

Diabetes in Long Term Care

Diabetes In Older Adults

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Objectives

- Learn the need for individualized goal setting in older adults with diabetes
- Learn the best medication choices for older adults with diabetes
- Understand the need to screen for cognitive and behavioral health issues
- Implement knowledge learned into clinical practice



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Guideline References

- American Geriatric Society
- American Diabetes Association
- American Association of Clinical Endocrinology



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Overview



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American Diabetes Association Standards of Care-2020

- Consider the assessment of medical, psychological, functional (self-management abilities), and social geriatric domains in older adults to provide a framework to determine targets and therapeutic approaches for diabetes management.
- Screen for geriatric syndromes (i.e., polypharmacy, cognitive impairment, depression, urinary incontinence, falls, and persistent pain) in older adults as they may affect diabetes self-management and diminish quality of life.

Diabetes Care 2020 Jan; 43(Supplement 1): S152-S162.



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Team Based Care in Older Adults

- Fall prevention, maintenance of function
- Nutrition management and intervention
- Social determinants of health, i.e., food security, transportation
- Psychological screening- mild cognitive impairment, depression, anxiety, dementia



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Older Adults

- “Tight” blood glucose control may not be appropriate
- Hypoglycemia and Hyperglycemia can lead to falls and/or mental status changes
- Hyperglycemia can lead to dehydration and promotes infection
- Need to know status of kidney function in selecting medications
- Insulin may be the safest drug in diabetes in older adults (particularly basal insulin)



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Older Adults

- Blood pressure goals need to be individualized to balance fall risk with heart disease, stroke, and kidney disease benefit
- Statin use is usually done case by case after age 75



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Geriatric Considerations in Diabetes

- Older adults who are **functional, cognitively intact, and have significant life expectancy** should receive diabetes care with **goals similar** to those developed for **younger adults**
- **Glycemic goals** for some older adults might reasonably be **relaxed**, using individual criteria, but hyperglycemia leading to symptoms or risk of **acute hyperglycemic complications** should be avoided in all patients



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Geriatric Considerations in Diabetes

- Treatment of hypertension is indicated in **virtually all older adults**
- Other **cardiovascular risk factors** should be treated in older adults with consideration of the time frame of benefit and the individual patient.
- **Lipid and aspirin therapy may benefit** those with life expectancy at least equal to the time frame of primary or secondary prevention trials.
- **Screening for diabetes complications** should be individualized in older adults, but particular attention should be paid to complications that would lead to functional impairment



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Framework for Treatment Goals in Older Adults

Patient characteristics/ health status	Rationale	Reasonable A1C goal†	Fasting or preprandial glucose (mg/dL)	Bedtime glucose (mg/dL)	Blood pressure (mmHg)	Lipids
Healthy (few coexisting chronic illnesses, intact cognitive and functional status)	Longer remaining life expectancy	<7.5%	90–130	90–150	<140/80	Statin unless contraindicated or not tolerated
Complex/intermediate (multiple coexisting chronic illnesses* or 2+ instrumental ADL impairments or mild-to-moderate cognitive impairment)	Intermediate remaining life expectancy, high treatment burden, hypoglycemia vulnerability, fall risk	<8.0%	90–150	100–180	<140/80	Statin unless contraindicated or not tolerated
Very complex/poor health (long-term care or end-stage chronic illnesses** or moderate-to-severe cognitive impairment or 2+ ADL dependencies)	Limited remaining life expectancy makes benefit uncertain	<8.5%†	100–180	110–200	<150/90	Consider likelihood of benefit with statin (secondary prevention more so than primary)

American Geriatric Society 2012



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Screening For Diabetes in Older Adults

- Usual risk factors for screening (FH, obesity, HTN, smoking, etc)
- Remember that AGE is a risk factor for type 2 diabetes



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Nutrition Risks/Challenges

- Anorexia
- Altered taste and smell
- Swallowing difficulties
- Oral/dental issues
- Functional impairments leading to difficulties in preparing or consuming food



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Nutrition Risks/Challenges

- Consistency
- Intercurrent illness
- Changes in status/co-morbidities

- LRD input is critical



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Older Adults with Diabetes Other High Risk

- Polypharmacy
- Depression / Diabetes Distress
- Cognitive impairment
- Urinary incontinence
- Injurious falls
- Persistent pain
- Vision impairment
- Hearing impairment



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Older Adults with Diabetes

- Most will have type 2 (recall 90%+ of all cases in U.S. are type 2)
- However, more type 1 patients are living longer
- Important to have the right diagnosis



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Glucose Control in Older Adults



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ADA-EASD Position Statement: Management of Hyperglycemia in T2DM

CONSIDERATIONS:

- **Age: Older adults**
 - Reduced life expectancy
 - Higher CVD burden
 - Reduced GFR
 - At risk for adverse events from polypharmacy
 - More likely to be compromised from hypoglycemia



- ✓ **Less ambitious targets**
- ✓ **HbA1c <7.5–8.0% if tighter targets not easily achieved**
- ✓ **Focus on drug safety**

Diabetes Care 2012; Diabetologia 2012;



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Type of Diabetes and Meds

- Type 1: almost always insulin only
- Type 2: everything else + insulin



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Possible Preferred Medications in Older Adults

- Good choices:
 - Basal insulin (easy to use)
glargine, detemir, U-300 glargine,
U-100 or U-200 degludec, NPH
 - Bolus insulin (combined with basal)
aspart, glulisine, lispro,
 - DPP-IV inhibitors (cost may be issue,
renally dosed GFR>40, may cause GI
symptoms)



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Medications In Older Adults

Case by case:

- metformin** (not in advanced renal disease GFR<40, may cause GI symptoms)
- GLP-1 agonists** (can be used in renal disease, but may cause GI symptoms)
- SGLT-2 inhibitors** (be aware of UTI, dehydration, orthostasis, not in advanced renal disease GFR<40)
- Premix insulin**
 - 70/30, 75/25, 50/50 insulin

Generally not used:

- sulfonylureas** – hypoglycemia risk
- TZD** – fluid overload, edema



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Other benefits beyond glycemic control

- Cardiovascular benefit:
 - Metformin
 - SGLT-2 inhibitors (also CHF benefit)
 - GLP-1 agonists
- Renal benefit:
 - SGLT-2 (in mild renal disease)
 - GLP-1 agonists



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Checking Blood Sugars in LTC

- On multiple daily insulin injections and stable- BID-TID
- Basal insulin only- once or twice a day
- On oral agents that don't usually cause hypoglycemia- once a day or less if stable (minimum once a month)
- PRN blood sugar testing is recommended (change in status)



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Checking Blood Sugars in LTC

- Increase testing when:
 - Status change
 - Return from hospital
 - Infection
 - Addition of steroids (i.e., prednisone)
- “Out of character” blood sugar elevations often point to infection



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Hyperglycemia Standing Order

- **FOR HYPERGLYCEMIA** : WHEN FINGERSTICK IS > 350 IF RESIDENT IS SYMPTOMATIC IE ; POLYURIA , POLYDIPSIA , MENTAL STATUS CHG , OR PULSE > 100 CALL PHYSICIAN.
- **IF ASYMPTOMATIC** : FOLLOW CURRENT DIABETES MGMT PLAN, REPEAT FINGERSTICK BLOOD GLUCOSE IN 2HRS,IF STILL >350 CALL PHYSICIAN ;
- **WHEN FINGERSTICK BLOOD GLUCOSE >300 3 TIMES OR MORE IN 7 DAYS** : CONSIDER CHG TO DM MGMT PLAN , CONSIDER POSSIBLE SOURCE OF INFECTION



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Hypoglycemia Standing Order

- **Treatment of Hypoglycemia**: If blood sugar less than 70 and resident is alert and able to swallow, give 15gm of CHO and repeat blood sugar in 15 minutes. If <70 repeat 15gram CHO and recheck. Examples of CHO choices would be 4oz of juice, one packet of crackers, or one piece of toast.
- **If the resident is not responsive, consumes partial CHO, or is unable to swallow**, give Glucagon 1mg IM. If no improvement in status within 15 minutes, repeat the Glucagon and call either the NP or MD. Notify NP or MD if blood sugars consistently low or high.



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Blood Pressure



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Blood Pressure

- Done at every visit (x2?)
- Target is $<140/<90$, $<130/<80$ if can be safely attained
- Consider weight loss if BP $>120/>80$



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Hypertension in Diabetes- Why <140/<90?

- ACCORD BP results suggest that blood pressure targets more intensive than <140/90 mmHg **are not likely** to improve cardiovascular outcomes among most people with type 2 diabetes but may be reasonable for patients who may derive the most benefit and have been educated about added treatment burden, side effects, and costs.....
- ACCORD BP trial provides the strongest direct assessment of the benefits and risks of intensive blood pressure control among people with type 2 diabetes

N Engl J Med 2010;362:1575–1585

Diabetes Care 2020 Jan; 43(Supplement 1): S111-S134



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Hypertension in Diabetes- Why <140/<90?

- “Additional studies, such as the Systolic Blood Pressure Intervention Trial (SPRINT) and the Hypertension Optimal Treatment (HOT) trial, also examined effects of intensive versus standard control, though the relevance of their results to people with diabetes is less clear”

N Engl J Med 2015;373:2103–2116

Lancet 1998;351:1755–176



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Hypertension Treatment

- Lowering blood pressure reduces CVD and kidney disease
- Caveat: worsening renal function on ACEI or ARB warrants imaging of kidneys/renal arteries or nephrology referral
- If on more than one anti-hypertensive, consider giving one at bedtime



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Blood Pressure Goals

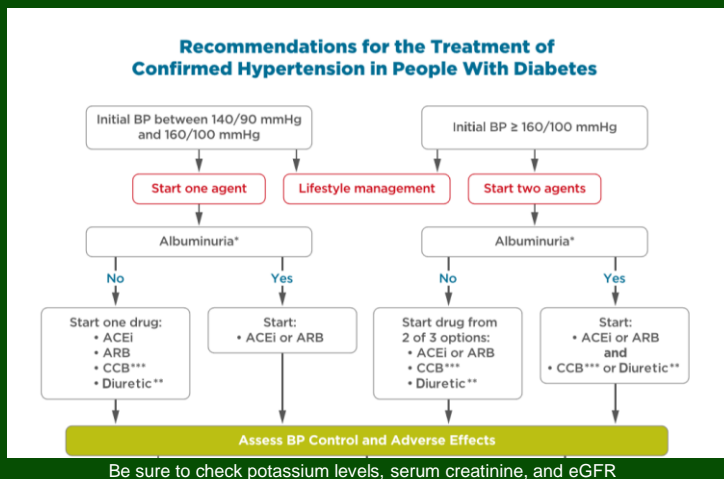
- "it may be reasonable to target blood pressure $<130/80$ mmHg among patients with diabetes and either clinically diagnosed cardiovascular disease (particularly stroke, which was significantly reduced in ACCORD BP) or 10-year ASCVD risk $\geq 15\%$, **if it can be attained safely.** "

• From chapter 10 ADA 2020 SOC



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Hypertension Treatment



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Lipid Management



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Lipid Management-Primary Prevention in Diabetes

- For patients with diabetes aged 40–75 years without atherosclerotic cardiovascular disease, use moderate-intensity statin therapy in addition to lifestyle therapy.
- For patients with diabetes aged 20–39 years with additional atherosclerotic cardiovascular disease risk factors, it may be reasonable to initiate statin therapy in addition to lifestyle therapy.
- In patients with diabetes at higher risk, especially those with multiple atherosclerotic cardiovascular disease risk factors or aged 50–70 years, it is reasonable to use high-intensity statin therapy.
- In adults with diabetes and 10-year atherosclerotic cardiovascular disease risk of 20% or higher, it may be reasonable to add ezetimibe to maximally tolerated statin therapy to reduce LDL cholesterol levels by 50% or more.



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Lipid Management-Secondary Prevention in Older Adults

- In adults with diabetes aged >75 years already on statin therapy, it is reasonable to continue statin treatment
- In adults with diabetes aged >75 years, it may be reasonable to initiate statin therapy after discussion of potential benefits and risks



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Summary

- A1C <7.5-8.5 with little or no hypoglycemia for many, but some may warrant tighter control
- BP<140/<90, but some may warrant tighter (or less rigid) control
- Lipids-statin for most, perhaps case by case after 75
- Aspirin benefit vs risk may tilt toward risk in older
- Need to know renal status for many diabetes medications



Cases



abbreviations

- CVD: cardiovascular disease
- HTN: hypertension
- MI: myocardial infarction (heart attack)
- CVA: cerebrovascular accident (stroke)
- CKD: chronic kidney disease
- BKA: below knee amputation



Case #1

- 76 y/o female with moderate to advanced Alzheimer's dementia in LTC
- History of CVA- left sided weakness
- CKD
- HTN
- Dyslipidemia



Case #1

- A1C 9.9
- BP 176/94, pulses range from 52-98
- Orthostatic BP 141/89
- Serum creatinine 1.7, GFR 38 (Stage 3 CKD)
- Lipids
 - TC 246
 - TG's 260
 - HDL 31
 - LDL 135
- Weekly blood sugars usually 250+



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Case #1

- Meds:
- Glargine 52 units daily
- Lisinopril 20 mg daily
- Metoprolol Succinate 25mg daily
- Atorvastatin 10mg daily
- Donepezil 5 mg daily
- Lorazepam 1mg TID
- Risperdal 0.5 mg BID



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Case #1

Blood glucose values/A1C/eating:

- Eating- fair with assist of 1, likes to “indulge” at birthday parties
- No known hypoglycemia, but occasional “behaviors”
- Sleeps a lot during many days

What now?



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Case #1

“Behaviors”

- Psych?
- Low blood sugars not being captured?
- Infection? (i.e., UTI)
- Bradycardia?
- Should consider all of these in this patient

“Daytime sleepiness”

- Should consider all of these factors



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Case #1

- Doesn't have bradycardia, UTI
- Blood sugar increased testing (QID x 3 days) shows all blood sugars >250, 2 hours post "birthday party" 425
- What now?



Case #1

- Daytime sleepiness may be from elevated blood sugars
- Increasing basal insulin (Levemir or Lantus) doesn't address post-meal blood sugars
- Could start by adding an injection of rapid acting insulin (Apidra, Novolog, Humalog) with each meal- small doses to start
- Also a "prn" insulin dose with birthday party (1 to 4 units)



Case #1

- Target FBS 100-180
(probably can't report hypoglycemia accurately)
- Target 2 hour post-meal or random blood sugars to be <200-220
- Target A1C 7.5-8.0 without significant hypoglycemia
- If unpredictable eater, can give mealtime insulin after meal and only if meal eaten



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Case #1

What about elevated BP? Could move metoprolol to hs

- New guideline suggests if on more than one med, one med should be given in evening
- Always consider fall risk
- Orthostatic BP is a factor in this patient



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Other CVD risk factors

What about statin and aspirin?

- Case by case, could prevent another massive stroke in this patient



Case #2

- 67 year old type 1, in assisted living with spouse
- CVA with significant memory issues
- Left BKA
- CKD
- HTN
- Dyslipidemia
- Retinopathy
- Has many risks for falls



Case #2

- Detemir 26 units daily AM
- Aspart 12 units with meals, 2 units with snacks (frequently does not report snacks)
- Lisinopril 20mg daily, blood pressure is 138/82
- Atorvastatin 40 mg daily
- ASA 81mg daily



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Case #2

- Blood sugars checked QID range from 35-435
- Gets an extra 5 units of aspart for every blood sugar >300
- Often very elevated at bedtime >300, often gets an extra dose of rapid acting from on-call physician
- Frequent overnight lows
- What next?



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Case #2

- Account for the extra insulin that is being given almost every night
- Maybe a larger dose of rapid acting with supper
- Maybe smaller doses with smaller meals
- Small increase in detemir, may decrease variability
- Try not to have situations where a lot of extra insulin is give for elevated blood sugars (corrections)
- Many daytime boluses cause “insulin stacking”, causing hypoglycemia later



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Case #3

- 59 year old female, lives at home with spouse
- Type 2 diabetes x 15 years
- HTN
- Dyslipidemia
- History of Myocardial infarction
- Recently retired, no cognitive impairment, but poor energy since retirement



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Case #3

- Metformin 1000 mg BID
- Glipizide XL 10 mg daily
- Lisinopril 20 mg daily
- Metoprolol XL 50 mg daily
- Atorvastatin 80 mg daily
- Aspirin 81 mg daily



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Case #3

- BP 138/84, 5'3", 210lbs BMI 35
- Lipids well managed on maximum statin, well-tolerated
- A1C 8.1%
- GFR 58, serum creatinine 1.3, LFT's all normal
- Self blood glucose monitoring 1-2 times daily, reports 140's-220's, occ <70
- PHQ-9 score is 6



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Case #3

- Activity: “walks when she can”. Completed cardiac rehab post MI, but didn’t continue with higher level of activity
- Meal planning: “try to eat healthy heart diet”
- ROS: fatigue, no chest pain or shortness of breath, some numbness in feet, no other complaints



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Case #3 Summary

- Elevated A1C and blood glucose values, elevated BMI. <7% may still be appropriate. Is she on correct diabetes medications for CVD, weight, and CKD?
- BP is controlled by ADA standards, but could consider <130/<80
- On maximum dose statin and aspirin-appropriate with her CVD history
- Likely depressed, which may be affecting her self-care



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Case #3

- A1C, blood glucose values, BMI:
 - Current guidelines suggest SGLT-2 inhibitor or GLP-1 agonist in those with CVD or high risk. Either would also help with weight, and slow progression of CKD. Consider stopping sulfonylurea due to hypoglycemia
 - Certified Diabetes Care and Education Specialist and Nutritionist referrals



Case #3

- Other CVD risk factors:
 - High dose statin is appropriate, as is aspirin
 - Consider BP target of $<130/<80$ if can be done easily without undue burden on patient. Consider adding thiazide diuretic. Appropriately on beta-blocker post MI
 - Safe exercise prescription
- Depression:
 - Behavioral health referral, consider medication. May not have a lot of improvement without this



Prompts

- Depending on various factors in older adults with diabetes, these targets:
 - Individualize A1C, avoid hypoglycemia-maybe ~8% instead of <7
 - Individualize BP depending on status and presence or absence of renal and/or CVD disease
 - Statin and aspirin- case by case depending on status and presence or absence of CVD
 - Always consider renal status, fall risk, other individual factors in prescribing



Summary

- Elderly usually need customized A1C, BP targets
- Think about age (or disease) related renal decline in choosing meds
- A lot of heterogeneity in this population



References

- Unless otherwise noted, all from American Diabetes Association Standards of Care-2020
- Diabetes Care 2020 Jan; 43(Supplement 1)
- https://care.diabetesjournals.org/content/43/Supplement_1

