Update on Diabetes in Older Adults

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GRECC Interim Director, Miami VAHS
UM Divisions of Endocrinology & Geriatric Medicine
• **Epidemiology:** Identify important risk factors and challenges for diabetes in the elderly.

• **Management:** Describe risks and benefits of lifestyle and pharmacological therapy in older adult diabetes care.

• **Functionality:** Discuss preventive strategies for diabetic complications according to the functional status of the patient.
Diabetes: A global pandemic

### Top 10 Countries with Diabetes in Older Adults

<table>
<thead>
<tr>
<th>Country/territory</th>
<th>Number of people with diabetes (60-79) in 1000s</th>
<th>% of elderly among adults with diabetes</th>
<th>Number of people with diabetes (60-79) in 1000s</th>
<th>% of elderly among adults with diabetes</th>
<th>Increase number DM 60-79 in 1000s</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>128,167.0</td>
<td>34.5</td>
<td>226,054.2</td>
<td>41.0</td>
<td>97,887.2</td>
</tr>
<tr>
<td>1 China</td>
<td>32,959.8</td>
<td>35.7</td>
<td>64,698.1</td>
<td>50.0</td>
<td>31,738.2</td>
</tr>
<tr>
<td>2 India</td>
<td>14,741.5</td>
<td>23.4</td>
<td>28,534.6</td>
<td>28.2</td>
<td>13,793.1</td>
</tr>
<tr>
<td>3 USA</td>
<td>10,069.6</td>
<td>41.8</td>
<td>15,400.5</td>
<td>52.0</td>
<td>5,331.0</td>
</tr>
<tr>
<td>4 Brazil</td>
<td>5,142.9</td>
<td>38.5</td>
<td>9,541.5</td>
<td>48.7</td>
<td>4,398.7</td>
</tr>
<tr>
<td>5 Mexico</td>
<td>2,775.3</td>
<td>26.2</td>
<td>5,782.7</td>
<td>35.2</td>
<td>3,007.5</td>
</tr>
<tr>
<td>6 Bangladesh</td>
<td>940.2</td>
<td>17.0</td>
<td>3,690.7</td>
<td>21.9</td>
<td>2,750.5</td>
</tr>
<tr>
<td>7 Indonesia</td>
<td>2,022.2</td>
<td>26.8</td>
<td>4,322.0</td>
<td>36.6</td>
<td>2,299.8</td>
</tr>
<tr>
<td>8 Egypt</td>
<td>2,104.8</td>
<td>27.9</td>
<td>4,001.5</td>
<td>32.3</td>
<td>1,896.8</td>
</tr>
<tr>
<td>9 Russia</td>
<td>5,812.1</td>
<td>45.8</td>
<td>7,599.9</td>
<td>53.9</td>
<td>1,787.8</td>
</tr>
<tr>
<td>10 Japan</td>
<td>4,350.4</td>
<td>61.2</td>
<td>6,107.3</td>
<td>60.2</td>
<td>1,756.9</td>
</tr>
</tbody>
</table>

Prevalence of Diabetes (Diagnosed and Undiagnosed) in the U.S. Adult Population

2011 National Diabetes Fact Sheet; www.cdc.gov/diabetes
Prevalence of Diabetes in U.S. Older Adults (Age ≥ 65) According to Alternative Definitions

Prevalence (%)

- Undiagnosed
- Diagnosed

FPG, A1c, or 2-hr

Projected Number of Cases of Diagnosed Diabetes for Total- and Older Adults in the United States: 2005 to 2050


* Percent contribution of older adult numbers to the total numbers projected
Incidence (per 1000) of Major Diabetes Complications According to Age among Adults with Diabetes, 2009

- 20-44
- 45-64
- 65-74
- 75+

National Diabetes Surveillance System; www.cdc.gov/diabetes
Diabetes-related Hospitalizations And Hospital Costs Among Adult Patients

Costs per patient for diabetes-related hospitalizations ($)

- <7%
- 7 to <8%
- 8 to <9%
- 9 to <10%
- >10%

Number of diabetes-related admissions per 100 patient-years

- <7%
- 7 to <8%
- 8 to <9%
- 9 to <10%
- >10%

Menzin et al, J Manag Care Pharm 2010;16:264-275
• **Epidemiology:** Identify important risk factors and challenges for diabetes in the elderly.

• **Management:** Describe risks and benefits of lifestyle & pharmacological therapy in older adult diabetes care.

• **Functionality:** Discuss preventive strategies for diabetic complications according to the functional status of the patient.
Prevention of Cardiovascular Disease in Older Adults with Diabetes

Death

MI

CAD with Symptoms

Other AS Manifestations

Subclinical Atherosclerosis

Multiple Risk Factors

Low Risk

First of Onset of Hyperglycemia

Prior CVD

Clinical Disease

No prior CVD

ACCORD

VADT

ADVANCE

UKPDS

Death

MI

CAD with Symptoms

Other AS Manifestations

Subclinical Atherosclerosis

Multiple Risk Factors

Low Risk

First of Onset of Hyperglycemia

Prior CVD

Clinical Disease

No prior CVD

ACCORD

VADT

ADVANCE

UKPDS
## Comparison of Recent Cardiovascular Trials in Older Patients with Diabetes

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ACCORD</th>
<th>ADVANCE</th>
<th>VADT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>62.2</td>
<td>66</td>
<td>60.4</td>
</tr>
<tr>
<td>DM duration (years)</td>
<td>10</td>
<td>8</td>
<td>11.5</td>
</tr>
<tr>
<td>A1c at baseline</td>
<td>8.1</td>
<td>7.2</td>
<td>9.4</td>
</tr>
<tr>
<td>% Prior CVD</td>
<td>30</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>Intensive Rx A1c(%)</td>
<td>6.4(6.1-7)</td>
<td>6.4(6-6.8)</td>
<td>6.9(6.5-7.4)</td>
</tr>
<tr>
<td>Standard Rx A1c(%)</td>
<td>7.5(7-8.1)</td>
<td>7 (6.5-7.9)</td>
<td>8.4(7.6-9.1)</td>
</tr>
<tr>
<td>Follow-up (years)</td>
<td>3.4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td><strong>Primary Outcome, Hazard Ratio (95%CI)</strong></td>
<td><strong>0.9</strong> (0.78-1.04)</td>
<td><strong>0.94</strong> (0.84-1.06)</td>
<td><strong>0.87</strong> (0.73-1.04)</td>
</tr>
<tr>
<td>Mortality, Hazard Ratio (95%CI)</td>
<td><strong>1.22</strong> (1.01-1.46)*</td>
<td><strong>0.93</strong> (0.83-1.06)</td>
<td><strong>1.07</strong> (0.80-1.42)</td>
</tr>
</tbody>
</table>

**ACCORD**, Action to Control Cardiovascular Risk in Diabetes.  
**ADVANCE**, Action in Diabetes & Vascular Disease Controlled Evaluation;  
**VADT**, Veterans Affairs Diabetes Trial
Low and High mean A1c values were associated with increased mortality

Predictors of Poor Outcomes in the VA Diabetes Trial

Diabetes Duration Predicts Mortality in the VA Diabetes Trial

Mortality during 6 yr Study (%) vs Diabetes Duration at Study Entry (yrs)

- Standard
- Intensive

Duration of Diabetes & Processing Speed Compared to subjects without diabetes

Saczynski & Launer (2006)

- $P_{\text{trend diabetes}} < .001$
- $p < .01$
- $p < .001$
Cardiovascular Events in Low and High Arterial Calcium (AC) Categories according to VADT Treatment Group

HR = 0.08 (95% CI .008-.77), P = 0.03

Reaven P et al. VADT Res Group Diabetes 2009
Strategies for Blood Glucose Management

- Incretin mimetics/amylin analogues/new agents
- Metformin
- Lifestyle Changes
  - Nutritional Therapy
  - Physical Activity Program
  - Diabetes Education
- Insulin
- Sulfonylureas; Glinides
- PPARs
- Alpha Glucosidase Inhibitors
## Limiting factors in the use of antidiabetic agents in the elderly

<table>
<thead>
<tr>
<th></th>
<th>Hypoglycemia</th>
<th>Weight gain</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfonylureas</td>
<td>X</td>
<td>X</td>
<td>May impede ischemic preconditioning</td>
</tr>
<tr>
<td>Meglitinides</td>
<td>X</td>
<td>X</td>
<td>Frequent dosing may affect compliance; no long-term experience</td>
</tr>
<tr>
<td>Biguanides</td>
<td>no</td>
<td>no (Wt loss)</td>
<td>Risk of lactic acidosis; diarrhea</td>
</tr>
<tr>
<td>Thiazolidinediones</td>
<td>no</td>
<td>XX</td>
<td>Edema, fracture, expensive; no long-term experience</td>
</tr>
<tr>
<td>Glucosidase inhibitors</td>
<td>no</td>
<td>no</td>
<td>Frequent dosing may affect compliance; intestinal gas; expensive</td>
</tr>
<tr>
<td>Incretin mimetics/amylin analogues</td>
<td>no</td>
<td>no (Wt loss)</td>
<td>Injection; expensive; no long-term experience</td>
</tr>
</tbody>
</table>

X, main side effect; XX, pronounced side effect

Glycemia Reduction Approaches in Diabetes Effectiveness (GRADE) Clinical Centers

Miami GRADE Center PIs:
Jennifer Marks (UM) & Hermes Florez (VA)
**Screening**
Type 2 diabetes
Treated with metformin alone
HbA1c ≥6.5% at screening
Less than 5 years duration at Randomization

**Metformin run-in**
Titrate metformin to 1000 (min) – 2000 (goal) mg/day

**HbA1c 6.5-8.5% at final run-in visit**

**Randomization**
n=6000 eligible subjects

- **Sulfonylurea** (glimepiride)  
  n=1500
- **DPP-IV inhibitor** (sitagliptin)  
  n=1500
- **GLP-1 analog** (liraglutide)  
  n=1500
- **Insulin** (glargine)  
  n=1500
**Primary outcome**
HbA1c ≥7%, confirmed, on maximally tolerated dose of assigned regimen

**Observe on assigned therapy**

**Secondary metabolic outcome**
HbA1c >7.5%, confirmed, on maximally tolerated dose of assigned regimen

**Add basal insulin (per glargine protocol)**
Continue Metformin, continue second agent

**Tertiary metabolic outcome**
HbA1c >7.5%, confirmed, on glargine, assigned agent and metformin

**Intensify insulin (add rapid-acting insulin to basal glargine), continue metformin, and discontinue second agent**

**Ancillary Proposal:** Aging & Body Composition study
(GRADE ABC PIs: Silvina Levis & Hermes Florez)
Changes in Physical Function & General Health: Intensive Lifestyle (ILS) better than Placebo (PLA) or Metformin (MET)

Florez H et al. SGIM 2012
Duration and severity of diabetes associated with worse strength per mass

Duration and severity of diabetes associated with worse strength per mass

Leg: strength/mass

Arm: strength/mass

Glycemic Control
(A1c <8% vs. ≥ 8%)

Diabetes Duration
(< 6 yrs vs. ≥ 6 yrs)

FIG. 1. Leg (A) and arm (B) muscle quality in subjects without diabetes (□), diabetic subjects with duration <6 years (■), and diabetic subjects with duration ≥6 years (■). *P < 0.05

FIG. 2. Leg (A) and arm (B) muscle quality in subjects without diabetes (□), diabetic subjects with A1C ≤8.0% (■), and diabetic subjects with A1C >8.0% (■). *P < 0.05 compared with sub-
Risk of Hip Fractures with Diabetes: Analysis from 3 Prospective Studies in Community-Dwelling Older Adults

Men

Women

JAMA. 2011;305(21):2184-2192
# U.S. Diabetes Prevention Program (DPP): Effect of Interventions on Diabetes Incidence

<table>
<thead>
<tr>
<th></th>
<th>Placebo</th>
<th>Metformin</th>
<th>Lifestyle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incidence of diabetes</strong></td>
<td>11.0%</td>
<td>7.8%</td>
<td>4.8%</td>
</tr>
<tr>
<td>(percent per year)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reduction in incidence</strong></td>
<td>----</td>
<td><strong>31%</strong></td>
<td><strong>58%</strong></td>
</tr>
<tr>
<td>compared with placebo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number needed to treat</strong></td>
<td>----</td>
<td><strong>13.9</strong></td>
<td><strong>6.9</strong></td>
</tr>
<tr>
<td>to prevent 1 case in 3 years</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The DPP Research Group, *NEJM* 346:393-403, 2002
Diabetes Incidence Rates by BMI

Body Mass Index (kg/m^2)

- **24 - < 30** (n=1045)
- **30 - < 35** (n=995)
- **> 35** (n=1194)

Cases/100 person-yr:
- **Lifestyle**
- **Metformin**
- **Placebo**

The DPP Research Group, *NEJM* 346:393-403, 2002
Benefits of Healthy Lifestyle in Older Patients

<table>
<thead>
<tr>
<th>Treatment</th>
<th>25 – 44 Years</th>
<th>45 – 59 Years</th>
<th>60 – 85 Years</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placebo</td>
<td>11.0</td>
<td>10.8</td>
<td>10.3</td>
<td>0.71</td>
</tr>
<tr>
<td>Metformin</td>
<td>6.7</td>
<td>7.7</td>
<td>9.3</td>
<td>0.07</td>
</tr>
<tr>
<td>ILS</td>
<td>6.3</td>
<td>4.9</td>
<td>3.3</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Results are cases per 100 person-years

- **Lifestyle change was very effective at preventing diabetes in older patients (71% risk reduction).**

- **Limited effectiveness of Metformin in older persons may reflect age-related differences in insulin action and secretion**

Genetic risk profile for diabetes: TCF7L2 polymorphisms

TT vs. CC genotype: HR=1.81 (95% C.I.: 1.21-2.70)

“Intervention can mitigate the risk conferred by genetic background”

TT vs. CC genotype: HR=1.15 (95% C.I.: 0.68-1.94)
U.S. Diabetes Prevention Program: Long-Term Effects on Diabetes Incidence

Delay in diabetes onset after 10 yr follow-up:
- 4 years for Lifestyle
- 2 years for Metformin

DPP Research Group, Lancet 2009; 374:1677-86
Interventions for Diabetes Prevention in Subjects with Prediabetes

<table>
<thead>
<tr>
<th>Intervention</th>
<th>% Reduction in Risk of Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>STOP-NIDDM: Acarbose</td>
<td>25</td>
</tr>
<tr>
<td>DPP: Metformin</td>
<td>31</td>
</tr>
<tr>
<td>XENDOS: Xenical</td>
<td>36</td>
</tr>
<tr>
<td>INTENSIVE LIFESTYLE</td>
<td>58</td>
</tr>
<tr>
<td>DPP: Lifestyle</td>
<td>58</td>
</tr>
<tr>
<td>TZDs</td>
<td>56</td>
</tr>
<tr>
<td>TRIPOD: Troglitazone</td>
<td>75</td>
</tr>
<tr>
<td>DPP: Troglitazone</td>
<td>62</td>
</tr>
<tr>
<td>DREAM: Rosiglitazone</td>
<td></td>
</tr>
</tbody>
</table>

Interventions for Diabetes Prevention in Subjects with Prediabetes

- STOP-NIDDM: Acarbose
- DPP: Metformin
- XENDOS: Xenical
- INTENSIVE LIFESTYLE
  - FDPS: Lifestyle
  - DPP: Lifestyle
- TZDs
  - TRIPOD: Troglitazone
  - DPP: Troglitazone
  - DREAM: Rosiglitazone
AHA 2020: Cardiovascular (CV) Health Promotion and Disease Prevention

• Ideal CV health behaviors:
  – Nonsmoking
  – Achieving normal weight (BMI<25 kg/m²)
  – Enough physical activity (150 min/week)
  – Healthy diet: fiber, veggies/fruits, low fat, complex CHO

• Ideal CV health factors:
  – Total cholesterol<200 mg/dl
  – Blood pressure< 120/80 mmHg
  – Fasting blood glucose<100 mg/dl

Global Cardiovascular Health in Latino Men and Women

AHA Global CV Health

P<0.001 for age
P<0.001 for interaction sex*age

Men
Women
Overall

Age groups (years)

Florez H et al. AHA Epi 2012
Global Cardiovascular Health Improves with Lifestyle Intervention in Latino Men and Women

* P<0.001 for Lifestyle vs. Controls

Florez H et al. AHA Epi 2012
• **Epidemiology:** Identify important risk factors and challenges for diabetes in the elderly.

• **Management:** Describe risks and benefits of lifestyle and pharmacological therapy in older adult diabetes care.

• **Functionality:** Discuss preventive strategies for diabetic complications according to functional status of the patient.
Functionality Trajectory in Diabetes: Interventions to Promote Healthier Aging?

Functional Independence ➔ Impairment ➔ Disability

Independence ➔ Aging, Disease Successful Compensation ➔ Difficulty with tasks Compensation partly successful ➔ IADL dependence ➔ 1-2 ADLs dependence ➔ ≥3 ADLs NH/CLC

Time

MILLER SCHOOL OF MEDICINE UNIVERSITY OF MIAMI

GRECC
<table>
<thead>
<tr>
<th>Patient characteristics/health status</th>
<th>Rationale</th>
<th>Reasonable A1C goal (A lower goal may be set for an individual if achievable without recurrent or severe hypoglycemia or undue treatment burden)</th>
<th>Fasting or preprandial glucose (mg/dL)</th>
<th>Bedtime glucose (mg/dL)</th>
<th>Blood pressure (mmHg)</th>
<th>Lipids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy</td>
<td>Few coexisting chronic illnesses, intact cognitive and functional status</td>
<td>&lt;7.5%</td>
<td>90–130</td>
<td>90–150</td>
<td>&lt;140/80</td>
<td>Statin unless contraindicated or not tolerated</td>
</tr>
<tr>
<td>Complex/intermediate</td>
<td>Intermediate remaining life expectancy, high treatment burden, hypoglycemia vulnerability, fall risk</td>
<td>&lt;8.0%</td>
<td>90–150</td>
<td>100–180</td>
<td>&lt;140/80</td>
<td>Statin unless contraindicated or not tolerated</td>
</tr>
<tr>
<td>Very complex/poor health</td>
<td>Limited remaining life expectancy makes benefit uncertain</td>
<td>&lt;8.5%†</td>
<td>100–180</td>
<td>110–200</td>
<td>&lt;150/90</td>
<td>Consider likelihood of benefit with statin (secondary prevention &gt; primary)</td>
</tr>
</tbody>
</table>
A 75-year-old man with DM (lifestyle Rx), CHF, knee OA & HTN presented for elective knee replacement

Resilient Patient
- He lifted weights regularly and walked up to 2 miles per day before his knee pain worsened over approximately 2 months.
- *His elective knee replacement was without complication*
- He returned home taking narcotic pain relievers and with home physical therapy 72 hours after undergoing surgery.

Vulnerable Patient
- He volunteered regularly but was less able to do so lately because of knee pain and *fatigue*.
- *His elective knee replacement was performed without complications.*
- On postoperative Day 1, he became *delirious* while taking low-dose narcotics, and *fell* while trying to get out of bed.
- He developed *incontinence*, and refused to participate in physical therapy.
- He required *2 full weeks of in-patient care and a month of outpatient rehabilitation* to regain mobility and independence.
Diabetes Challenges in the Aging Population

Modifiers: A1c, blood pressure, lipids, physical activity, treatment

Outcomes:
- Geriatric syndromes
- Disability
- Mortality

Impairments:
- Cognitive
- Affective
- Neurologic
- Physical function

Complications:
- Macrovascular
- Microvascular

Diabetes

IR, obesity
Prevalence of Inability to Do Physical Tasks and ADLs/IADLs (NHANES III)

Depression and Glycemic Control ($A_1c \geq 8\%$)

Miami VA GRECC Telehealth-Care Reduces Cardiovascular Risk

Framingham CHD Score

Baseline
T-Care 2 Years

Dang S, ..., Florez H. Diabetes Technology & Therapeutics 2010

* p<0.01
Peer-Leader Activated Care & Telehealth (PACT): Diabetes Prevention & Management

Better Health Outcomes

Older Adults Pre-DM/DM

Peer Leaders

Support Technologies

Monitoring

Education

Survey

WEB-BASED FEEDBACK

Primary Care Providers

Pharmacy/Nutritionist

Specialists

T-Care Team: Care Coordination
PACT TELEHEALTH: DIABETES PREVENTION & MANAGEMENT

DPP and LookAHEAD Modules:
✓ Healthy nutrition
✓ Better fitness
✓ Weight loss
✓ Self-monitoring:
  ➢ Blood glucose (DM)
  ➢ Blood pressure (Pre-DM/DM)
  ➢ Weight (Pre-DM/DM)
  ➢ Physical activity (Pre-DM/DM)
MyHealtheVet underutilized function: Track Health

Track Health may include self-entered and VA health record information. As a registered user, you can self-enter your blood pressure, body weight, and more under Vitals + Readings. Keep track of your lab results in Labs + Test. Record your medical events, allergies and immunizations in Health History. You can also enter your exercise routine and food intake in the Journals. If you are a VA patient with an upgraded account, you can view portions of your VA medical record as it becomes available. Currently this includes VA Allergies and Adverse Reactions in Health History and VA Chemistry/Hematology in Labs + Test.

- Blood glucose
- Blood pressure
- Weight (waist)
- Physical activity (150 minutes/week)
- Food diary (healthy diet)
"Diabetes & Healthier Aging" Forecasting: UM / VAHS/ JHS Partnership

Health Determinants
- Genetics
- Environment
- Behavior

Generic Pathways
- Oxidative Stress
- Immunology & Inflammation
- Development & Senescence
- Regeneration & Repair
- Hormones & Vitamins

Collaborative for Healthier Aging, Management & Prevention (CHAMP)
Case 1 presentation

An 80-year old white community dwelling woman is seen by her PCP for routine follow-up of diabetes. No symptoms of hypo / hyperglycemia. History of HTN, CVA with no residual damage, and hyperlipidemia. Meds: glipizide, metformin, aspirin, hydrochlorothiazide and ACE inhibitor.

Functionality: independent with IADLs and ADLs. Physical normal. Last HbA1c of 7.0%, LDL cholesterol of 130 mg/dl and negative urine for microalbumin.

Diet counseling and physical activity has been initiated for six months. In spite of these efforts, the patient wishes to reduce her risk for cardiovascular events.
Question: case 1

Which is the most appropriate step in her management?

1. Recommend no change in therapy.
2. Recommend weight loss.
3. Prescribe statin therapy in addition to a review of her diet and exercise.
4. Increase the dosage of aspirin.
5. Prescribe oral conjugated estrogen with medroxyprogesterone.
Case 2 presentation

An 80-year old man who lives alone in the community is seen in the clinic because his daughter reports a worsening of his ability to follow his diabetes home glucose monitoring. He did not bring in his glucose result booklet, which he had routinely brought in prior clinic visits. His face is not shaved and he appears to not have bathed for quite awhile.

He had an unremarkable clinic visit 3 months ago, but it was noted that his A1C was elevated from stable at baseline. He has a history of hypertension and stable CAD.

Physical examination shows a pleasant older man who is alert and cooperative. Blood pressure of 140/80 mmHg is noted. Foot examination is normal.

Geriatric depression scale (GDS): 1 of 15 items (normal)
Question: case 2

Which is the most appropriate next step in the evaluation?

1. Perform a screening dilated eye exam.
2. Screen for cognitive impairment.
3. Measure serum LDL for lipid abnormalities.
5. Perform a repeat hemoglobin A1c.
Case 3 presentation

A 75-year old woman with diabetes mellitus is seen in an outpatient clinic. She lives alone in an apartment and has had assistance of family members for instrumental activities of daily living (IADLs).

Recent home glucose monitoring seems higher than usual in AM (130-160 mg/dl) and PM (~180 mg/dl) because she forgot to take her medications for 3 days. PMHx: obesity, Alzheimer’s disease and hypertension. Meds: aspirin, long acting insulin, donepezil, pioglitazone, lisinopril and a statin.

BP 150/70, otherwise normal CV and foot examination. GDS 0 of 15, MMSE 25 of 30 (with poor short-term memory, orientation to date, and visio-spatial skills).
Question: case 3

Which is the most appropriate next step in the management?

1. Assess hemoglobin A1C.
2. Define a more aggressive target for better blood sugar control.
3. Assess lipid management.
4. Target blood pressure of less than 140/80 if tolerated.
5. Establish goals of care with the patient and caregivers.
Case 4 presentation

A healthy 65-year old community dwelling man with diabetes mellitus presents to the clinic for a routine follow-up. ROS: no hypo- or hyperglycemic episodes. PMHx: hypertension, obesity, peripheral neuropathy and hyperlipidemia. Meds include: aspirin, glyburide, a statin, and hydrochlorothiazide.

Physical examination is unremarkable and foot exam is normal. The patient has had recent normal ophthalmologist evaluation.

Diagnostic laboratory is remarkable for hemoglobin A1C of 6.2% and LDL cholesterol of 95 mg/dl. A urine for microalbumin is negative. He shows you a diary of glucose values and regular physical activity.
Question: case 4

Which is the most appropriate next step in the management?

1. Educate the patient on the risk factors for foot ulcers.
2. Endocrinology consultation for optimal glucose control.
3. No additional interventions.
4. Screen with CT scan of the heart for detection of CAD.
5. Screen for urine incontinence.
Case 5 presentation

A frail 90-year old woman living in an assisted living facility with stable T2D for twelve years. No labs in the past year for LDL-C or HbA1c. Nursing staff concerned with weight loss of five pounds in the past year. She has had no falls or pain. Normal screening tests for depression and cognitive impairment Meds: HCTZ, glipizide, and aspirin. BP 145/70, but otherwise unremarkable physical. Last HbA1c (two years ago) was 6.9%. Random fingerstick BG has been normal.
Question: case 5

Which of the following should you do next?

1. Order an LDL cholesterol level.
2. Order a hemoglobin A1C.
3. Document the reason for the lack of aggressive monitoring.
4. Encourage efforts towards further weight loss.
5. Initiate diet to lower lipid level to LDL of < 100 mg/dl.
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