

## Diabetes and Older Adults

How can we help them?

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### Objectives

- Briefly discuss age-related demographics.
- Identify the impact of chronic disease on older adults
- Identify the prevalence of and risk factors for diabetes in older adults
- Identify the combined impact of geriatric syndromes and diabetes on older adults with diabetes.

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  - Please refer to learning goals and objectives
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### Objectives

- Identify factors that increase functional disability in older adult women with diabetes
- Describe barriers to care.
- Discuss tips and strategies to promote effective diabetes self-care management in older adults.
- Identify a framework for treatment guidelines for BG, BP, and lipids in older adults with diabetes.

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### True or False

1. Approximately 25% of adults age >65 years have diabetes.
2. Approximately 30% of adults >65 years of age have pre- diabetes.
3. Type 1 diabetes peaks a second time between ages 50 – 70.
4. Older adults are less vulnerable to hypoglycemia.
5. Diabetes Prevention Programs have not been shown to be as effective for seniors as for persons >65 years of age

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### Reasons for Decline

- Americans have been found to have poorer health in many domains, including obesity and diabetes.
- Factors contributing to health disadvantage include lifestyle factors, e.g.,
  - Heavy caloric intake
  - Urban living and dependence on cars
  - Weaker social welfare supports
  - Lack of universal health insurance.

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### True or False

6. People with diabetes have higher incidences of all cause, Alzheimer, and vascular dementias than people with normal glucose tolerance.
7. Classic S & S of diabetes are often absent in older adults.
8. A1C monitoring without SMBG provides an adequate assessment of glycemic control in older adults.
9. Recommended BP goals in older adults is 140-150/90.

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### Significant Changes in US Demographics

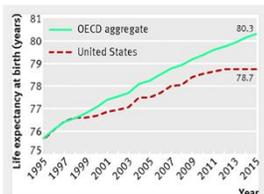
- Despite claims that 50 is the new 30 and 70 the new 50, 65 is still the generally accepted age for older adults.
- By 2030, all baby boomers will be older than age 65—one in every 5 people will be retirement age.
- By 2035, for the first time in U.S. history, older adults are projected to outnumber children.
- There will be a significant increase in minorities.

<https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html>

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### Life Expectancy (LE) in the US

Per the Organisation for Economic Cooperation (OECD), LE in the U.S. dropped for the second year in a row in contrast to rising LE in developed countries.

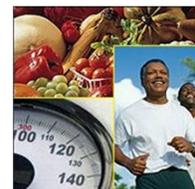


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### Public Health Priority

One of the highest priorities is to increase the number of older adults who live longer, high-quality, productive, and independent lives.

However.....



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### Human Beings are Complex “Systems”

- The “wear & tear” aging theory suggest that human beings fail randomly and gradually.
- We have thousands of critical components with redundancy and back-up systems.
- As defects increase, one more defect is enough to impair the whole organism.
- Net result...aging and frailty, frequently complicated by chronic and acute disease.

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### Diabetes in Older Adults is Generally Under-recognized

- May not demonstrate the usual S & S of hyperglycemia due to:
  - Increased renal threshold for glucose
  - Decreased sensation of thirst
- Confusion, incontinence, & diabetes-related complications may be first sign of diabetes.

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### Impact of Chronic Disease

Chronic diseases exact a particularly heavy health & economic burden on older adults:

- Associated long-term illness
- Frailty and adverse health outcomes due to multisystem decline (especially in 75+ years).
- Diminished quality of life
- Greatly increased health care costs (3 - 5x higher than the cost for someone younger than 65).

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### Age-related Metabolic Changes

- Accumulation of fat within the  $\beta$ -cell and reduced  $\beta$ -cell mass  $\longrightarrow$  ~50% reduction in secretory capacity of beta cells resulting in elevated fasting and post-prandial BG levels.
- Loss of lean body mass and increase in visceral and intramuscular fat  $\longrightarrow$  insulin resistance.
- Rise in free fatty acids.

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### Prevalence of Diabetes in Older Adults

- 50% of persons 65+ years have pre-diabetes
- By 2025 adults age 60+ will comprise 2/3 of the population with diabetes.
- Minorities will continue to be disproportionately affected by diabetes.
- Older adults have an increased risk of diabetes-related complications.

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### Summary of Risk Factors

Progressive worsening of multiple age-related metabolic disturbances

$\geq$ 50% contribution from environmental, genetic, and behavioral factors

Diabetes

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## Impact of Diabetes on Older Adults

- Physiological changes occur at a faster rate than in people without diabetes.
- Diabetes increases the potential for an earlier decline in functional capacity &/or other geriatric syndromes.
- May be more difficult to remain independent in both basic and instrumental ADLs.

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DOI: 10.1111/j.1464-5491.2006.01943.x

## The prevalence of co-morbid depression in adults with Type 2 diabetes: a systematic review and meta-analysis

S. Ali, M. A. Stone, J. L. Peters, M. J. Davies\* and K. Khunti

### Abstract

University of Leicester and \*University Hospitals of Leicester, Leicester, UK

Accepted 16 March 2006

**Aim** To conduct a systematic literature review in order to estimate the prevalence and odds ratio of clinically relevant depression in adults with Type 2 diabetes compared with those without.

**Methods** MEDLINE, EMBASE and PSYCINFO databases were searched using MeSH terms and free text to identify relevant controlled studies. Published reference lists were also examined. Study selection and appraisal were conducted independently by two reviewers and a meta-analysis was performed to synthesize and analyse the data.

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Diabetes in Older Adults

## GERIATRIC SYNDROMES

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## Depression

- Prevalence of depression nearly twice as high in PWD as those without diabetes.
- Link between depression and diabetes is unclear, e.g. diabetes burden or biochemical factors.
- Often undiagnosed if screening is not performed, e.g., Geriatric Depression Scale {GDS\*}.

\* <http://www.stanford.edu/~yesavage/GDS.html>

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## Geriatric Syndromes

- Depression
- Cognitive impairment
- Functional impairment
- Polypharmacy
- Persistent/chronic pain
- Incontinence
- Hypoglycemia
- Falls
- Malnutrition

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## Depression

- Failure to adhere to medications, diet, exercise, and SMBG may be particularly detrimental to older adults who have age-related comorbidities.
- Treating depression generally improves glycemic control which may mitigate the S & S of depression.

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### S & S Depression

- Increased complaints- vague, somatic aches, pains &/or problems.
- Worsening glycemic control.
- Non-adherence to medication regimen.
- Increased anxiety
- Insomnia or sleeping too much.
- Difficult to manage diabetes
- Failure to enjoy formerly enjoyable activities
- Withdrawal /isolation

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### Cognitive Impairment-T1D & T2D

#### Type 1 Diabetes

- Diminished mental flexibility and slowing of mental speed; learning and memory are largely not affected.
- Cognitive decline may be mild and may not interfere with their functionality until other aging-related factors become important.

#### Type 2 Diabetes

- Decline in executive function, memory, learning, attention, and psychomotor efficiency.
- Risk of cognitive dysfunction in T2D may be influenced by glycemic control, hypoglycemia, inflammation, depression, and macro- and microvascular pathology.

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### Cognitive Dysfunction in Older Adults With Diabetes: What a Clinician Needs to Know

*Diabetes Care 2017;40:461-467 | DOI: 10.2337/dc161111*

**Caution...Cognitive dysfunction is frequently unrecognized!!!**

One of the challenges of managing older adults with diabetes is the individualization of care in people with multiple comorbid conditions. Although macrovascular and microvascular complications of diabetes are well recognized, there is a lack of awareness regarding other conditions such as cognitive dysfunction, depression, and physical disabilities. Cognitive dysfunction is of particular importance because of its impact on self-care and quality of life. In this Perspective, I discuss common and practical questions faced by clinicians managing diabetes in older adults who also have cognitive dysfunction.

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### Diabetes and Dementia

- Alzheimer's type and multi-infarct dementia are approximately twice as likely to occur in older adults with diabetes compared with age-matched control subjects without diabetes.
- Presentation varies from subtle executive dysfunction to overt dementia and memory loss.

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### Cognitive Dysfunction/Impairment

- Includes memory, learning, mental flexibility, attention, and executive function.
- Spectrum ranges from mild (capable of performing daily activities) to severe (dementia).
- Executive functions involve insight into a particular problem, problem-solving, judgment, stopping or changing old habits, and starting new habits

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### Recognizing Dementia

- Older adults who report memory problems merit a cognitive assessment.
- Memory loss **NOT** a part of normal aging
- Majority of dementias are accompanied by behavioral disorders.
- Simple assessment tools can be accessed at.....

[www.hospitalmedicine.org/geriresource/toolbox/howto.htm](http://www.hospitalmedicine.org/geriresource/toolbox/howto.htm)

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### Medical Causes of Memory Problems/Delirium

In older people with diabetes, consider medical causes & associated behavioral disturbances:

- Hyper or hypoglycemia
- Electrolyte imbalance/dehydration
- UTI or URI
- Medications (opioids, antipsychotics, incontinence meds, antispasmodics, benzodiazepines.
- Nutritional deficiencies

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### Polypharmacy

- Polypharmacy: >5-6 medications.
- Multiple meds increase
  - Health care expenses
  - Complexity of medical regimen
  - Risk for error and poor adherence
  - Susceptibility for falls, cognitive decline, & depression
  - Risk for adverse drug reactions



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### Functional Impairment (FI)

- Aging & diabetes: Significant RF for FI.
- Older adults with diabetes tend to score worse in several measures of HRQL:
  - General health perceptions
  - Physical functioning-independence in performing ADLs
  - Satisfaction with physical health
  - Role limitations 2<sup>o</sup> physical and emotional health
  - Sleep problems

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### Persistent/Chronic Pain

- Common, subjective experience associated with a number of chronic & acute conditions.
- >80% of older adults have chronic medical conditions that are typically associated with pain.
- Pain is often poorly assessed and poorly managed, especially in older adults.
- Older adults with cognitive impairment may be unable to verbalize their pain.

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### Functional Impairment: Etiology

- Interaction between coexisting medical conditions
- Gait and balance problems; neuropathy
- Sensory impairments—vision & hearing
- Obesity
- DJD
- CVD, including CAD & stroke
- Depression

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### Impact of Pain on Health, Functioning, & QoL

- Impaired immune function and healing
- Impaired mobility
- Sleep disturbances.
- Depression, anxiety, decreased socialization
- Functional loss and increased dependency
- Exacerbation of cognitive impairment
- Increased health care utilization and costs

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### Urinary incontinence

- Factors that increase the risk of urinary incontinence include diabetes, polyuria, neurogenic bladder, UTI, medications, fecal impaction.
- Affects women twice as often as men.
- Persistent incontinence may lead to social isolation, reduced QoL, increased risk for institutionalization.

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### Geriatric Syndromes and Health Related Quality of Life (HRQL)

- Geriatric syndromes and hypoglycemia affect HRQL as much or more so than diabetes complications in older adults with diabetes.
- Nearly all geriatric syndromes were associated with lower HRQL suggesting that care of older adults should address all of these conditions.

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### Hypoglycemia: Contributing Factors

- Polypharmacy
- Missed meals
- Unusual activity
- Cognitive impairment & lack of support
- Weight loss
- Reduced liver glycogen stores
- Renal impairment
- Alcohol abuse
- Recent hospitalization

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### Impact on Life Expectancy and Quality of Life

Combined burdens of diabetes, its complications, and geriatric syndromes decrease LE and QL years

	↓ Life Expectancy	↓ Quality of Life Years
Men	7.3 years	11.1 years
Women	9.5 years	23.8 years

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### Understanding the Relationship between Type 2 Diabetes Mellitus and Falls in Older Adults: A Prospective Cohort Study

Tine Roman de Mettelinge<sup>1</sup>, Dirk Cambier<sup>1</sup>, Patrick Calders<sup>1</sup>, Nele Van Den Noortgate<sup>2</sup>, Kim Delbaere<sup>3</sup>

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#### Abstract

**Background:** Older adults with type 2 Diabetes Mellitus are at increased risk of falling. The current study aims to identify risk factors that mediate the relationship between diabetes and falls.

**Methods:** 199 older adults (104 with diabetes and 95 healthy controls) underwent a medical screening. Gait (GAITRise<sup>®</sup>), balance (AccuGait<sup>®</sup> force plate), grip strength (Jamar<sup>®</sup>), and cognitive status (Mini-Mental State Examination and Clock Drawing Test) were assessed. Falls were prospectively recorded during a 12-month follow-up period using monthly calendars.

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### Older Women and Diabetes

- Compared to men older women have more and more severe functional disabilities associated with aging
- Spend twice as many years disabled & are more likely to reside in nursing homes.
- Are more vulnerable b/c they tend to be less physically active, have longer LE & more geriatric syndromes.



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Clinical Care/Education/Nutrition/Psychosocial Research  
ORIGINAL ARTICLE

## Assessment of Barriers to Improve Diabetes Management in Older Adults

A randomized controlled study

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complications such as hypoglycemia, and an overall decline in health and quality of life. The American Geriatrics Society (4) and the American Diabetes Association (8) recommend assessment for age-specific barriers in older adults to improve diabetes management. However, practical tools, methods of implementing this strategy, and the impacts of these recommendations on outcomes are unknown.

Older adults with diabetes frequently encounter fluctuations in their glucose

**OBJECTIVE**—To evaluate whether assessment of barriers to self-care and strategies to cope with these barriers in older adults with diabetes is superior to usual care with attention control. The American Diabetes Association guidelines recommend the assessment of age-specific barriers. However, the effect of such strategy on outcomes is unknown.

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## Successful Management of Older Adults with Diabetes

- Recognize heterogeneity of health & aging experience.
- Understand older adults' needs and priorities.
- Identify and address barriers to care.
- Provide patient-centered care.
- Assess functional status and geriatric syndromes.
- Prioritize treatment strategies.

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## Common Barriers to Care

- Inadequate titration of medications between provider visits
- Lack of previous diabetes education or low health literacy
- Difficulty coping with co-morbid conditions/geriatric syndromes.
- Hypoglycemia and fear of hypoglycemia

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## Successful Management of Older Adults with Diabetes

- Keep therapy as simple and inexpensive as possible.
- Encourage diabetes education.
- Treat HTN & LDL cholesterol
- Involve family or other support figures.
- Initiate calls between provider visits to address common barriers to care.

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## Social Barriers to Care

- Isolation
- Transportation difficulties
- Lack of motivation
- Caregiver stress
- Financial difficulties
- Conflicting health beliefs
- Major events with self/family members
- Difficulty with care coordination and facilitation
- Non-adherence
- Inadequate monitoring (SMBG)

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## Mitigate the Adverse Effects of Aging

- Encourage and help them find a way to INCREASE:
  - Physical activity.
  - Resistance exercise.
  - Intake of fiber & complex carbs
- Encourage and help them find a way to DECREASE dietary intake of saturated fat, simple sugars.

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### Teaching Tips

- Assess cognitive status.
- Address barriers.
- Involve family member/support prn
- Reduce the memory load of a task, e.g,
  - Use pictures as memory aids
  - Provide text that is clear and explicit

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Health Status	Rationale	A1C Goal	Fasting/Pre-meal BG	HS BG	BP	Lipids
Healthy	LE >5 years	<7.5%	90-130 mg/dL	90-150 mg/dL	<140/90 mm/Hg	Statins unless contraindicated or not tolerated
Complex, multiple comorbidities (≥3)	Life expectancy may be < or > 5 years, high treatment burden	< 8.0%	90-150 mg/dL	100-180 mg/dL	<140/90 mm/Hg	
Very complex, end-stage chronic illnesses	Life expectancy limited, e.g., < 5 years	< 8.5%	100-180 mg/dL	110-200 mg/dL	<150/90 mm/Hg	Consider likelihood of benefit

ADA (2018). Older Adults: Standards of Medical Care in Diabetes-2018. Diabetes Care 41 (Suppl1), S119-S125.

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### Teaching Tips

- Allow more time to process new information.
- Use good lighting
- Speak slowly and face the patient
- Provide time to practice new skills until they become automatic
- Eliminate irrelevant details

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### Question for you....

*What do you think are the most important take home points about caring for/teaching older adults with diabetes?*

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### Treatment Guidelines

Consensus framework for considering treatment goals for BG, BP, and dyslipidemia in older adults with diabetes.

- Health status categories are general concepts and must be individualized to each patient.
- Consider ability to perform ADLs independently.
- Consider number and severity of comorbidities, e.g. arthritis, cancer, CHF, depression, falls, emphysema, chronic kidney disease, MI, stroke.

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*Thank you!*

**For all you do....**

References Available upon Request!

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