

North Carolina's Guide to Prevention and Management of Diabetes **3rd Edition**



Diabetes Management and
Prevention of Complications



MANAGE WEIGHT | LIVE TOBACCO FREE | PARTICIPATE IN LIFESTYLE CHANGE PROGRAMS
PARTICIPATE IN DIABETES EDUCATION | ENGAGE IN TREATMENT PLAN | GET ADEQUATE SLEEP

Diabetes Management and Prevention of Complications

For people with diabetes, the key to managing their illness, blood sugars and preventing complications is following their health provider's clinical recommendations including medication adherence, screening for early signs of complications and adopting healthy behaviors.

Clinical Considerations

Several excellent guidelines lay out clinical recommendations such as those from the American Diabetes Association Standards of Medical Care in Diabetes.⁷¹

Scan the QR code for more details from the American Diabetes Association on suggested “Components of the Comprehensive Diabetes Medical Evaluation at Initial, Follow-Up and Annual Visits.”⁷⁶



diabetesjournals.org/care/article/47/Supplement_1/S52/153956/4-Comprehensive-Medical-Evaluation-and-Assessment

Time in Range (TIR) and emerging tool for clinical management.

An estimated 30%–40% of people with type 1 diabetes as well as a growing number of those with insulin requiring type 2 diabetes use insulin pumps, continuous glucose sensor monitors (CGM), or integrated insulin pump/CGM devices as tools for diabetes management.⁷⁷

Today, the new “hybrid” models of insulin pumps are designed to deliver insulin, integrate glucose monitoring, and provide diabetes management software that offers comprehensive data analysis related to both insulin doses and daily life activities. Many of these hybrid insulin pumps are now fully integrated with CGMs; offering the person with diabetes and their health care team real-time data to assist in the management of diabetes. Careful review of the comprehensive data provided by these hybrid pumps/CGM integrated systems has unveiled a new metric which can also be used to assess overall glycemic control called **Time in Range (TIR)**.⁷⁸

While A1C can be used to diagnose diabetes, it does not address the constant changes of glucose levels, hypoglycemia, or daily glucose patterns and trends. A 10- to 14-day CGM assessment of TIR, with CGM use of 70% or higher, can be utilized to evaluate glycemic status and is important in clinical management.⁷⁹ TIR identifies both the percentage of time and specific time frames where glucose is above or below the individual's recommended target. TIR provides useful information regarding patterns and trends related to food timing, insulin dosing, exercise and daily activity, hypoglycemia, and illness.

TIR is also a more accurate measure than A1C for assessing glycemic control in individuals with those conditions where A1C values are less accurate (iron deficiency and other anemias, hemoglobin abnormalities, and pregnancy).⁷⁸ A recent retrospective analysis of Diabetes Control



and Complication Trial (DCCT)⁸⁰ and other studies⁸¹ demonstrated that TIR is strongly associated with reduced risk of microvascular complications (e.g., retinopathy and microalbuminuria: small amounts of protein in the urine above what is normal and typically an early sign of kidney disease) in people with T1D and T2D when the TIR percent increased. A TIR value of 70% strongly aligns with an A1C of 7,^{82,83} and the clinical recommendation is to keep TIR $\geq$ 70% for a minimum of 16 hours/day.⁷⁸ In clinical practice, TIR is a useful tool that complements A1C as metrics for both targets and outcomes in optimizing diabetes care, management, and outcomes.

A **TIR Tip-Sheet** is available.

TIR targets:

- T1D and T2D target range = 70–180 mg/dL
- Pregnancy target range = 63–140 mg/dL
- Recommendations also outline setting conservative CGM targets for individuals with diabetes who are older and/or considered high risk, with a strong focus on reducing the percentage of time spent in hypoglycemia/hyperglycemia.

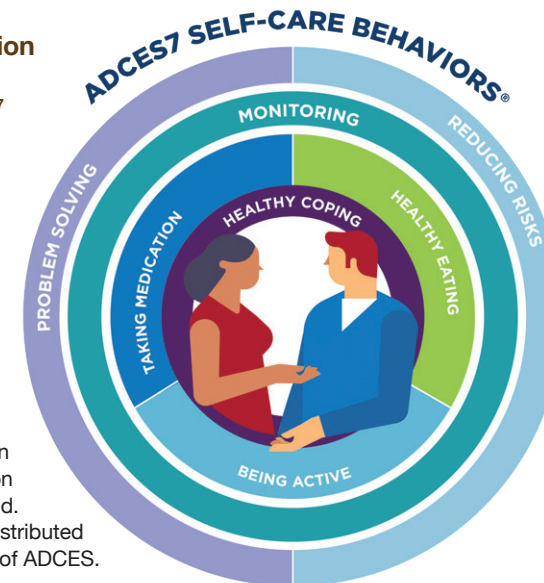
Diabetes Self-Care Management Education and Support (DSMES)—A Critical Tool for Adopting (or Developing) Healthy Self-Care Behaviors

For personalized diabetes management and preventing complications, a critical tool for managing blood glucose and preventing complications is successfully practicing the **ADCES7 Self-Care Behaviors®** (Figure 3) and incorporating those skills and processes into their everyday routines. These behaviors are healthy eating, being active, monitoring, taking medications, problem solving, reducing risk, and healthy coping. These skills assist people with diabetes in their efforts to manage and stabilize their blood glucose levels within the range recommended by their health care team as well as providing recommended clinical preventative measures for overall health maintenance and risk reduction. Evidence-

based research demonstrates that managing diabetes by keeping glucose within recommended individual target ranges reduces the risk for complications, slows the progression of the disease and improves health outcomes.^{84,85} This is best accomplished through a patient centric collaborative team approach that includes the individual's primary and diabetes health care providers, diabetes self-care management and support (DSMES) team, specialists if indicated and ongoing support.⁸⁶



Figure 3. Transformation of the ADCES7 Seven Self-Care Behaviors.⁸⁷



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DSMES provides people affected by diabetes with the critical survival skills and strategies to manage their diabetes as well as ongoing support as they integrate these processes into daily life. Diabetes care and education (also referred to as diabetes self-management education and support or diabetes self-management training, or DSMT), is performed by health care professionals who have appropriate credentials and experience within their scope of practice. **DSMES services** are provided by a variety of credentialed professionals such as nurses, registered dietitian nutritionists (RDN), pharmacists, and Certified Diabetes Care and Educational Specialists (CDCES). DSMES services are designed

Definitions and Terms used in Diabetes Self-Care Management and Support (DSMES)⁷⁵

Lifestyle Management includes: DSMES, DSMT, MNT, physical activity, smoking cessation counseling, psychosocial care.

DSMES: Diabetes Self-Management Education and Support

The combination of education (DSME) and support (DSMS). With the inclusion of “support” in the most recent update in the National Standards for DSMES, this is now the preferred terminology

DSMT: Diabetes Self-management Training

Term used by the Centers for Medicare & Medicaid Services for DSMES. Preferred term for legislative activity and reimbursement/billing issues.

MNT: Medical Nutrition Therapy

CDCES: Certified Diabetes Care and Education Specialist

DCES: Diabetes Care and Education Specialist

to address the person’s health beliefs, cultural needs, current knowledge, physical limitations, emotional concerns, family support, financial status, medical history, health literacy, numeracy, and other factors and barriers that influence each person’s ability to meet the challenges of self-care.⁸⁸ These providers can be found in a variety of settings: hospitals, physician offices, clinics, pharmacies, home health, wellness programs, health departments, or communities. The initial DSMES referral is provided by a primary care provider (PCP) to a formal DSMES program. Ongoing support services can be provided within PCP or endocrinology practices as well as in a variety of community-based resources such as rural health centers, health departments, support groups, faith-based programs, payer-based programs, or by community health workers.

Evidence-based research demonstrates that engaging adults with diabetes in DSMES results in statistically significant and clinically meaningful improvements in A1C. The greatest improvements are achieved when DSMES includes both individual and group education, is provided by a team, participants attend more than 10 hours, and is individualized to address each person’s unique needs. Additionally, DSMES is focused on behaviors, lifestyle changes, and engages the person with diabetes in the process.⁸⁹

When to Refer for DSMES

There are four critical times when DSMES should be provided for type 2 diabetes (Figure 4):

- At diagnosis
- Annually and when not meeting targets
- When complicating factors occur
- When transitions in care occur

Figure 4. Four Critical Times for DSMES Services⁹⁰



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Table 2. Target Goals for Glucose (Fasting, Pre-meal, Post-meal) and A1C goals⁹¹

Fasting glucose before your meal:	80 to 130 mg/dl
Glucose two hours after the start of the meal:	Below 180mg/dl
A1C goal:	< 7% without frequent hypoglycemia—individualized for each person
A1C goal—adjusted:	< 8% for people sensitive to hypoglycemia, elderly, history of severe heart disease, long duration of diabetes
Talk with your health care team about what blood sugar numbers are right for you.	



These times identified in Figure 4 are critical points when people with diabetes may need assistance to achieve and/or adjust their goals and care plans for successful daily self-management.⁸⁸ Because diabetes is a chronic disease that progresses over time, ongoing vigilance and flexibility are necessary to address and adjust changing needs or treatments. Increased DSMES referrals may be necessary to assist the person with diabetes to meet healthy goals and outcomes to prevent complications. Diabetes care and education plans at each of the 4 critical times include individual assessments that focus on the needs and experiences of the person with diabetes relevant to self-management and applicable treatment targets.⁶⁰

Self-Care Recommendations for Individuals with Diabetes

It is recommended to follow-up with your diabetes care team every 3 months to live healthy with diabetes. During these visits, people with diabetes should expect to have:

- A1C checked and compared to blood sugars from home
- Blood pressure checked
- Blood and/or urine chemistries to assess kidney function, with a referral to a specialist as needed
- Lipid (cholesterol) levels (at least once a year)
- Foot exam (take off those shoes and socks) and importance of daily self-foot exam at home to inspect for changes in skin or temperature, infections, fungus, cracks, fissures, corns or callous, ingrown nails, edema or decreased sensation
- Depression or distress screening; let your provider know if you are overwhelmed by managing your diabetes, are feeling depressed, or find it challenging to cope
- Screening for tobacco use or vaping • Reminder to see your dentist two times/year and to brush and floss teeth daily
- Assessment for sleep apnea, with a referral to a specialist as needed
- Referral to an audiologist at the time of diagnosis for hearing evaluation and screening for risk of falls (future evaluations might be required based on the full medical history)
- A review of your individualized, patient-focused plan of care for managing your diabetes
- Referral to an eye care provider at least once a year who can perform a dilated eye exam
- Review of all your immunizations to ensure you are up to date: flu vaccine (yearly), pneumonia vaccines, hepatitis B vaccine, and discuss the need for a Tdap and/or MMR booster, shingles and HPV vaccines with your provider
- Referral to see your DSMES team at the four critical times (e.g., when complicating factors occur) and annual follow-up review.

Preventing and Reducing Risks for Complications

Diabetes can lead to complications over time particularly when glucose levels remain elevated for extended periods of time and /or there is extreme glucose variability. Diabetes is associated with:

- Amputations: diabetes and complications of ulcerations lead to 50–75% of the non-traumatic amputations
- Depression
- Distress
- Falls: Increased risk from loss of vision, foot neuropathy, and vestibular complications leading to potential fractures and head injury
- Fatty liver: Non-alcoholic Fatty Liver Disease (NAFLD)
- Gastroparesis (slower or incomplete emptying of the stomach) and impaired digestion secondary to central autonomic neuropathy
- **Hearing Loss**
- Macrovascular changes of the large blood vessels which can lead to cardiovascular disease (heart attack, strokes, hypertension), clotting disorders, amputations, hearing loss
- Microvascular changes to the small blood vessels which can impact the eyes (retinopathy), ears (hearing), kidneys, end stage renal disease and dialysis (nephropathy), feet, hands, and nerves (neuropathy)
- Periodontal (gum) disease, loss of dentition
- Peripheral vascular disease (altered or decreased circulation to the feet and legs, edema, nails and skin
- Skin changes (skin tags, oral skin lesions, itching, infections due to bacteria, fungus, or yeast)
- Sleep apnea
- Other endocrine or autoimmune disorders

Immunizations are important for people with diabetes as protection from complications of flu, pneumonia, Hepatitis B, Shingles, Tetanus, Pertussis, and Diphtheria. All illnesses and infections in individuals with diabetes cause glucose to rise to high levels (hyperglycemia), which in turn increases the difficulty to resolve these illnesses, which is why immunizations are important.^{71,92}

- Annual flu vaccine
- Hepatitis B vaccination for all adults with diabetes who have not previously been vaccinated for Hepatitis B and are younger than 60 years of age.
- Pneumococcal vaccines once as an adult before 65 years of age and then two more doses at 65 years or older
- Shingles vaccine
- Tdap (Tetanus, diphtheria, and pertussis): Initially and then every 10 years

For additional information about immunizations and diabetes, visit the **Association of Diabetes Care & Education specialists website.**⁹³

The Language of Diabetes

Diabetes is a challenging and complex medical condition that demands intense engagement in the daily management on the part of the person with diabetes. The learning curve is rapid and steep; requiring mastery of multiple critical self-care skills and problem-solving strategies to successfully navigate this condition. People with diabetes must also integrate these new responsibilities into their other roles and obligations (spouse, parent, grandparent, manager, employer, employee, community member, household manager, caregiver, teacher, mentor, etc.). Individuals *and* families who live with diabetes every day need ongoing support and encouragement from their health care teams, community, families, friends, and co-workers.

Language is the primary channel for sharing knowledge and verbalizing understanding.⁶ Once heard or read, people transform words into meaning,^{94,95} impacting their self-concept. Language is the center whereby a person determines their identity, social perception, attitudes, bias, and stereotypes. The use of certain words or phrases can intentionally or unintentionally express bias about personal

characteristics (e.g., race, religion, health, or gender).⁶ Language shapes the experience for the person with diabetes and impacts both the context and their perception of the information. Studies have demonstrated that the language used in diabetes care and management makes a huge difference in terms of behaviors, outcomes, and motivation.

The Association of Diabetes Care and Education Specialists (ADCES) and the American Diabetes Association (ADA) formed a joint task force focused on language in diabetes care and education. This group reviewed the literature regarding language used in the delivery of diabetes care and education and made recommendations for language that enhances the communication process. Appropriate language should be used by all health care professionals and others when discussing diabetes through spoken or written words and can be used with a variety of audiences (people with diabetes, colleagues, or the public).⁶



There are four guiding principles:

- Stigma that historically has been attached to a diagnosis of diabetes can contribute to stress and feelings of shame and judgment
- Every member of the health care team can serve people with diabetes more effectively through a respectful, inclusive, and person-centered approach
- Empowering language that focuses on the individual’s strengths can improve communication and enhance motivation, health, and well-being of people with diabetes.
- Specific themes and associated words should be avoided.

Words to Avoid

- **Judgment** (non-compliant, uncontrolled, don’t care, should, failure)
- **Fear/Anxiety** (complications, blindness, death, diabetic ketoacidosis)
- **Labels/Assumptions** (diabetic, all people with diabetes are fat, suffer)
- **Oversimplifications/Directives** (lose weight, you should, you’ll get used to it, at least it’s not...)
- **Misunderstanding/Misinformation/Disconnected** (cure, reverse, bad kind, you are fine)
- **Body Language and Tone** (no eye contact, accusatory tone)

BE AWARE AND CHOOSE YOUR WORDS WITH CARE

Table 3. List of Problematic Words and Preferred Words to Use.

Problematic	Preferred
Diabetic	Person living with diabetes
Test blood glucose	Check or Monitor
Control (Verb)	Manage—describe what the person is doing
Control (Noun)	Define what you mean with control and use A1C, blood glucose level
Good / Bad / Poor	Safe/unsafe levels; target levels; use numbers and focus on facts instead of judgmental terms
Compliant / Adherent	Takes medicine about half the time; Eats vegetables a few times a week; describe engagement and participation

Our words and messages are powerful. When our mindset places the person first, the language will follow, removing the labels of shame, guilt, and blame. When we hear language that is negative, speak up and advocate for people with diabetes while educating those around us.⁹⁶ Additional resources can be found at the **Association of Diabetes Care & Education Specialists**.⁹⁷

Medication

There are many drug classes available to help manage diabetes. New research continually adds to the list of medications, their uses, recommendations, risks, and benefits. As a result, we suggest reviewing the American Diabetes Association's (ADA) Pharmacologic Approaches to Glycemic Treatment within the ADA Standards of Care and Resources. These are available online (remember to select the current year) and as an Android or iOS app:

Find it on the [Web](#)
Get the [Android-App](#)
Get the [iOS-App](#)



Diabetes drugs like GLP-1 AGONISTS (e.g. Ozempic), and SGLT2 inhibitors (e.g. Farxiga) are popular for treating obesity, heart disease, and chronic kidney disease (CKD). Currently, Mounjaro (Tirzepatide) is the first and only dual GLP-1/GIP agonist approved by the FDA for type 2 diabetes. Addressing insurance and payment is crucial to helping patients afford treatments. Here is how health care providers can assist patients in navigating these aspects:

1. Insurance Coverage

Check Insurance Plans:

Verify coverage before prescribing, check whether the patient's insurance plan covers the specific weight loss medication. Coverage can vary widely between different insurance providers and plans.

Formulary: Determine if the medication is on the insurance company's formulary (list of covered medications) and if there are any preferred options or tiered pricing.

Prior Authorization:

Process Requirements: Many weight loss medications require prior authorization. Be prepared to complete and submit the necessary documentation.

Medical Necessity: Provide detailed information to justify the medical necessity of the medication, including the patient's BMI, comorbidities, previous weight loss efforts, and the rationale for choosing the specific medication.

Appeals:

Denied Claims: If a claim is denied, assist the patient in understanding the appeals process. This may involve providing additional documentation or a letter of medical necessity.

2. Cost Assistance Programs

Manufacturer Assistance Programs:

Many pharmaceutical companies offer patient assistance programs or savings cards that can reduce out-of-pocket costs for weight loss medications.

Resources: Direct patients to the manufacturer's website or provide contact information for these programs.

Nonprofit and Community Resources:

Some nonprofit organizations and community health programs offer financial assistance or discounts on medications.

Referrals: Refer patients to resources such as NeedyMeds or the Partnership for Prescription Assistance.

3. Alternative Payment Options

Generic Medications:

If available, consider prescribing generic versions of weight loss medications, which are often less expensive than brand name drugs.

Discount Programs:

Pharmacy Discount Cards: Programs like GoodRx or SingleCare offer discounts on prescriptions and can be used instead of insurance.

Comparison Shopping: Encourage patients to compare prices at different pharmacies, as prices can vary.

4. Patient Communication

Discuss Costs Upfront:

Have an open conversation about the potential costs of weight loss medications and any financial concerns the patient may have.

Transparency: Be transparent about the potential need for prior authorization or out-of-pocket costs.

Provide Written Information:

Give patients written information on their insurance plan's medication coverage policy, including contact information for their insurance provider and steps to take if they encounter issues.

5. Follow Up and Support

Ongoing Assistance:

Offer support for navigating insurance and payment issues throughout the treatment process, including assistance with prior authorizations and appeals if necessary.

Office Staff: Utilize office staff, such as a patient navigator or case manager, to help patients with insurance and financial concerns.

Monitor Financial Impact:

Regularly check in with patients about the financial impact of their treatment to address any issues promptly and adjust the treatment plan if necessary.

Key Takeaways for Patients

1. Insurance Verification:

Confirm with your insurance provider whether the prescribed weight loss medication is covered and understand any prior authorization requirements.

2. Cost Assistance:

Explore manufacturer assistance programs, discount cards, and nonprofit resources to reduce medication costs.

3. Open Communication:

Discuss any financial concerns with your health care provider to find the most affordable and effective treatment options.

4. Documentation:

Keep copies of all documentation related to insurance coverage, prior authorizations, and any communications with the insurance company.

By addressing insurance and payment considerations proactively, health care providers can help ensure that patients have access to the weight loss medications they need without undue financial burden.

If a patient's pharmacy does not have the prescribed weight loss medication in stock, there are several steps both the patient and health care provider can take to resolve the issue:

1. Contact the Pharmacy

Check Availability: Have the patient or a staff member call the pharmacy to confirm the medication is out of stock and inquire about the expected restock date.

Alternative Locations: Ask if the pharmacy can check the availability of the medication at other nearby locations or transfer the prescription to another branch that has it in stock.

2. Explore Alternative Pharmacies

Different Pharmacies: Suggest that the patient contact other local pharmacies to see if they have the medication available. This can include independent pharmacies, larger chain pharmacies, and specialty pharmacies.

Online Pharmacies: Consider reputable online pharmacies, which may have the medication available. Ensure the online pharmacy is certified by the National Association of Boards of Pharmacy under its Digital Pharmacy Accreditation program (Reference: 21 N.C. Admin. Code 46.1601).

3. Communication with Health Care Provider

Inform the Prescriber: The patient should inform the health care provider about the issue. The provider can then assist in finding a solution.

Alternative Prescriptions: If the medication is not available in the area, the health care provider may consider prescribing an alternative medication that is in stock and appropriate for the patient's condition.

4. Pharmacy Interventions

Special Orders: Some pharmacies can place special orders for medications that are not in stock. This might take a few days, so it's important to ask about the timeframe.

5. Insurance and Payment Considerations

Coverage Check: Ensure that any alternative pharmacy or medication is covered by the patient's insurance plan to avoid unexpected costs.

Prior Authorization: If an alternative medication is prescribed, confirm if a new prior authorization is required and complete it promptly.

6. Patient Communication

Keep the Patient Informed: Maintain clear communication with the patient about the steps being taken to obtain their medication. Provide updates on any expected delays or changes in the prescription.

Provide Instructions: If the prescription is transferred to another pharmacy, provide the patient with clear instructions on where to go and what they need to do to pick up their medication.

7. Follow Up

Confirm Receipt: Follow up with the patient to confirm that they have received their medication and address any further issues that may arise.

Summary of Steps for Patients

- 1. Contact the Pharmacy:** Verify that the medication is out of stock and inquire about restock dates.
- 2. Check Other Locations:** Ask if the medication is available at other pharmacy branches or nearby pharmacies.
- 3. Inform the Prescriber:** Let your health care provider know about the issue so they can assist.
- 4. Consider Alternatives:** Look into different pharmacies, including certified and accredited online pharmacies (e.g. Amazon).
- 5. Stay Informed:** Keep in communication with your health care provider and pharmacy for updates.

Supply considerations

The supply situation for weight loss medications can vary widely depending on several factors, including the specific medication, manufacturer production capacity, distribution logistics, and regional demand. While supply issues for weight loss medications can occur, proactive communication with pharmacies, manufacturers, and patients can help mitigate these challenges. Staying informed about the latest updates from manufacturers and professional associations can also provide valuable insights into managing and addressing supply constraints.

FDA Drug Shortage List: The FDA maintains a **list of current and resolved drug shortages**, which includes information on the current status of various medications, including weight loss drugs.



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