

# Focused Geriatric Assessment for Individualizing the Diabetes Care Plan

Patricia Davidson, DCN, RDN, CDE, LDN, FAND  
Nancy Barker, MSN, EdD, RN  
West Chester University  
West Chester, PA

## Abstract

Management of the older adult with diabetes requires individualized and goal driven care based on health risks and glycemic control. On-going risk assessment for malnutrition, cognitive and functional changes, and causes of variation in glucose control are essential in this population. This article discusses components of a comprehensive geriatric assessment.

## Introduction

Diabetes continues to be a major health health issue for many individuals in the United States. It is especially concerning as older adults currently make up 40% of the population with diabetes (1). The prevalence of diabetes in older adults increased by 62% from 1997 to 2010 with 7.81 million self-reporting a diagnosis of diabetes (1). These alarming statistics highlight the importance of identification and management of appropriate care for this population to assist in the prevention of diabetes related complications. This article will review the assessment and care management of older people with diabetes.

## Literature Review

Lewandowicz et al. (2018) examined the effect diabetes has on geriatric patients and specific needs related to the aging process and impaired functioning (2). The authors were able to identify several trends related to diabetes and aging, particularly the challenge of maintaining

glycemic control, and interrelated factors such as the decline in cognitive function and memory (2). The rate of memory decline was accelerated with elevated A1c values thus highlighting the need for improving glycemic control in this population. However, hypoglycemia has been shown to negatively affect cognition and contribute to falls and serious injuries (2). Additionally, there is a high prevalence and exacerbation of co-morbidities in those with diabetes including an increased risk for falls and fractures, urinary incontinence, frailty, delayed wound healing, malnutrition, vision loss, vascular complications, and cognitive impairment (2). All of these can ultimately impact the older adult's independence, health status and quality of life (2). Health care practitioners, such as registered dietitians, nurse practitioners and gerontologists, should collaborate to include interventions to assist with the reduction of risk related to those complications while considering the individual's needs and preferences.

Geriatric patients also experience age related physiological changes. For example, as a person ages there can be focus and vision changes due to fluid loss in the lens of the eye (3). These changes can make reading medication labels and markings/ numbers on insulin pens or syringes difficult causing administration or dosing errors. In addition, geriatric patients can experience hearing

changes such as losing the ability to distinguish higher pitch sounds. When teaching geriatric patients, it is important to ensure a quiet environment as background noise can make it challenging for patients to hear clearly and comprehend verbal directions (3). Challenges with vision and hearing may make it advantageous to provide both verbal and written directions to the older adult. The ADA also recommends patient-centered communication that utilizes active listening and elicits patient preferences and beliefs. It is recommended that teaching should be evaluated for effectiveness by having the patient demonstrate back the skill to ensure comprehension using the “teach back” technique. Inclusion of caregivers in the assessment for additional information, allowing for longer clinic visits to explore multiple aspects of care, and interdisciplinary collaboration to identify priorities for the plan of care are vital when assessing self-care in this population. Since diabetes care relies heavily on self-care, RDNs should assess abilities and barriers to self-care on an ongoing basis as variables can change often in this population (4).

## Assessment Recommendations

Assessment of a patient’s social and financial support, including potential food insecurity, and any financial barriers should be a priority as it may influence glycemic control and treatment adherence (5). Utilizing social work support can assist patients in locating assistance, including programs for reduced or no cost medications and federally supported nutrition support programs. Examples of such nutrition support programs include the Senior Farmers’ Market Nutrition Program (SFMNP), Commodity Supplemental Food Program (CSFP), Congregate Nutrition Programs and/or Home-

Delivered Nutrition (5). The use of these types of services can help ease the financial burden for low-income seniors, decrease the risk of malnutrition, improve food security, and decrease admissions and readmissions to healthcare facilities.

Neurological changes should be screened for annually starting at the age of 65 (6). The development of neurocognitive dysfunction in the older person with diabetes can lead to dementia. If neurocognitive dysfunction exists and limited support is available, patients may require simplified self-care regimens or increased assistance, including home health visits or assisted living facilities, related to medication treatment (7). Simplified regimens can include less frequent medication therapy, flexible timing and ease of administration of medication such as the use of insulin pens or prefilled insulin syringes. It is important to ask about medication adherence at every visit and to guide the patient to reveal barriers when possible (8). In addition, assessment for cognitive changes should be considered if there is a significant change in a person’s health status or self-care and management (acute illness or hospitalization, skipping medication doses or meals, variability in glucose levels) (6). A mini mental cognitive assessment can be completed (refer to Table 1 for assessment tools for the older adult with diabetes). Patients who have vision or fine motor skill changes can utilize insulin delivery devices with large-sized numbers, audible clicks on dose dialing and low-pressure requirement for administration (7). The use of pill boxes and reminder devices can assist patients who are experiencing mild memory loss.

An assessment of a patient’s health literacy, including understanding the signs and symptoms of hypoglycemia and the appropriate treatment

interventions must be evaluated. The patient should be able to explain how to manage low blood glucose through the use of glucose tablets, drinking juice or regular soda for severe low blood sugar and not consuming protein containing carbohydrates such as milk, chocolate, or nuts (6,10). It is especially important to observe the patient demonstrate, without coaching, blood sugar monitoring techniques to ensure they are accurate and capable of monitoring independently. It is also important to assess a patient’s understanding of the signs and symptoms of hyperglycemia and appropriate interventions, such as when to notify their provider or seek emergency treatment.

An assessment of a patient’s risk for skin breakdown, via the Braden Scale, (3) will help determine the interventions necessary for prevention. In general, skin assessments are completed by registered nurses routinely when caring for individuals in their home or acute care center. An important preventive measure to reduce the risk for breakdown or ulceration, is to assess how a patient cares for their feet, including properly fitting shoes. An assessment of distal pulses should also be evaluated to determine the likelihood of decreased blood flow in relation to the perfusion of the extremities (3). Finally, an assessment of any non-intact skin should be included to determine the severity of breakdown (3).

Medical nutrition therapy plays an integral role in diabetes management and requires on-going assessment of nutritional status. To structure and individualize the diabetes management plan, assessment is the initial step in caring for the older person with diabetes. This includes consideration of medical issues, presence of geriatric syndromes,

**Table 1: Comprehensive Exam of the Older Adult with Diabetes**

Assessment Domain	Inquiries/Testing	Validated Tools
<b>Functional Status</b> Activities of daily living (such as bathing, dressing, toileting, transferring, maintaining continence, feeding) Instrumental Activities of Daily Living (use of phone, finances, preparing meals, food shopping, transportation, laundry, medication administration)	Able to complete without assistance Able but with difficulty; unable to complete without assistance	Katz Index of Independence in Activities of Daily Living (ADL)  Lawton Instrumental Activities of Daily Living (IADL) Scale
<b>Malnutrition</b>	Any weight loss or weight gain in the last year?	Mini Nutritional Assessment and Short Nutritional Assessment Questionnaire MST – Malnutrition Screening Tool “DETERMINE” Nutrition Risk checklist Two Item Food Insecurity Screen Anthropometrics- CC, TC or MUAC
<b>Fall Risk</b>	Any falls in the last three months?	Fall Risk Assessment for Older Adults: The Hendrich II Fall Risk Model or Fried score
<b>Physical Impairment</b>	Check balance, strength, and gait	Grip strength 4 min Gait Speed Get up and Go test FRAIL Score SarcF Tool
<b>Cognitive problems</b>	Any concern with orientation or ability to be independent?	Mental Status Assessment of Older Adults: The Mini-Cog Single Item Literacy Screening Tool
<b>Depression</b>	Have you had any loss of interest in doing things?	Geriatric Depression Scale (GDS)  PHQ2 Screening Tool
<p>Ward, K.T., Reuben, D.B. Comprehensive geriatric assessment. UpToDate. 2019</p> <p>Harvard Institute for Geriatric Nursing. General Assessment. Retrieved from: <a href="https://consultgeri.org/try-this/general-assessment">https://consultgeri.org/try-this/general-assessment</a></p> <p>LeRoith D, Biessels GJ, Braithwaite SS, Casanueva FF, Draznin B, Halter JB, Hirsch IB, McDonnell ME, Molitch ME, Murad MH, and Sinclair AJ. Treatment of Diabetes in Older Adults: An Endocrine Society Clinical Practice Guideline, The Journal of Clinical Endocrinology &amp; Metabolism, 2019; 104 (5):1520–1574, <a href="https://doi.org/10.1210/jc.2019-00198">https://doi.org/10.1210/jc.2019-00198</a>.</p> <p>National Council on Aging. <a href="https://www.ncoa.org/assessments-tools/malnutrition-screening-assessment-tools/">https://www.ncoa.org/assessments-tools/malnutrition-screening-assessment-tools/</a></p> <p>Mini Nutrition Assessment. <a href="https://www.mna-elderly.com/forms/mini/mna_mini_english.pdf">https://www.mna-elderly.com/forms/mini/mna_mini_english.pdf</a></p> <p>Malnutrition Screening Tool (MST) for a residential aged care facility or for adults in the inpatient/outpatient hospital setting. <a href="http://static.abbottnutrition.com/cms-prod/malnutrition.com/img/Alliance_Malnutrition_Screening_Tool_2014_v1.pdf">http://static.abbottnutrition.com/cms-prod/malnutrition.com/img/Alliance_Malnutrition_Screening_Tool_2014_v1.pdf</a></p> <p>DETERMINE Nutrition checklist- <a href="https://nutritionandaging.org/wpcontent/uploads/2017/01/DetermineNutritionChecklist.pdf">https://nutritionandaging.org/wpcontent/uploads/2017/01/DetermineNutritionChecklist.pdf</a></p> <p>Food Insecurity Screen- IHS Division of Diabetes Treatment and Prevention, 2015. <a href="http://www.ihs.gov/diabetes">www.ihs.gov/diabetes</a> search “Food Insecurity” on the Educational Materials and Resources webpage.</p> <p>Single Item Literacy Screening Tool- <a href="https://afmc.org/wp-content/uploads/2017/01/Literacy-Tools-UAMS-CHL-DHS-2017.pdf">https://afmc.org/wp-content/uploads/2017/01/Literacy-Tools-UAMS-CHL-DHS-2017.pdf</a></p> <p>FRAIL Score- Abellan van Kan G, Rolland Y, Bergman H, Morley JE, Kritchevsky SB, Vellas B. The I.A.N.A Task Force on frailty assessment of older people in clinical practice. <i>J Nutr Health Aging</i>. 2008;12(1):29–37.</p> <p>SarcF Screening Tool- Malmstrom TK, Morley JE. SARC-F: A Simple Questionnaire to Rapidly Diagnose Sarcopenia. <i>Journal of the American Medical Directors Association</i> 14(8). June 2013</p>		

psychological issues, functional abilities, and social geriatric domains. There should be a thorough clinical nutrition assessment conducted including food and nutrition related

history, client/personal history, anthropometric measures, biochemical parameters, and physical findings. This includes an assessment of a person’s oral health and

dentition. People with diabetes are at a higher risk for developing periodontal disease and tooth decay and aging can contribute to the onset (3). Dentition status can impact

food choices. Missing and decayed teeth, poorly fitting dentures, and soft tissue injuries may decrease the intake of difficult to chew fibrous foods, such as raw fruits and vegetables and protein foods such as meats and nuts and seeds (3). Often these foods are replaced with refined carbohydrates and sweets which can cause fluctuations in blood glucose levels and malnutrition. Increasing evidence has shown that people with diabetes who are overweight with a higher BMI experience lower mortality rates than underweight people with diabetes (11).

## Geriatric Syndrome

In older adults with diabetes there is a higher incidence of disability caused by the presence of geriatric syndrome. Geriatric syndrome involves polypharmacy, cognitive impairment, increased frequency of falls, pain associated with neuropathy, and frailty. Even though it is common for an adult to be overweight at diagnosis, weight loss may not be recommended because the BMI is not a good indicator of body composition. Muscle mass can be lost as a result of aging (sarcopenia) and can be excessive in older adults with diabetes, which increases risk of frailty (11). Frailty is considered a wasting condition that involves malnutrition, changes in physical functioning, body composition changes, particularly muscle mass. Assessing for frailty is determined by the number of observable characteristics present, including weight loss, weakness, decreased physical activity, exhaustion and slow gait (12, 14). Those with three or more of these characteristics are classified as frail. Concurrent with frailty and weight loss there are physiological changes that affect glucose levels including increased insulin sensitivity and

**Table 2: Factors that can affect the accuracy of A1c tests**

Factors that can falsely elevate A1c	Factors that can falsely reduce A1c
Hypothyroidism	Anemia (hematocrit less than 30%)
Iron deficiency anemia, B12 or folate deficiency	Blood loss (surgery, anticoagulation therapy)
Anemia of chronic disease	Blood transfusions
Chronic aspirin or salicylate ingestion	Hemolysis, hemolytic anemia
African American or Hispanic race/ethnicity	Hemodialysis
Chronic alcohol consumption	Liver disease
Chronic opioid use	Abnormal hemoglobin (sickle cell, thalassemia)
Severe hypertriglyceridemia	Ingesting high doses of Vitamin C or E
Metabolic acidosis or uremia	Erythropoietin therapy in chronic kidney disease

Reference 6

transitioning to a normoglycemic state, placing them at higher risk for hypoglycemic events and falls. The patient's glycemic control should be evaluated via recent glycated hemoglobin (A1c) and daily glucose monitoring data. The Endocrine Society and the American Diabetes Association recommend glucose targets be individualized based on the frequency and/or risk of hypoglycemia, comorbid conditions, cognition and functional status. A1c recommendations range from < 7.5% for those at lower risk to < 8.0-8.5% at a higher health risk of hypoglycemia (6, 9). (See Table 3 in *Unique Challenges of Managing Older Adults with Type 1 and Type 2 Diabetes*). Increased risk for hypoglycemia can include those with multiple doses of insulin, hypoglycemia unawareness or individuals who live alone. It is important to note that A1c measurements can be affected by several factors (See Table 2). An assessment of the patient's last several weeks of self-monitoring blood glucose results (SMBG) or continuous glucose monitoring data (CGM) will assist the diabetic educator in determining

recommended changes in relation to diet, exercise and medication.

Unintentional and intentional weight loss can accelerate muscle wasting, change bone mineral density (BMD), and cause micronutrient deficiencies. It is recommended to use alternative anthropometric methods for assessing body composition including the calf (CC), thigh (TC) or mid-upper arm circumference (MUAC). For the older adult the CC has a stronger sensitivity than the MUAC for identifying body composition changes, muscle loss in lower extremities, and the risk for falls in the older adult (14). Lower CC measurement is related to increased frailty, decreased BMD and decreased functionality (14). TC is a good predictor of muscle mass and risk of hip and spine fracture as well as cardiovascular disease but not BMD (15). In addition, grip strength, gait, balance and flexibility should be evaluated. Grip strength (GS), a measure of upper body strength, is considered one of the key measures for identifying malnutrition along with weight and body composition (16). Besides being an indicator of

muscle strength, GS can identify sarcopenia, and correlates with nutritional status, cognition, physical functionality, and morbidity better than body weight. Assessing for body composition and strength using simple, quick anthropometric measures are beneficial in a variety of health care settings and can identify the need for intervention to help improve functionality in the aging adult with diabetes.

Finally, patients should be assessed for cardiovascular disease including coronary heart disease, cerebrovascular disease and peripheral arterial disease as these are the leading cause of morbidity and mortality for patients with diabetes (5). An assessment of blood pressure should be taken at every clinical visit and patients should monitor their blood pressure at home as hypertension often presents with no symptoms (3,5). In addition to blood pressure measurement, serum lipids should also be monitored in people with diabetes and statin therapy initiated when indicated (3,5). Healthcare providers should encourage a Mediterranean style eating plan or the Dietary Approaches to Stop Hypertension (DASH) diet as well as regular physical activity to improve lipid profile levels and lower blood pressure (3,4,17).

It is recommended that patients with diabetes undertake an exercise program and should include at least 150 min/week of moderate-intensity aerobic activity. Vigorous-intensity type exercise may be contraindicated in patients with diabetic retinopathy. In the absence of contraindications, resistance training should be included at least 2 times a week. More recent guidelines specify that older adults should also include activities such as tai chi or yoga for improved balance and flexibility 2 to 3 times a week

which may help prevent falls. All adults with diabetes should limit periods of sitting, breaking up sedentary time every 30 minutes through the day (6). Patients can be encouraged to participate in activity in a formalized setting. If patients have limited mobility or at an increased risk of falls, supervised exercise and modifications can be implemented. For example, exercise classes are offered at Silver Sneaker facilities which are supported by some Medicare Advantage plans. Silver Sneakers offers fitness classes with specific modifications for all ability levels. Many of these Silver Sneaker fitness classes are offered at YMCA locations and senior centers which may include transportation support. In addition, several chair exercise programs are available for home or group community center use.

## Conclusion

The aging process poses additional challenges for people with diabetes. It is incumbent on health care practitioners caring for this population to provide thorough physical and nutritional assessments in order to formulate comprehensive care management for the older adult with diabetes. Changes in cognition, frailty, vision loss, alterations in mobility or the inability to perform activities of daily living must be assessed. A person's diabetes care plan is not static. It is imperative that continuous monitoring and evaluation of a person's physiological, psychosocial needs occur to improve outcomes for people with diabetes (see Table 1).

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