ADA Guidelines in the Older Adult Population

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Prevalence

- Diabetes is a highly prevalent health condition in the aging population.
- Over ¼ of people over the age of 65 years have diabetes and ½ of older adults have prediabetes and the number of older adults living with these conditions is expected to increase rapidly in the coming decades.

Screening

- Screen for geriatric syndromes (i.e., polypharmacy, cognitive impairment, depression, urinary incontinence, falls, and persistent pain) in older adults. Older adults with diabetes are at greater risk for these syndromes than other older adults. These could potentially affect diabetes self-management and diminish quality of life.

Cognitive Impairment in Older Adults

- Screening for early detection of mild cognitive impairment or dementia should be performed for adults 65 years of age or older at the initial visit and annually as appropriate.
- The presence of cognitive impairment can make it challenging for clinicians to help their patient reach individualized glycemic, blood pressure, and lipid targets. It also hinders their ability to appropriately maintain the timing of meals and content of diet.
- It is crucial to simplify drug regimens and to facilitate and engage the appropriate support structure to assist the patient in all aspects of care.

Cognitive Impairment in Older Adults

- Screening for cognitive impairment should additionally be considered when a patient presents with a significant decline in clinical status due to increased problems with self care, such as errors in calculating insulin dose, difficulty counting carbs, skipping meals, skipped insulin doses, and difficulty recognizing, preventing, or treating hypoglycemia.

Hypoglycemia

- Because older adults with diabetes have a greater risk of hypoglycemia than younger adults, episodes of hypoglycemia should be recognized and addressed at routine visits.
- For older adults with type 1 diabetes, continuous glucose monitoring should be considered to reduce hypoglycemia.

Hypoglycemia

- Cognitive decline has been associated with increased risk of hypoglycemia, and conversely, severe hypoglycemia has been linked to increased risk of dementia.
- An important step to mitigating hypoglycemia risk is to determine whether the patient is skipping meals or inadvertently repeating doses of their medications.
- Glycemic targets and pharmacologic regimens may need to be adjusted to minimize the occurrence of hypoglycemic events.

Hypoglycemia

- In the Wireless Innovation in Seniors with Diabetes Mellitus (WISDM trial) patients over 60 years of age with type 1 diabetes were randomized to CGM or standard blood glucose monitoring (BGM). Over 6 months, use of CGM resulted in a small but statistically significant reduction in time spent with hypoglycemia (glucose level <70 mg/dL) compared with routine finger stick monitoring using CGM.
- While the current evidence base for older adults is primarily in type 1 diabetes, CGM may be an option for older patients with type 2 diabetes using multiple daily injections of insulin.

Treatment Goals

- Older adults who are otherwise healthy with few coexisting chronic illnesses and intact cognitive function and functional status should have lower glycemic goals (such as A1c <7.0-7.5%), while those with multiple coexisting chronic illnesses, cognitive impairment, or functional dependence should have less stringent glycemic goals (such as A1c <8.0-8.5%).
- Glycemic goals for some older adults might reasonably be relaxed as part of individualized care, but hyperglycemia leading to symptoms or risk of acute hyperglycemia complications (such as dehydration, poor wound healing, and HHS coma) should be avoided in all patients.

Treatment Goals

Patient characteristics/ Health status	Rationale	Reasonable A1c goal	Fasting or preprandial glucose	Bedtime glucose
Healthy (few coexisting illnesses)	Longer remaining life expectancy	<7.0-7.5%	80-130 mg/dL	80-180 mg/dL
Complex/ intermediate (multiple coexisting chronic illnesses)	Intermediate remaining life expectancy, high treatment burden, hypoglycemia	<8.0	90-150 mg/dL	100-180 mg/dL
Very complex/poor health	Limited remaining life expectancy	Avoid reliance on A1c, should avoid hypoglycemia and symptomatic hyperglycemia	100-180 mg/dL	110-200 mg/dL

Treatment Goals

- A1c is used as the standard biomarker for glycemic control in all patients with diabetes, but may have limitations in patients who have medical conditions that impact red blood cell turnover. Many conditions associated with increased red blood cell turnover, such as hemodialysis, recent blood loss or transfusion, or erythropoietin therapy, are commonly seen in older adults and can falsely increase or decrease A1c.
- In these instances, plasma blood glucose fingerstick and sensor glucose readings should be used for goal setting.

Lifestyle Management

- Optimal nutrition and protein intake is recommended for older adults; regular exercise, including aerobic activity, weight-bearing exercise, and/or resistance training, should be encouraged in all older adults who can safely engage in such activities.
- For older adults with type 2 diabetes, overweight/obesity, and capacity to safely exercise, an intensive lifestyle intervention focused on dietary changes, physical activity, and modest weight loss (5-7%) should be considered for its benefits on quality of life, mobility, and physical functioning, and cardiometabolic risk factor control.

Pharmacologic Therapy

- In older adults with type 2 diabetes at increased risk of hypoglycemia, medication classes with low risk of hypoglycemia are preferred.
- Overtreatment of diabetes is common in older adults and should be avoided.
- De-intensification (or simplification) of complex regimens is recommended to reduce the risk of hypoglycemia and polypharmacy, if it can be achieved within the individualized A1c target.
- Consider costs of care and insurance coverage rules when developing treatment plans in order to reduce risk of cost-related nonadherence.

Metformin

- Metformin is the first-line agent for older adults with type 2 diabetes.
- Recent studies have indicated that it may be used safely in patients with eGFR of >30.
- It is contraindicated in patients with advanced renal insufficiency and should be used with caution in patients with impaired hepatic function or CHF because of the risk of lactic acidosis.
- Metformin can be held during hospitalizations and when acute illness may compromise renal or liver function.
- Metformin can cause GI side effects and a reduction in appetite that can be problematic for some older adults.

Thiazolidinediones

- Actos and Avandia
- If TZD's are used at all, they should be used very cautiously in patients on insulin as well as patient's with or at risk for CHF, osteoporosis, falls or fractures, and/or macular edema.

Sulfonylureas/ Insulin Secretagogues

- Sulfonylureas and other insulin secretagogues are associated with hypoglycemia and should be used with caution.
- If used, sulfonylureas with a shorter duration of action, such as glipizide or glimepiride, are preferred. Glyburide is a longer-acting sulfonylurea and should be avoided in older patients.

Incretin-Based Therapies
DPP-4 Inhibitors

- Oral dipeptidyl peptidase 4 (DPP-4) inhibitors have few side effects and minimal risk of hypoglycemia, but their cost may be a barrier to some older patients.
- DPP-4 inhibitors do not increase major adverse cardiovascular outcomes.

Incretin-Based Therapies (cont.)
GLP-1 Receptor Agonists

- GLP-1 receptor agonists have demonstrated cardiovascular benefits among patients with established atherosclerotic CVD.
- These drugs are injectable agents (with the exception of oral semaglutide), which require visual, motor, and cognitive skills for appropriate administration.
- GLP-1 receptor agonists may be associated with nausea, vomiting, and diarrhea. Given the GI side effects of this class, GLP-1 receptor agonists may not be preferred in older patients who are experiencing unexplained weight loss.

Sodium-Glucose Cotransporter 2 Inhibitors

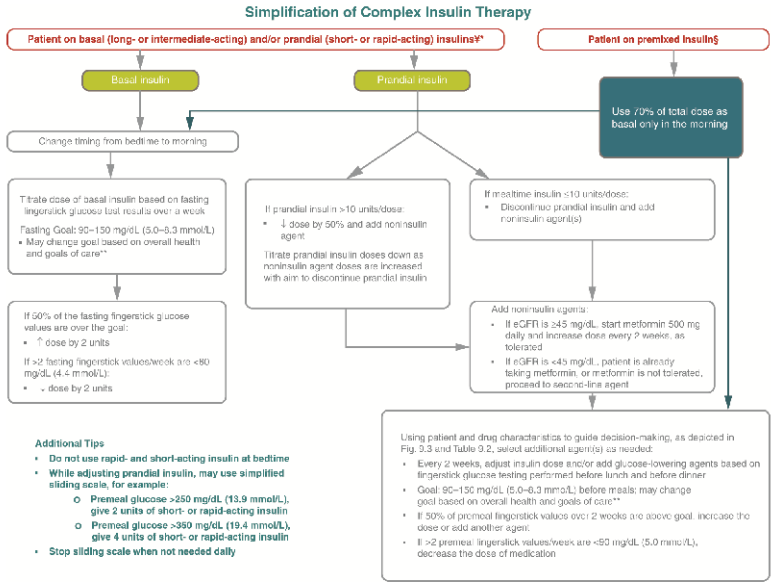
- SGLT2 inhibitors are administered orally, which may be convenient for older adults with diabetes. In patients with established atherosclerotic CVD, these agents have shown cardiovascular benefits.
- This class has also been found to be beneficial for patients with heart failure and to slow the progression of chronic kidney disease.
- Side effects such as volume depletion may be more common among older patients.

Insulin Therapy

- The use of insulin therapy requires that patients or their caregivers have good visual and motor skills and cognitive ability.
- Insulin doses should be titrated to meet individualized glycemic targets and to avoid hypoglycemia.
- Once daily basal insulin injection therapy is associated with minimal side effects and may be a reasonable option in many older patients. Multiple daily injections of insulin may be too complex for the older patient with advanced diabetes complications, life-limiting coexisting chronic illnesses, or limited functional status.

Simplification of Complex Insulin Therapy

Figure 13.1



Algorithm to simplify insulin regimen for older patients with type 2 diabetes. eGFR, estimated glomerular filtration rate. *Basal insulins: glargine U-100 and U-300, detemir, degludec, and human NPH. **See Table 13.1. ¥Prandial insulins: short-acting (regular human insulin) or rapid-acting (lispro, aspart, and glulisine). §Premixed insulins: 70/30, 75/25, and 50/50 products. Adapted with permission from Munshi and colleagues (85,123,124).

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Special Considerations for Older Adults with Type 1 Diabetes

- Due in part to the success of modern diabetes management, patients with type 1 diabetes are living longer, and the population of these patients over 65 years of age is growing. This population has unique challenges and require distinct treatment considerations.
- Insulin is an essential life-preserving therapy for patients with type 1 diabetes, unlike for those with type 2 diabetes.
- To avoid diabetic ketoacidosis, older adults with type 1 diabetes need some form of basal insulin even when they are unable to ingest meals.
- Insulin may be delivered through an insulin pump or injections. CGM is approved for use by Medicare and can play a critical role in improving A1c, reducing glycemic variability, and reducing risk of hypoglycemia.

Questions???