
14. Diabetes in Elderly Patients

As the population lives longer, the number of older adults with diabetes will continue to increase significantly. In addition to macro- and microvascular complications of diabetes, elderly patients with diabetes are also at increased risk of the adverse effects of polypharmacy, functional disabilities, cognitive dysfunction, depression, urinary incontinence, falls, and persistent pain.

Elderly patients with diabetes represent a heterogeneous population ranging from those who are highly functional and reside independently in the community, to those who live in assisted-care facilities, to functionally dependent persons who live in nursing homes. Although the overall goals of diabetes management in the elderly are similar to those in younger adults, several concerns are unique and need individualized consideration.

The ideal care of elderly patients with diabetes requires a multidisciplinary team approach that includes a diabetologist, a primary care physician and/or gerontologist, a nurse educator, a nutritionist, an exercise physiologist, and a social worker. Diabetes education is a covered benefit by Medicare, and elderly patients should be referred for diabetes education and medical nutrition therapy. Individual education can be provided for patients who have hearing or other impairments if the referral specifies that need. Many community and senior citizens centers have programs that help persons with diabetes, such as exercise and healthy eating programs. Maintaining a current list of these resources will allow you to provide this information to patients when it is needed.

Because older adults may have hearing, cognitive, or other impairments, assess their understanding at the end of each visit or educational session by using the “teach-back” method—ask the patient to tell you in his or her own words what advice he or she received and what actions will be taken at home to implement it.

Glycemic Goals and Control of Other Risk Factors

Glycemic goals in elderly patients with diabetes should be established in light of overall health, coexisting conditions, and life expectancy. A highly functional elderly patient may be able to use a complicated regimen and achieve tight hemoglobin A1C control. On the other hand, a higher A1C goal may be appropriate for a functionally impaired or frail elderly patient, or one with multiple chronic illnesses that also require self-management. Glycemic goals should be periodically reassessed in this population because declining health in an elderly patient may require upward adjustment of a goal set when the patient was in better health.

Because of the higher risk of post-meal hyperglycemia in elderly patients, normal fasting glucose levels may be accompanied by high A1C results. A practical approach to treatment is for these patients to use walking or other low-impact exercise and modest dietary modifications, taking care to avoid inappropriate weight loss, combined with self-monitoring of blood glucose that includes postprandial readings.

The goals for management of risk factors in elderly patients are similar to those in young adults. However, additional factors, such as renal dysfunction, coexisting medical conditions, polypharmacy, and drug-to-drug interactions, should be considered and may lead to less strict control. There is strong evidence suggesting a reduction of morbidity and mortality by tight control of blood pressure in elderly patients with diabetes. The evidence is less convincing for tight control of lipid lowering, glycemic control, and aspirin use in this population.

Medical Management

Oral diabetes medications, alone or in combination, are prescribed for elderly patients without specific restrictions. However, the following cautions should be noted:

- Coexisting medical conditions and liver function should be carefully evaluated before selecting medications.
- Renal function should be followed because elderly patients may have normal serum creatinine levels, even if creatinine clearance is low, as a result of their lower muscle mass.
- The sulfonylurea class of drugs should be used with caution because of its tendency to cause hypoglycemia.
- Unintended weight loss and gastrointestinal side effects are limiting factors for the use of metformin.
- Newer agents, such as exenatide (Byetta) and pramlintide (Symlin), are not well studied in this population.

Diet and Exercise

Dietary modifications may have a limited role in the management of diabetes in elderly patients. Many factors may be involved, including the difficulty in changing a lifetime of eating habits, limitations in the patient's ability to cook or shop for groceries, dependence on family or others for cooking and shopping, decreased appetite, other health issues, and financial concerns. In addition, weight loss can increase morbidity and mortality in the elderly. Weight should be assessed at each visit, with a focus on unintentional weight loss.

Modest dietary modifications that avoid large fluctuations in blood sugars without undue risk of weight loss and nutritional deficiency can be a reasonable goal. Encouraging patients to eat

small meals at frequent intervals or to use simple meal planning methods, such as the plate method or healthy food choices (see Chapter 5, *Helping Patients Make Lifestyle Changes*), is often adequate. Older adults who aim for tight glucose control will benefit from a referral to a dietitian to develop a personal meal plan.

Exercise is beneficial for the elderly, not only for improved glycemic control, but also for muscle strengthening, gait and balance, and overall quality of life. No additional screening for cardiovascular disease is needed when starting low-impact exercise as tolerated; however, cardiac clearance should be sought before starting an intensive exercise program. Examples of activities appropriate for older adults include low-impact exercises (walking, swimming) and weight training. Many community and senior centers have exercise programs specifically for older adults. The Centers for Disease Control and Prevention's program "Growing Stronger" (available at: www.cdc.gov/nccdphp/dnpa/physical/growing_stronger/index.htm) is a guide to strength training for older adults.

Special Considerations

Hypoglycemia

Hypoglycemia is a serious complication of diabetes management in elderly patients. This complication increases the risk of cardiovascular events (myocardial ischemia, angina), stroke, impaired cognition, and falls in the elderly. Older adults are also more likely to experience neurologic symptoms of hypoglycemia, such as dizziness, weakness, delirium, and confusion, as opposed to the adrenergic symptoms of tremor, palpitations, and sweating that are commonly seen in younger adults. Consequently, hypoglycemic episodes in an elderly patient may remain undiagnosed or be misdiagnosed as a primary neurologic event.

Hypoglycemia can be a particularly frightening event for older adults, and they may choose to omit oral medications or insulin rather than risk

a reaction. Outcomes of even a mild episode of hypoglycemia can be poor in an elderly patient. For example, hypoglycemia causing dizziness or weakness in a frail elderly person may cause a fall and subsequent injury, requiring nursing home placement. The risk of hypoglycemia can also limit a patient's independence and ability to live alone or take advantage of social opportunities.

Patients and their families or caregivers need instruction on the recognition, treatment, and prevention of hypoglycemia. These issues are addressed more fully in Chapter 6 (Monitoring Glycemic Control). Because the symptoms among older adults may be different from those listed in the typical educational handout, this information needs to be personalized and reviewed carefully with the patient, family, and caregivers. In addition, recommend that patients keep glucose tablets or a juice box by their bed to help prevent falls if hypoglycemia occurs at night. Wearing medical identification is particularly important for this age group.

Nonketotic Hyperosmolar Syndrome

Elderly patients with diabetes have a greater risk of developing a nonketotic hyperosmolar state because of their higher risk of dehydration. Adequate hydration is important to prevent this complication in elderly patients, especially during illnesses. Patients and their families need information about sick day management and the symptoms of nonketotic hyperosmolar syndrome.

Cognitive Impairment and Depression

Elderly persons with diabetes have a higher risk of cognitive dysfunction than do their peers without diabetes. In the early stages, most impairment is undiagnosed. Elderly patients with dementia are at higher risk for poor self-management, poor diabetes control, and complications of treatment (e.g., hypoglycemia). Early recognition of dementia will help you set


appropriate treatment goals (e.g., a higher A1C value) and avoid complicated treatment regimens.

Elderly persons with diabetes also have a high risk of depression, and untreated depression is associated with poor glycemic control. Treatment of depression not only improves the patient's ability to manage his or her diabetes, but also improves quality of life. Cognitive impairment and depression in diabetes are addressed in more detail in Chapter 11 (Depression and Cognitive Dysfunction).

Polypharmacy

Whereas many—if not most—patients with type 2 diabetes take multiple medications for control of hypertension, hyperlipidemia, and hyperglycemia, the number of comorbid conditions requiring medications and the risks of drug interactions expands greatly in the elderly. Review these patients' medications regularly to assess for side effects, drug interactions, and the continued necessity of each medication. The cost of even the co-payments for the number of medications needed by these patients can be a limiting factor in their ability to take their prescribed medications.

Careful assessment of the medications being taken is needed at each visit to determine whether financial or other issues are affecting safe medication use (e.g., side effects; confusion about dosage/timing; use of over-the-counter, herbal, and vitamin preparations). Tips to help your patients manage their oral medications are included in Chapters 7 (Oral Diabetes Drugs) and 10 (Hyperlipidemia and Hypertension). In

 Chapter 7 of the *Diabetes Care Guide Toolkit* is a form where your patients can keep vital information regarding their medications handy at all times.

Falls

Falls are common in elderly patients with diabetes. The etiology of a fall is usually

multifactorial and includes peripheral or autonomic neuropathy, drug adverse effects, nutritional deficiency, functional disability and muscle deconditioning, loss of vision, and coexisting conditions such as osteoarthritis.

Reversible causes of falls should be identified and treated. Intervention strategies that may reduce the risk of falls include supervised exercise programs, physical/occupational therapy, vision and hearing aids, and avoidance of medications that cause delirium, drowsiness, or confusion. Simple strategies that patients or their caregivers can use include adequate lighting, well-fitting footwear, avoidance of clutter, and placement of night lights in hallways and bathrooms.

Management of Elderly Patients in the Chronic Care Setting

Elderly persons living in an assisted-care or a nursing home setting have unique needs and problems. Overall health, life expectancy, and patient preference should guide management of these patients. Use of a regular diet may improve quality of life and prevent weight loss and so is the recommended meal plan in these settings. Exercise as tolerated remains important for these patients.

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