Complete Summary

GUIDELINE TITLE

Guideline for the care of the older adult with diabetes.

BIBLIOGRAPHIC SOURCE(S)

Joslin Diabetes Center. Guideline for the care of the older adult with diabetes. Boston (MA): Joslin Diabetes Center; 2007 Feb 2. 8 p. [15 references]

GUIDELINE STATUS

This is the current release of the guideline.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- August 14, 2007 – Thiazolidinedione class of antidiabetic drugs: Addition of a boxed warning to the updated label of the entire thiazolidinedione class of antidiabetic drugs to warn of the risks of heart failure.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Type 1 and 2 diabetes
- Acute and chronic complications associated with diabetes, including hypertension, hyperlipidemia, and eye and foot conditions

GUIDELINE CATEGORY

Counseling
Management
Prevention

CLINICAL SPECIALTY

Endocrinology
Family Practice
Geriatrics
Internal Medicine
Preventive Medicine

INTENDED USERS

Health Care Providers
Physicians

GUIDELINE OBJECTIVE(S)

To assist primary care physicians, specialists, and other healthcare providers in individualizing the care of, and setting medical goals for, older adults with diabetes

TARGET POPULATION

Adults 70 years of age or older with type 1 or type 2 diabetes

INTERVENTIONS AND PRACTICES CONSIDERED

1. Treatment goals based on individual assessment
2. Screening for geriatric syndrome
3. Self-monitoring of blood glucose (SMBG)
4. Periodic assessment of patient's SMBG technique and of medication administration
5. Glycemic control, using medications including:
    - Sulfonylureas
    - Metformin
    - Thiazolidinediones
    - Alpha-glucosidase inhibitors
    - Dipeptidyl peptidase-4 (DPP-4) inhibitors
    - Insulin
    - Exenatide and pramlintide
6. Management of hypertension, including monitoring of renal function and serum potassium in treatment with angiotensin-converting enzyme (ACE)

inhibitors and angiotensin receptor blockers (ARBs) and of electrolytes with thiazide and loop diuretics
7. Management of hyperlipidemia, including monitoring of alanine aminotransferase (ALT), creatine kinase (CK), and liver enzymes for patients on statins, fibrates, or niacin
8. Eye and foot examinations
9. Education targeted to older patients
10. Consideration of nutritional requirements
11. Daily physical activity regime

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Approved by the Joslin Clinical Oversight Committee on 2/2/07.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Target Individuals and Treatment and Monitoring Goals	
Target Population	Adults 70 years of age or older with type 1 or type 2 diabetes

Goals: Treatment	• In determining treatment goals, individual patient assessment is required, being cognizant of the following:
	  • Chronological age vs. actual health status
	  • Duration of disease and age of onset
	  • Presence of complications and co-morbidities
	  • Variable life expectancy
	  • Social support system
	  • Financial status
	• Treatment regimen should be simplified to prevent medication errors and to avoid overwhelming the patient.
	• Treatment goals should be re-assessed at frequent intervals as health status can change quickly in older adults.

Geriatric Syndrome	Older adults with diabetes are at increased risk of developing the geriatric syndrome, a group of conditions that are not commonly seen in younger adults. These conditions may interfere with the patient's ability to perform self-care and follow the treatment regimen. Signs and symptoms of the geriatric syndrome can be subtle and are often unrecognized by patients and caregivers. Thus, screening should be performed if these conditions are suspected or

Target Individuals and Treatment and Monitoring Goals	
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	when an older adult fails to achieve the treatment target. Some of the conditions of geriatric syndrome are: • Cognitive dysfunction—older adults with cognitive dysfunction have difficulty remembering and/or integrating learned education material into practice. Cognitive dysfunction should be suspected and screened for in older adults who make repeated errors in medications and judgment, fail to achieve glycemic control after reasonable effort or seem overwhelmed by the treatment regimen. Tools such as the clock drawing test or Mini Mental State Examination can be used to screen for cognitive dysfunction. • Depression—depression in older adults with diabetes is associated with poor glycemic control, decreased adherence, increased functional disability and mortality. Tools such as the Geriatric Depression Scale can be used to screen for depression. • Functional disabilities and falls—older adults with diabetes are at increased risk of functional disabilities such as vision and hearing impairment, injurious falls, and an inability to perform activities of daily living. The older adult's ability to follow treatment recommendations safely may be improved by referral to appropriate specialists (e.g., physical therapists, occupational therapists, elder services and social workers). Questions addressing problems with vision, hearing or falls should be included on a routine assessment of these patients.
Hypoglycemia	• Safety is of paramount importance in frail older adult individuals. Weighing the benefit of tight diabetes control versus the risk of hypoglycemia is essential in this population. • In the older adult who takes insulin or certain antihyperglycemic agents, hypoglycemia symptoms may occur at lower blood glucose levels, may be harder to recognize, and may result in poorer outcomes when compared to younger adults. Symptoms of hypoglycemia in older adult patients may be subtle and may go undiagnosed by both patients and providers. • Older adult patients commonly exhibit neuroglycopenic manifestations of hypoglycemia that include confusion, delirium, dizziness, weakness or falls as compared to adrenergic symptoms. It is important that older adult patients and their caregivers recognize these symptoms as hypoglycemia and treat appropriately. • Frail older adult patients may have poor outcomes from even mild hypoglycemia. For example, injurious falls can lead to unintended consequences such as

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	institutionalization. In addition, hypoglycemia can exacerbate existing conditions (e.g., coronary artery disease or cerebrovascular disease).
Monitoring	• Self-monitoring of blood glucose (SMBG) should depend on treatment modality and current diabetes control as well as the patient's physical, cognitive, and financial capabilities. Patients using insulin or those with poor glycemic control in which the regimen is being actively modified may need more frequent monitoring. • SMBG can be beneficial for the older adult, but frequency of monitoring is highly individualized and should be adapted to each patient's individual needs. Special blood glucose monitors are available for patients with impaired dexterity, and there are talking monitors and monitors with large numerical displays and backlights available for patients with impaired vision. • The healthcare provider or educator needs to assess the patient's monitoring technique at regular intervals, since the patient's mental and physical status may change over time.
Glycemic Control	
Goal	The true goal of care is to bring glycated hemoglobin (A1C) as close to normal as safely possible. A goal of <7% is chosen as a practical level for most patients using medications that may cause hypoglycemia to avoid the risk of that complication. Achieving normal blood glucose is recommended if it can be done practically and safely. The recommended A1C goal is less than 7% or as close to normal as possible, but in older adults, the target should be set to achieve optimal control without hypoglycemic episodes. A higher A1C goal and higher blood glucose goals are acceptable for: • Frail older adults • Persons with a life expectancy of less than 5 years • Patient in whom the risk of severe hypoglycemia is pronounced • Patients with advanced co-morbidities • Chronically ill, institutionalized patients with a short life expectancy do not require aggressive glucose control, but do require adequate control to facilitate healing and prevent: • Dehydration • Symptoms of hyperglycemia or hypoglycemia • Weight loss
Medication	General principles to keep in mind when prescribing diabetes medications to an older adult:

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	• "Start low and go slow" with all medications.
	• Consider drug-drug interactions carefully as most older adult patients are on multiple drugs as well as supplements.
	• Do not assume that because the creatinine is normal that kidney function is normal, since an older adult with decreased muscle mass can have normal creatinine levels with significant renal dysfunction as seen by low glomerular filtration rate (GFR).
	• Monitor liver and kidney function tests periodically even though diabetes medications, alone or in combination, are safe in older adult patients when selected carefully.
	• *Sulfonylureas*:
	  • Use with caution in older adult patients because of the risk of hypoglycemia.
	  • Avoid agents like chlorpropamide and glyburide because of their prolonged length of action.
	  • Shorter acting agents like glipizide, or the non-sulfonylurea insulin secretagogues repaglinide and nateglinide, can be useful to avoid nocturnal hypoglycemia, or to avoid hypoglycemia in patients with erratic oral intake.
	• *Metformin*:
	  • Use with caution in the older adult with diabetes because of an increased risk of lactic acidosis in patients with impaired renal function.
	  • Measure serum creatinine and liver function tests (LFTs) periodically in the older individual who receives metformin, and with any increase in dose.
	  • Measure creatinine clearance with a timed urine collection at least annually and with increases in dosage of metformin in frail older adults, or those with decreased muscle mass.
	  • Avoid initiating in patients $\geq$80 years of age unless creatinine clearance is within normal limits.
	• *Thiazolidinediones (TZDs)*:
	  • TZDs are well tolerated by older adults as they do not cause hypoglycemia. Side effects of fluid retention and leg edema can be limiting factors in using this class of medications in the older adult.
	  • TZDs should be avoided in patients with Class III and Class IV congestive heart failure.
	• *Alpha-Glucosidase Inhibitors*:
	  • Alpha-glucosidase inhibitors are less effective than other agents and may cause gastrointestinal side effects.
	• *Dipeptidyl Peptidase-4 (DPP-4) Inhibitors*:
	  • Little is known about the effects of this class of medications in older adults at this time. Care should

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	be taken in dose selection if used. Consider assessing renal function prior to initiating dosing and periodically thereafter.
	• *Insulin*:
	  • Older adult patients taking insulin often face difficulties with self-administration because of reduced dexterity, impaired vision and cognitive deficits. In these situations, it is beneficial to use simpler insulin regimens with fewer daily injections, such as pre-mixed insulin preparations, pre-measured doses, and easier injection systems (e.g., insulin pens with easy to set dosages). A careful assessment of the individual's ability to draw up and give an injection needs to be made prior to devising the insulin and self-monitoring regimen. Other self-management skills, such as treating hypoglycemia and eating on a regular schedule, will also need to be assessed prior to determining the person's insulin regimen.
	• *Exenatide and Pramlintide*:
	  • The same issues relating to insulin concerning difficulties with self-administration apply to these injectable medications. Little is known about the use of these agents in the older adult population. Side effects include nausea and increased satiety, which can affect nutritional status in the older adult.</li

Management of Hypertension	
Goal	• The goals of therapy for hypertension in the older adult are the same as for younger adults with diabetes. The target blood pressure should be less than 130/80 mm/Hg as tolerated. Isolated systolic hypertension is much more common in the older adult. Care should be taken to treat with antihypertensive agents to bring systolic blood pressure to goal, if feasible. Blood pressure should be lowered gradually in order to reduce the risk of hypotensive symptoms. • Older adults are prone to "white coat" hypertension. If suspected, patients should be asked to measure blood pressure at home and keep a log for periodic evaluation.
Medication	• Older adults with diabetes taking angiotensin converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARBs) should have renal function and serum potassium monitored within 1 to 2 weeks of initiation of therapy, with each medication dose increase, and at least yearly. • For older adults taking thiazide diuretics or loop diuretics,

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	consider monitoring electrolytes within 1 to 2 weeks of initiation of therapy, with each medication dose increase, and at least yearly. • There is some evidence to suggest that treatment with calcium channel blockers, diuretics, and ACE inhibitors are more effective than beta blockers in this population. • Most patients require more than one antihypertensive medication to reach goal.
Management of Hyperlipidemia	
Goal	• The targets of therapy, interval of lipid profile screening, and choice of medications for treatment of hyperlipidemia in older adult patients with diabetes are the same as those in younger adults. • When an individual does not have evidence of cardiovascular disease (CVD) and has a life expectancy that is determined by the provider to be three years or less, relaxation of the goals of therapy may be made.
Medication	• Older adults with diabetes who are newly prescribed statins, fibrates, or niacin should have an alanine aminotransferase (ALT) measured within 6-12 weeks of initiation of the medication or change in dose, and with any signs or symptoms of liver dysfunction. A baseline creatine kinase (CK) should be checked, as well; there is no need to recheck CK unless symptoms warrant. • Older adults on medications for hyperlipidemia should have periodic evaluation of liver enzymes. There is no specific evidence supporting the intervals at which liver enzyme screening should occur.
Eye and Foot Care	
Goal	• Recommendations for eye and foot examinations and treatment in older adults with diabetes are the same as those for younger individuals. Older adults may require additional education and devices such as mirrors to examine their feet due to decreased mobility and dexterity. See the National Guideline Clearinghouse (NGC) summary of Joslin's Clinical Guideline for Adults with Diabetes. • Older adults should be encouraged to see a podiatrist regularly. Medicare provides coverage for podiatrist visits every 9 weeks, along with special footwear for patients with diabetes-related foot problems. • Providers need to be aware of eye conditions commonly seen in older adults, including macular degeneration and cataracts, which may complicate the treatment of diabetic retinopathy; conversely, diabetic retinopathy may

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	complicate cataract surgery.

General Diabetes Education

- Recommend equipment that is easy to hold, easy to read and requires the least amount of steps. Insulin pens and pre-filled syringes may be easier for older patients to use than a syringe. Syringe magnifiers are available if vision is a problem. Choose blood glucose meters that have a large display, are easy to hold and use, and do not require coding or handling of strips.
- Emphasize the importance of regular SMBG, especially before driving. Some older adults may not be able to perform SMBG due to physical or cognitive impairment. In such situations, the glycemic goals may need to be adjusted to keep blood glucose levels higher, and the regimen should be simplified to avoid hypoglycemia for those at risk. Referral for education and counseling should be advised if patient's ability to drive is in question. Organizations such as elder services and American Geriatric Society may have more information for patients as well as family members. (http://www.americangeriatrics.org/education/forum/driving.shtml)
- Encourage caregivers to accompany patients to education sessions and receive appropriate training in glucose monitoring and blood glucose interpretation.
- When possible, simplify the patient's care regimen, especially for patients who have multiple medical problems, cognitive dysfunction, or functional disability (e.g., changing insulin to 2 injections a day from 4 injections a day). Involve caregiver or arrange for visiting nurse if medication adherence is an issue.
- Use educational material that is easy to follow and excludes extraneous information. Education sessions should be slow-paced, with instruction occurring in steps. Multiple sessions should be scheduled, as necessary, to prevent "information overload."
- Provide individual rather than group education if the patient has cognitive or physical deficits.
- Use memory aids (e.g., personalized handouts) to reinforce points made during face-to-face sessions.
- Focus education on reinforcement of medication adherence, using charts, pill boxes and other reminders, since older adults often take multiple medications. Caregivers should be instructed to track amount of medication used.
- Educate the patient that uncommon symptoms such as confusion, dizziness, and weakness can be manifestations of hypoglycemia.
- Provide very specific guidelines on when patient or caregiver should call the healthcare provider.

Nutrition

- Although diabetes nutritional guidelines for the older adult are no different than for younger adults, unique challenges often exist due to:
  - Poor motivation
  - Altered taste perception
  - Weight loss and malnutrition

Target Individuals and Treatment and Monitoring Goals	
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- Co-existing illnesses
- Poor dentition
- Skipping meals due to cognitive dysfunction or depression
- Altered gastrointestinal function
- Impaired food shopping or preparation capabilities
- Limited finances

- A dietitian is helpful in working with the older adult patient and his or her family to assess nutritional needs, help maximize a limited food budget, and establish a nutrition plan that can minimize blood glucose variations and help maintain or achieve a reasonable weight.
- The current trend is to distribute the patient's carbohydrate intake as evenly as possible throughout the day. Education regarding the importance of consistency in carbohydrate intake and the timing of meals can help avoid large fluctuations in blood glucose levels.
- Every effort should be made to minimize the complexity of meal planning and to engage the spouse, or others living with the patient, in creating a home environment that supports positive lifestyle change.
- Weight loss diets, commonly recommended to younger adults, should be prescribed with great caution, since under-nutrition/malnutrition is often more of a problem than obesity in the older adult. In chronic care settings, there is no need for a rigid and restrictive meal plan. A regular diet with consistent, moderate carbohydrate intake may be sufficient and may help to avoid under nutrition.

Physical Activity

- A daily physical activity regime offers numerous benefits to older adults, such as:
  - Reduced glucose levels
  - Improved lipid profile
  - Improved blood pressure
  - Increased muscle tone and strength
  - Improved gait and balance
  - Overall physical conditioning
- Types of physical activities that may be appropriate for the older adult include:
  - Walking
  - Swimming or water aerobics
  - Bicycle riding
  - Armchair exercises
  - Tai Chi
  - Yoga
  - Gardening
  - Household chores
- Regular physical activity offers benefits that extend beyond the obvious physical ones, such as improved quality of life, decreased depression, and an overall sense of improved well-being. However, the older adult with diabetes often faces the following unique challenges to maintaining a regular physical activity program:

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• Fluctuations in health • Co-morbidities, such as cardiovascular disease, osteoarthritis and osteoporosis • Risk and fear of falls • Issues with transportation • Finding a safe environment for exercise In addition, the risk of hypoglycemia is increased among those people who are taking insulin and certain diabetes medications. Extra precautions and frequent SMBG must occur to reduce this risk. A physical or occupational therapist or exercise physiologist can provide a supervised environment to help a patient perform exercises safely.	

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate care of the older adults with diabetes

POTENTIAL HARMS

Side effects of medications, particularly hypoglycemia among those taking insulin and certain diabetes medications

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This guideline focuses on the unique needs of the older person with diabetes. It is not intended to replace sound medical judgment or clinical decision-making and may need to be adapted for certain patient care situations where more or less stringent interventions are necessary.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Joslin Diabetes Center. Guideline for the care of the older adult with diabetes. Boston (MA): Joslin Diabetes Center; 2007 Feb 2. 8 p. [15 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2007 Feb 2

GUIDELINE DEVELOPER(S)

Joslin Diabetes Center - Hospital/Medical Center

SOURCE(S) OF FUNDING

Joslin Diabetes Center

GUIDELINE COMMITTEE

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Joslin Clinical Oversight Committee

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Joslin Diabetes Center.

Print copies: Available from the Joslin Diabetes Center, One Joslin Place, Boston, MA 02215

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI Institute on October 16, 2007. The information was verified by the guideline developer on December 19, 2007.

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