

Importantly, GLP-1-based therapies may cause fatigue, which could undermine an exercise plan. Ideally, an exercise physiologist should be consulted to develop an optimal exercise prescription for the person. However, exercise physiologists are usually found in comprehensive health care facilities and may not be available to most people in need. In these cases, clinician can collaborate with local gyms and health clubs to connect patients with certified trainers who can help develop safe and effective exercise programs.

The introduction of GLP-1-based therapies has brought forth medications with unprecedented efficacy and challenges, echoing Charles Dickens's quote, "It was the best of times; it was the worst of times." Weight loss was just a "shot" away. These medications have created the perception that weight loss could be rapidly achieved through pharmacotherapy alone. Their widespread use has led to medication shortages, counterfeit products, cost barriers, unintended uses, and unrealistic expectations.

Judicious prescribing of these agents is crucial to prevent adverse effects and ensure patient safety while optimizing therapeutic outcomes. Both commercial and compounded preparations carry risks of dosing, prescribing, and filling errors, emphasizing the need for vigilant oversight and coordinated care among health care professionals.

Long-term benefits derived from GLP-1-based therapy may be limited without concurrent lifestyle modification, particularly nutritional and behavioral interventions.[12]

Real-world data reveal suboptima medication taking rates, with approximately 30% adherence to GLP-1 agonists for weight management at 1 year and 48% medication persistence at 2 years for individuals with obesity and T2D.[13,14] These "real world" data articulate the need to ensure improved medication adherence, affordability, access, and ongoing follow-up and support.

Herein lies the realization that a multifaceted approach beyond medication alone is required to manage complex diseases such as diabetes or obesity. It takes a village to care for these individuals. Unfortunately, resources are finite, and not all villages can provide the services required to ensure good outcomes. It is imperative for policymakers, academia, clinicians, and the health care industry to develop solutions that address these ongoing issues. The focus should be on providing appropriate care and ensuring affordable, equitable access not only to medication but also to the support systems critical for patient success.

The Dickens quote is a fitting reflection of the current moment, that GLP-1-based therapies represent an unprecedented opportunity yet also unprecedented challenges. Their story should not end as one of unfulfilled potential limited by cost, inequity, or misuse. To truly achieve their promise, we must ensure safe, affordable, and team-based integration of these therapies, supported by policy, research, and education that prioritize equitable access and long-term patient outcomes. ■

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There's Nothing Better Than the Career I Chose

CARLA COX, PHD, RDN, CDCES, FADCES, CPT

I was a young dietitian working in a pediatric practice. Any child diagnosed with type 1 diabetes was seen jointly by a nurse and me. We taught the child and family exchanges, insulin syringe techniques, low blood glucose treatments, blood glucose monitoring, and so on.

Back in the days of NPH and regular insulin, I can remember vividly a newly diagnosed family that was referred to us. The patient was a 15-year-old young man with a passion for wrestling. He came from a whole family of wrestlers—dad, uncles, and his 3 older siblings. Not long after his diagnosis, he was trying to "make weight" and had eaten little. He had a seizure in the middle of the night. He was treated in the ER and recovered nicely. Of course, his parents were very afraid for him. Their answer was to remove him from wrestling. I clearly remember trying to encourage them to work around the issue and their fear and to allow him to continue to do what he loved, but to no avail.

This was truly the pivotal moment in my career. I wanted so much for anyone diagnosed with type 1 diabetes to be able to do what they wanted to do and to not let diabetes rule their life and choices.

Fast forward to 40 years later, and I still love working with families with type 1 diabetes. I love helping them to be Sherlock Holmes every day as they problem-solve glucose fluctuations and workarounds—letting them be free to make life choices without letting diabetes get in the way. I still love it all, including attending 5 or more diabetes camps each year helping children, adolescents, and families to embrace life with diabetes.

We now have much better insulins and automated insulin delivery systems that help families and educators to enhance outcomes while making life with diabetes easier to manage. I have grown with the added technologies of diabetes and now teach pumps and sensors. I make insulin adjustments on a regular basis in collaboration with the peds endo, and I am the go-to for many families trying to navigate the joys in life while having diabetes.

Helping people with diabetes is my calling. I can't imagine a more fulfilling career. ■

Carla Cox, PhD, RDN, CDCES, FADCES, CPT, is with Mountain Vista Medicine in South Jordan, UT.

Spotlight on the Diabetes Patient Advocacy Coalition (DPAC)

The Diabetes Patient Advocacy Coalition (DPAC), a 501(c)4 organization, is a grassroots alliance of thousands of people with diabetes, caregivers, patient advocates, health professionals, disease organizations, and companies working collaboratively to promote and support public policy initiatives to improve the health of people with diabetes.

DPAC works on Capitol Hill and in statehouses across the country to elevate the patient voice in key policy discussions affecting the diabetes community. Our mission is to ensure quality of and access to care, medications, and devices for people living with diabetes and to educate, inspire, and empower patient advocates and lawmakers toward meaningful action on diabetes.

DPAC is committed to equitable health care for all Americans living with or at risk for diabetes and to fostering a welcoming and representative environment for advocates and patients. Cofounded in 2015 by people with diabetes who understood that like diabetes, advocacy is a long-term process with no quick fixes, DPAC formed because the patient voice was missing from important policy conversations in Congress and the states. In short, you are either at the table or on the menu.

DPAC is currently working on a number of priorities that impact the diabetes community and diabetes care and education specialist specifically:

- Pharmacy benefit manager (PBM) reform: We are striving to eliminate the conflict of interest inherent in the drug pricing and access system by delinking the PBM's revenue from the price of the medication. That will remove their perverse incentive to drive patients and formularies to more expensive drugs, often at the expense of generics and biosimilars. We also are advocating for fairness in pharmacy treatment to avoid the unfair PBM business practices that are causing pharmacy closures and limiting patient choice (see our resource for state legislators on PBM reform).
- Diabetes self-management training access: We partner with ADCES and the diabetes community in expanding access to diabetes self-management education (or training, as it is called in the federal bill currently before Congress).
- Access to diabetes technology: We advocate for access to and patient choice in the

technology patients rely on every day. Not all devices interact with each other, and the patient should have the technology that fits their personal lifestyle and health needs (see the recent white paper from the Diabetes Leadership Council). We are currently monitoring the proposed competitive bidding program from Centers for Medicaid and Medicare Services that would take the number of suppliers of insulin pumps and continuous glucose monitors down from 6000 to 9 or less and change the financial model from own to rent. Both of these changes threaten to significantly disrupt patient access.

- Access to obesity treatments: We advocate for access to the full spectrum of treatments of obesity. This includes access to medical nutrition therapy (MNT) and other lifestyle management therapies. We partner with ADCES and the Academy of Nutrition and Dietetics on removing barriers to MNT access.

DPAC produces an ongoing patient and community educational series called DPAC Dialogues, where we dive into topics of interest. We also have a guide on What To Do When You Lose Health Insurance that provides some helpful tips on navigating a difficult situation.

We are proud to partner with ADCES and support patient access to diabetes education and nutritional therapies. We welcome you to join us and become a DPAC Champion! We will not spam you. We will inform you on topics of importance and ask for your engagement when hands-on advocacy is needed at the federal or state levels. We also urge you to follow the ADCES Advocacy Team and ensure your voice is heard through that channel as well!

Together, we can make a difference in the lives of people with diabetes! ■

ADCES AWARD WINNER

Expanding Pharmacist-Led Interventions in Primary Care

KEVIN COWART, PHARMD, MPH, BCACP, CDCES

If you have ever felt like your patients living with type 2 diabetes (T2D) could be doing better but just are not quite getting there, you are not alone. Despite advances in drug therapy and technology, about half of people living with T2D in the United States still are not meeting glycemic goals.[1] Recent estimates indicate that even fewer meet their goals once they are using insulin.[2] Clinical inertia, patient inertia, and limited access to innovative tools and technology all play a role.[3]

That is where I saw my role as a pharmacist and Certified Diabetes Care and Education Specialist (CDCES) come in. During the pandemic, we started to see continuous glucose monitoring (CGM) really gain popularity despite it having been around for over 25 years. I learned quickly that most primary care physicians did not have time to log into the third-party portals to access CGM data before or during clinic appointments with their patients. Many of them were also not familiar with how to interpret the reports either.

At our academic family medicine clinic, we set out to establish a scalable, sustainable pharmacist-led CGM service paired with diabetes self-management education and support (DSMES). What started as an idea has grown into a prospective study (NCT06572306) that is not only testing outcomes but also serving as a blueprint for how PharmDs in primary care everywhere can integrate CGM into routine care and serve as diabetes technology champions.

Why CGM for T2D?

The American Diabetes Association (ADA) Standards of Care now recognizes CGM as a valuable tool for all people living with T2D, not just those on intensive insulin. Unlike A1C or fingerstick glucoses, CGM tells the full story. CGM empowers both patients and providers to see how diet, physical activity, and medications impact glucose in real time. For patients, that "aha moment" when they see how a meal spikes their glucose or helping them prevent lows can be more powerful than any medical appointment or yesterday's fad book on dieting.

From Idea to Implementation

So how did we make this happen? It took vision, persistence, and a bit of persuasion. Slowly, I built the case for how PharmDs are well suited to lead this charge.

- *Spotting the gap:* It was clear that most of our patients with T2D were stuck in the cycle of A1C checks and occasional glucometer logs. Few had access to CGM even though they stood to benefit.
- *Pitching the concept:* We made the case

to physician leadership and administrators outlining that pharmacist-led CGM services could drive better outcomes, improve efficiency, and align with ADA standards. Framing it as an innovative pilot (and obtaining grant funding) helped win buy-in.

- *Building the service:* We are formally testing what we have been doing for years now. That is, collaborative drug therapy management by pharmacists, layered with DSMES into each CGM visit. We thought 5 touchpoints across 12 weeks would be enough to formally show a difference in outcomes based on our experience.
- *How we did it:* We initially used the FreeStyle Libre 2 system, which patients could scan with their smartphone. However, we began experiencing many issues with the sensors. Despite our intensive pharmacist-provided education, sensors were frequently falling off or malfunctioning. Although many have experienced success with these, we are now seeking support for the latest technology to continue our study.
- *Navigating pitfalls:* Some providers worried CGM was "only for insulin patients." We countered with ADA evidence and real-world success stories. We also encountered cost and access barriers in practice. Again, the grant helped supply sensors. Although for those not enrolled in a study, we work with population health teams and our care coordinators (nurses) to identify patients most likely to benefit and help them secure sensors. Time was also an issue initially, especially ensuring reports were updated prior to visits. Integrating CGM review into existing pharmacist visits kept the workflow realistic, and I was able to leverage some of my learners to assist with previsit workups and data troubleshooting.

The Service in Action

Each patient gets the following:

- *Baseline visit:* sensor placement, DSMES, baseline labs, and the Summary of Diabetes Self-Care Activities (SDSCA) survey.
- *Follow-ups (weeks 2, 4, 6, 12):* We review the CGM Ambulatory Glucose Profile, provide DSMES check-ins, make medication adjustments (if warranted), and provide behavior coaching.
- *At 12 weeks:* We repeat the A1C, obtain CGM metrics, and administer the SDSCA again.

We are tracking A1C, time in range, health behavior via the SDSCA, and even patient-

Table 1 Lessons Learned (So Far)

Challenge	What Worked	Takeaway for the DCES
Convincing leadership	Present evidence (ADA Standards) and evidence of pharmacist impact (local and national trends)	Anchor your pitch in guidelines + cost and benefit
Patient skepticism	Hands-on education and quick wins with CGM	Empower patients with their own data
Workflow concerns	Build CGM into an already existing workflow	Start small; integrate into what you already do
Sensor access/ troubleshooting	Partnered with an interdisciplinary team and applied/secured grant funding	Identify creative funding streams and network with local device representatives and medical science liaisons

Abbreviations: ADA, American Diabetes Association; CGM, continuous glucose monitoring; DCES, diabetes care and education specialist.

reported changes in diet, activity, and medication adherence.

Table 1 summarizes our lessons learned (so far).

Outcomes and Early Wins

Although our study is ongoing, the patient stories already show promise. These wins can be seen after only 1 CGM wear period:

- CGM can help that patient cut their sugary beverage intake after seeing what it does.
- CGM can improve medication timing by uncovering link between missed doses and spikes.

Blueprint for Your Setting

If you are a pharmacist or diabetes care and education specialist (DCES) looking to innovate with technology in your own clinic, here is a starting roadmap:

- Step 1: Identify the gap (people living with T2D not meeting glycemic goals).
- Step 2: Pitch the tech as both evidence-based and patient-centered.
- Step 3: Secure buy-in (use ADA guidelines and success stories).
- Step 4: Start small; add the technology into a couple of visits.
- Step 5: Pair technology with DSMES.
- Step 6: Collect outcomes (A1C, time in range, patient behaviors, workload).
- Step 7: Share results internally, at conferences, and in publications.

Final Thoughts

CGM is a tool that belongs in primary care, and pharmacists are well suited to lead the charge. By pairing DSMES with CGM, we are not just adjusting medications; we are helping patients see, understand, and act on their own data.

If you have been looking for a way to innovate in your clinic, this model is a practical, scalable way to elevate diabetes care and show pharmacist or DCES impact. Start small, share outcomes, and build from there. You will be surprised how quickly colleagues, patients, and leadership get on board. ■

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Clarifying **"Confusion"** When It Comes to Women's Health

Why Your Diabetes Matters

CHRISTINA FETCENKO, PHARMD, BC-ADM, CDCES, NBC-HWC, DIPACLM, ACE-CPT, ACE-GFI

As I think about my journey in ADCES, it is not shocking that most people do not know who I am. If I think about those I have met, I realize that despite our promotion that we should not label people, most have me labeled. It is not exactly the Scarlet Letter but more like THE "rebel" when it comes to diabetes and the standards of care. I thought that a 43-year history of type 1 diabetes carried some street cred, but in this arena, that story is all too familiar. The story that I am about to share, however, is not.

It was September 5, 2024, and my husband and I were on vacation. We were completely off our regular healthy eating habits, and although we still got our daily movement in, I am not sure it could conquer the ill effects of all the caffeine and highly processed foods we were consuming. We got to our room that night, and I went to take a shower. Out of nowhere, I felt it. It was impossible to miss. In fact, you wonder how, even just the night before, it was not there. The lump that I felt in my left breast took my breath away. I was not sure I even had the words to tell my husband. All that went through my mind was that I was more afraid of what the health care system would do to me than I was of the lump. When Monday came, I still found myself on the phone and following the guidelines despite the feeling in my gut.

My experience was alarming. At this point, there was no listening. My emotion of "fear" was in overdrive and the accelerator pressed to the floor. I went through the diagnostic mammogram and ultrasound and adamantly kept reminding everyone who treated me of my 41-year history of diabetes and exogenous insulin use. No one seemed to care. There was really nothing alarming in my results. When I asked the radiologist for an explanation, she threw her arms up and sarcastically proclaimed, "Shouldn't it be alarming enough that it is there now, but it wasn't there before?" Really, it should not. There are lots of benign breast masses that show up that were never there before. Against my intuition, I went for the core biopsy.

On September 16, 2024, that call came. The lady on the other end of the phone greeted me with "Happy Monday! There seems to be some confusion." Confusion? She then added, "I'm sorry to tell you that the results of your biopsy are positive for cancer." I stood there in shock and not because she said I had cancer. I was in shock because she said there seems to be confusion. When it comes to cancer, I thought the diagnosis was "definitive." I asked what that confusion was, but she had no answer. She said the surgeon might be able to answer that at my appointment.

I thought it was strange that someone would mention there was confusion, but as the surgeon walked in the room, I heard it again. She held my biopsy papers and looked at me, and again the suggestion of confusion came out. As the researcher that I am though, I already knew that diabetes-related mastopathy highly mimics invasive ductal carcinoma and how critical the history of diabetes is to its proper diagnosis. When I asked if the confusion was that I had diabetes-related mastopathy instead, she looked at me like a deer caught in headlights. She then asked why they would even consider that. Now I was the deer in the headlights. I made my history of diabetes well known, and it should clearly be in my records. I reiterated my 41-year history of diabetes and exogenous insulin use (factors in diabetes-related mastopathy) to which she replied that she was unaware. This was a critical piece, however, to my outcome. Even though I brought it up repeatedly, as I went down the assembly line, they kept leaving it out. It was crucial, too. The only way they look for diabetes-related mastopathy and have it in the differential diagnosis is if you have diabetes. It is crazy how much different the outcome is when you are a 49-year-old female versus a 49-year-old female with a long-standing history of diabetes. For me, it was the difference of an "interpretation" that I had invasive ductal carcinoma versus the benign condition of diabetes-related mastopathy. It would take me a year to finally get my third-party confirmation that it really was diabetes-related mastopathy all along. I will stop my story here.

Being a "rebel" may not be the label most desire, but when it comes to protecting the health of people who live with diabetes, I will gladly step up! What I learned from my own publications protected me from going down a rabbit hole. Invasive ductal carcinoma involves surgery, lymph node removal, radiation, chemo, and 5 to 10 years of more drugs. For diabetes-related mastopathy, there is no treatment. Surgery is not usually standard of care either because of the 60% chance of recurrence.

My publications taught me to find my "why." I realized that I needed to accept my diabetes and make it my friend and that sometimes, I need to fight hard for it. I learned how critical patient-centered care is. In my story, they completely left me, the patient, out of the plan. Now instead of living life with type 1 diabetes, I have extra things to think about. Side effects to contrast dyes on my kidneys, the radiation they injected to find lymph nodes (although no other tests showed they were affected), an unnecessary surgery that comes with a 60% risk of recurrence, and the fact that they rendered my left arm useless for finger sticks, injections, blood draws, and continuous glucose monitor (CGM)/pump sites, all because they removed 3 lymph nodes. My article about the moment of silence and listening is what saved me the most so far. Listening helped me avoid radiation, chemo, and drugs that are part of "guidelines" for a cancer I did not have.

In a time where new advances in science seem to come at us at the speed of light, one thing we learn as survivors when it comes to living with type 1 diabetes is often how much we really do not know. When it comes to complications of our disease, we know even less. Are our complications solely from a lack of time in range (TIR)? Are they from the disease itself? Or is it possible that they are linked to the very treatments that keep us alive? It is this type of mental torment I put myself through that helped me find my answer, the answer that was buried like a needle in a haystack, and how I learned the importance of health literacy.

The information on diabetes-related mastopathy is hard to find. I have never found information about it in the standards of care. I have never heard about it from my providers over the past 43 years. When talking with others living with diabetes, they are in the dark as much as I was. And as for resources for diabetes-related mastopathy, you may be shocked at the list. Again, this brings me back to the “rebel” in me. Because there is not much when it comes to the literature out there, I relied on resources like a dictionary to increase my health literacy and the “art” of our disease. I found myself getting personal with others, begging for their stories, who went through a diagnosis of cancer to realize that there was something “different” about mine. I used package inserts to research the impacts of long-term insulin use. It is tough reading information about the dark side of a drug that your very existence relies on. I had to dig into my records. If you saw my biopsy reports and pathology reports, you would be amazed at how many words I had to look up and define and then look up words in those definitions to fully understand what it said. The more I looked up, the more I was in disbelief. What I was learning was that the “interpretation” of what I had was even more rare than diabetes-related mastopathy. In fact, like my alphabet soup of credentials, it had me identified as if I was a mythical unicorn. So many things had been interpreted to fit the picture of a regular 49-year-old female and not one who had lived with type 1 diabetes for most of her life. I looked up the results of all my tests. In a complication that has been around since 1984, it is a bit eye-opening that this is all I can provide to you. I had to rely on the “art” of my disease and something we often forget in practice when it comes to patient-centered care. Patient-centered care should remind us that there is even science in the “art” of care. We cannot forget that science tells us that we are all bio-individual, meaning we are all made up of a different combination of molecules, and leaving that out, like my diabetes was in this case, made all the difference. I am sorry that there is not a concrete and simple list to provide, but when it comes to type 1 diabetes, as we already know, there rarely is.

I think about what it took to find my answer. One would think it was as simple as asking the doctor. It was not. I asked. In fact, the more I asked, the more the doctors retreated. I found myself in yet another unfamiliar place. An attorney’s office. My ignorance in how this process worked . . . could not have been more obvious. Getting a second opinion, one that included my diabetes, came down to this. I have been known as a member of ADCES to be a bit vocal too when it comes to profiting off my health, so you know that I was not here because I was being an ambulance chaser. I simply wanted to know the truth because I knew my diabetes mattered. Where language matters, as someone who lives with diabetes, I will gladly wear that “label.” Call me Tina the "diabetic", label me by my TIR or my A1C, or the “rebel.” Really, call me what you want. I AM Type One Tina, and my diabetes is part of my identity. There was always the chance in this second opinion that it could confirm the cancer, and if that were the case, I would have accepted it. We are so quick to trust science, but in a case like mine, where the science proved the first hypothesis to be wrong, it does not seem fair that I must wear that label for the rest of my life. I am lucky, though, that my type 1 diabetes has taught me that even when life seems unfair, there is always something good that can come out of it. For you, the reader, that is my story. A story of passion, resilience, and more fight than one can imagine. A story that shows that sometimes you really do have to be the ”rebel” and go completely against the grain. Please share my story with others because in the end, the chance to help someone else, protect their health, is what matters most to me in this world. To help just one person would make an experience that should have never happened to me be worth every single step of the journey.

This experience also came with an unexpected reality about technology. Everything was normal before the technology. Although there are perks to it, putting complete trust in technology may not always be helpful. CGMs with FDA warning letters about accuracy especially when it controls the automatic insulin delivery (AID) of a pump is scary. The lower targets (even below 7%) promoted in pump algorithms have not been shown to add any improvement to the overall prognosis of diabetes; however, they do contribute to higher total daily insulin amounts, a factor linked to diabetes-related mastopathy. The trust I placed to let the AID "take care" of me has left me disappointed. It was advertised as if it had my back, but it let me down. In a condition where insulin amounts matter, my total daily insulin dose went from 45 to 60 units (sometimes much higher) and with no improvements to my health. In fact, it was quite the opposite. Going forward, pushing through the inertia when it comes to lifestyle, is crucial. Eating healthy, cooking at home, and moving daily has kept me steady at an A1C of 6.2% and total daily insulin at 40 units/day.

Living with type 1 diabetes has always made me vulnerable. Even though I research far beyond the advertised claims, I still could not completely protect myself. This experience over this past year has left me even more exposed and raw. I have a feeling you will find me being the "rebel" that I am because at the end of the day, what matters most is MY story. My only hope is that my story can help someone else. When you walk through the doors of a place that advertises "world renowned health care," you should not walk out in worse shape than you went in. ■

Declaration of Conflicting Interests

This author declares that there are no conflicts of interest.

What's Your Advice?

What Is Your Favorite ADCES Resource and Why?

Online Store

"There's lots of continuing education (CE) that's related to our profession—and some of it is free. However, the cost of the CEs is very affordable. You can also purchase the ADCES Curriculum in the ADCES store, too—this book is a game changer for my program since I do not have to create an entire curriculum myself!"

Diabetes Care and Education Curriculum

"Beautifully translates the ADCES7 Self-Care Behaviors into real-world, evidence-based tools that empower people with diabetes to live healthier, more confident lives. I've used this curriculum to train pharmacy teams, student pharmacists, and interprofessional educators. It consistently delivers measurable outcomes and meaningful engagement. This resource remains the gold standard for bridging science, compassion, and practice."

Podcast

"On my daily walks, *The Huddle: Conversations with the Diabetes Care Team* podcast is terrific to listen and learn from our colleagues while getting exercise and fresh air."

Ask the Reimbursement Expert

"Reimbursement is a significant challenge for our programs. I love that there's a reimbursement expert available that provides guidance on how to bill and get reimbursement for the services we provide so that we can build and maintain a sustainable program."

ADCES Connect

"Allows me to engage with other DCES professionals in my state and across the country, sharing insights, events, and best practices."

Webinars

"They address specific topics for us as DCESs. I like the branded ones ADCES has been doing lately that help me learn more about specific products."

Communities of Interest

"I do not have a favorite community of interest (COI) because they are all special and resourceful. It all depends on my question and need. If I have an inpatient question need, I will turn to the inpatient COI; if I have a start-up business need, I will turn to the entrepreneurial COI. [Several members also added shout-outs to the Plant-Based COI and the Inpatient Diabetes Management COIs!]"

Danatech

"I can find what I need to know about diabetes technology in one place! It has detailed information with links back to the manufacturer's sites, CE opportunities, and videos for online device training. That means I can learn about the products when I have free time virtually because I have no time to meet with the companies while I am in clinic!"

"Offers unbiased information on products, ongoing education for health care professionals, and information about available apps that can be used in diabetes care."

"It remains a constant reference for me in my day-to-day work life. I also find myself referring my colleagues to danatech. I love the ability to compare and contrast products. It's the "best" one-stop shopping experience for busy professionals."

"It has all the up-to-date diabetes tech and webinars and insurance tools and comparisons and all the things! It's so well organized."

Test YOUR KNOWLEDGE

Note: Adapted from *Review Guide for the Certified Diabetes Care and Education Specialist Exam*, 6th Edition, (c) 2023. Association of Diabetes Care & Education Specialists. Reprinted with permission.

Answers appear on page 86.

1 A person with diabetes presents with urinary albumin-to-creatinine ratio of 106 mg/g and estimated glomerular filtration rate (eGFR) of 50 mL/min/1.73 m^2. Into which stage of chronic kidney disease (CKD) would this person be classified?

A. Stage 1
B. Stage 2
C. Stage 3
D. Stage 4

2 People with peripheral arterial disease are considered to have the same atherosclerotic cardiovascular disease (ASCVD) risk as people with established coronary artery disease. Which of the following would classify a person with ASCVD?

A. Ankle brachial index greater than 9
B. Abdominal aortic aneurysm
C. hs-CRP <1 mg/dL
D. ASCVD 10-year risk <10%

3 At an initial diabetes education appointment, a man agrees to a goal of exercising 30 minutes every day. At a 1-month follow-up visit, the man states he has only been able to exercise 15 minutes 4 days a week and that exercising 30 minutes every day seems overwhelming. What is an appropriate follow-up action?

A. Continue with the original exercise goal of 30 minutes 7 days a week.
B. Adjust the exercise goal to 15 minutes 4 days a week.
C. Set an intermediate exercise goal of working up to 20 minutes 6 or 7 days a week by the 3-month follow-up appointment.
D. Discontinue exercise because the goal cannot be achieved.

4 A 24-year-old college student with type 1 diabetes presents to the pharmacist diabetes specialist for an insulin dose adjustment. She reports injecting the same amount of rapid-acting insulin with each meal and never makes any changes. Her recent A1C was 8.7%. Which of the following is the most appropriate approach for this student?

A. Advise her to search the internet for information on meal planning.
B. Suggest she consult with a registered dietitian to provide her with information about carbohydrate counting.
C. Contact her family to enlist their help and support.
D. Provide her with printed handouts to take home.

Test Your Knowledge Answers

Questions appear on page 84.

1. **C:** According to the National Kidney Foundation, this individual has stage 3 CKD as evidenced by the presence of albumin in the urine and moderately decreased estimated glomerular filtration rate (GFR).

2. **B:** Abdominal aortic aneurysm is correct. Individuals with peripheral arterial disease, history of abdominal aortic aneurysm, or metabolic syndrome are considered to have the same ASCVD risk as individuals with established coronary artery disease (CAD). Other biomarkers of cardiovascular disease (hs-c-reactive protein (CRP), C; ankle brachial index <0.9, A) may help modify the goals of therapy but do not establish absolute risk by themselves.

3. **C:** The focus of this question is evaluation of goals and documenting outcomes. Some key areas to consider when evaluating goals include:

   1. What is the man's assessment of the goal?
      - Did he feel he achieved the goal?
      - How would he rate his progress?
   2. What is the diabetes care and education specialist's collaborative assessment of the goal?
      - Was the goal appropriate?
      - Was there adequate time to achieve the goal?
      - Did the goal achieve the expected outcome?
      - Did the outcome impact the diabetes treatment plan?
      - Does therapy need to change?
   3. What should the next steps be?
      - Should the goal be changed or continued?
      - Should additional goals be added or other goals changed?
      - When will new goals be evaluated?
      - What other changes in the diabetes treatment plan need to occur to support the goal(s)?

   The assessment for this man reflects that exercising 30 minutes 7 days a week is too overwhelming. It appears that the initial goal was too aggressive for him. Setting an intermediate goal of working up to 20 minutes 6 or 7 days a week over a longer 3-month period is likely more realistic for this individual (C). The man has already relayed that this goal is currently too overwhelming (A). Maintaining his current activity level does not further work him toward a long-term goal of 30 minutes 7 days a week (B). There is no need to discontinue exercise altogether. At this point, some is better than none, and setting an intermediate goal assists him in working toward a long-term goal of 30 minutes 7 days a week (D)

4. **B:** The focus of this question is on assessing needs and making referrals as appropriate. College students by nature have variable schedules and typically variable food intake from day to day. The fact that this student takes the same insulin dose with each meal despite carbohydrate intake does not maximize her diabetes management. This woman could benefit from a consult with a registered dietitian for education on carbohydrate counting and using insulin-to-carbohydrate ratios. Although the woman could gain some valuable information on meal planning from the internet, the information would not be individualized for her needs, nor would she have the opportunity to ask questions and receive feedback, as she would with a personal consult (A). Although family support is important, the key issue is carbohydrate counting, which the woman must understand and be able to implement on her own (C). Printed handouts do not replace individualized nutrition education by a registered dietitian (D).

Thank You to Authors and Reviewers 2025!

ADCES thanks the authors and reviewers who have helped contribute to the success of *ADCES in Practice* during the past year.

Are you interested in joining this list and becoming an *ADCES in Practice* author or reviewer? If so, contact the journal's Executive Editor, Amy Hess Fischl, MS, RDN, LDN, BC-ADM, CDCES, at adcesinpractice@gmail.com.

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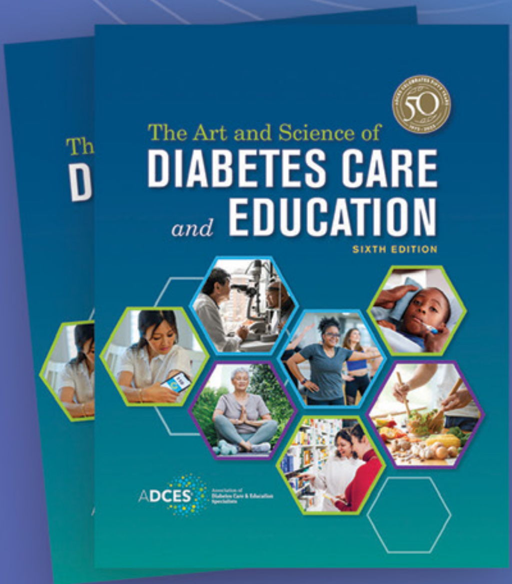

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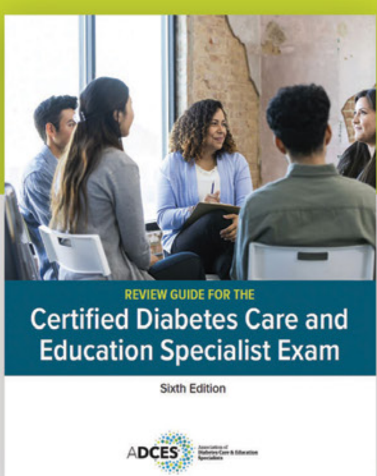

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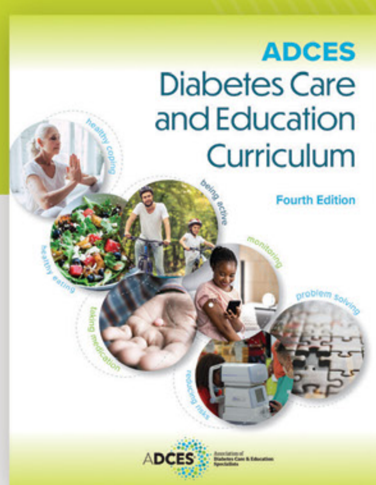

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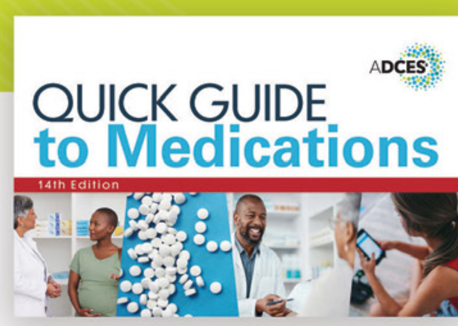

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