

## Update on Diabetes Care in Older Adults

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## Disclosures

- None

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## Learning Objectives

1. Review the most recent American Diabetes Association guidance on care of older adults with diabetes.
2. Understand the risks and benefits of newer anti-hyperglycemic agents in the nursing home setting.
3. Recognize the utility of continuous glucose monitoring devices for the elderly population.

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## Epidemiology of Diabetes in Older Adults

- >25% of adults >65 years old have diabetes
  - ~50% have prediabetes
- 2016: 1.3 million adults in nursing homes
  - 25-34% with diabetes

Latteerapong & Huang. Diabetes in older adults. In Diabetes in America. 3rd ed.  
CDC National Diabetes Statistics Report, 2020: Estimates of Diabetes and its Burden in the United States.

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## Guidelines on Diabetes Management in Older Adults

2013

Guidelines Abstracted from the American Geriatrics Society  
Guidelines for Improving the Care of Older Adults with  
Diabetes Mellitus: 2013 Update

American Geriatrics Society Expert Panel on the Care of Older Adults with Diabetes Mellitus

2019

CLINICAL PRACTICE GUIDELINE

Treatment of Diabetes in Older Adults: An Endocrine  
Society® Clinical Practice Guideline

Derek LeRoith,<sup>1</sup> Geert Jan Bessels,<sup>2</sup> Susan S. Brathwaite,<sup>3,4</sup> Felipe F. Casanueva,<sup>5</sup>  
Boris Draznin,<sup>6</sup> Jeffrey B. Halter,<sup>7,8</sup> et al B. Hirsch,<sup>9</sup> Marie E. McDonnell,<sup>10</sup>  
Mark E. Molitch,<sup>11</sup> M. Hassan Murad,<sup>12</sup> and Alan J. Sirtlan.<sup>13</sup>

2022

13. Older Adults: Standards of  
Medical Care in Diabetes—2022

American Diabetes Association  
Professional Practice Committee®

Diabetes Care 2022;45(Suppl. 1):S195–S207 | <https://doi.org/10.2337/dic22-3013>

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## Recommended Glycemic Targets in Older Adults

### American Geriatrics Society (2013):

- A1c 7.5-8% if moderate co-morbidities and life expectancy <10 yrs

### American Diabetes Association (2022):

- Healthy: A1c <7-7.5%
- Complex/Intermediate: A1c <8%
- Community dwelling in skilled nursing or very complex: Avoid reliance on A1c

J Am Geriatr Soc 2013;61:2020.  
Diabetes Care. 2022 Jan 1;45(Suppl 1):S195.

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## Endocrine Society Conceptual Framework for Determining Glycemic Targets

Overall Health Category	Group 1: Good Health	Group 2: Intermediate Health	Group 3: Poor Health
Patient characteristics	No comorbidities or 1-2 non-diabetes chronic diseases* and No ADL impairments and 1 IADL impairment	3 or more non-diabetes chronic diseases* and/or Any one of the following: - mild cognitive impairment - or early dementia - 12 ADL impairments - 12 IADL impairments	Any one of the following: - End-stage medical condition(s)** - Moderate to severe dementia - 12 ADL impairments - Residence in a long-term nursing facility
Reasonable glucose target ranges and HbA1c by group			
*Shared decision-making: individualized goal may be lower or higher			

J Clin Endocrinol Metab. 2019;104(5):1520.

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## 2022 ADA Standards of Medical Care: Older Adults Main Points

1. Framework for considering glycemic treatment goals
1. Simplification of complex insulin regimens
1. Considerations for diabetes treatment regimen simplification and deintensification/deprescribing in older adults



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## Why Is Less Tight Glycemic Control Recommended in Older Adults?

Lack of macrovascular benefit from tight control

Long duration of treatment needed to decrease microvascular complications

Documented harms of tight glycemic control (i.e. hypoglycemia)

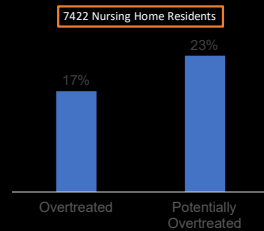
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### Glycemic treatment deintensification practices in nursing home residents with type 2 diabetes

- VA nursing home residents (2013-2019)

• "Overtreatment" = HbA1c <6.5 with any insulin use.

• "Potential overtreatment" = HbA1c <7.5 with any insulin use or HbA1c <6.5 on any glucose-lowering medication other than metformin alone.



Lederle LJ, et al. J Am Geriatr Soc. 2022 Mar 23.

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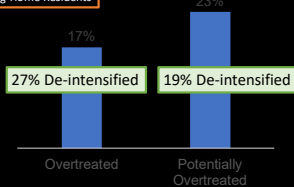
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### Glycemic treatment deintensification practices in nursing home residents with type 2 diabetes

Were medications de-intensified within 14 days of A1c result?

7422 Nursing Home Residents



Lederle LJ, et al. J Am Geriatr Soc. 2022 Mar 23.

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### But in 2022, Should "Deintensification" Really Be Our Primary Focus in Older Adults?.....



.....my opinion: "deintensification" is too simplistic in light of new developments in diabetes management.

- We can now often avoid hypoglycemia while maintaining tight glucose control.
- By adding or switching certain medications we can improve clinical outcomes that are important for older adults.
- We can monitor glucoses in a more patient-centered and informative way.

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## What's Changed in Diabetes Care Since 2013?

Short Answer = Almost Everything!

- Cardiovascular outcome trials:
  - 2015 – EMPA-REG Trial (empagliflozin)
  - 2016 – LEADER Trial (liraglutide)
- 3 once-weekly GLP-1 agonists: exenatide ER, dulaglutide, semaglutide
- 1<sup>st</sup> oral GLP-1 agonist (oral semaglutide)
- Huge improvements in continuous glucose and flash glucose monitoring (Dexcom G6, Freestyle Libre) and evidence for their use
- Benefits of GLP1 agonists and SGLT2i for CVD, renal disease, and HF
- Expansion of evidence of SGLT2i benefits in patients with and without diabetes

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## Let's Review 4 Things

DPP4 Inhibitors

GLP1 Agonists

SGLT2

Inhibitors

Continuous Glucose Monitors

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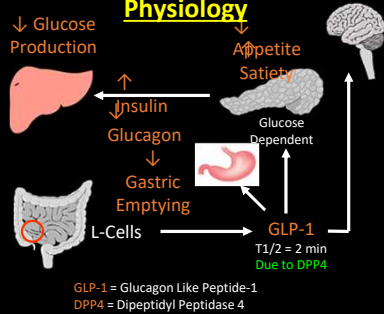
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## Incretin Physiology



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**Incretin Based  
Therapy**

GLP-1 (7-36)  $\xrightarrow[\text{[DPP4]}]{\text{Peptidase 4}}$  GLP-1 (9-36)  
 $T_{1/2}$  : 1-2 min Inactive

**GLP-1 Analog / Agonist**

- Prolonged Duration of **Analog** Action

**DPP4 Inhibitor**

- Prolongs Duration of **Native GLP-1** Action

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**Incretin Based  
Therapy**

**GLP-1 Agonists (SQ)**

Exenatide (Byetta) BID  
 Liraglutide (Victoza) QD  
 Lixisenatide (Adlyxin) QD  
 Exenatide QW (Bydureon) Weekly  
 Dulaglutide (Trulicity) Weekly  
 Semaglutide (Ozempic) Weekly

**Combinations**  
 Liraglutide + Degludec (Xultophy)  
 Lixisenatide + Glargine (Soliqua)

Blood Glucose  
 ↓↓  
 Weight Loss

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**Incretin Based  
Therapy**

**DPP4 Inhibitors (PO)**

Sitagliptin (Januvia)  
 Saxagliptin (Onglyza)  
 Linagliptin (Tradjenta)  
 Alogliptin (Nesina)

**Combinations**  
 Many

Blood Glucose  
 ↓  
 Weight Neutral

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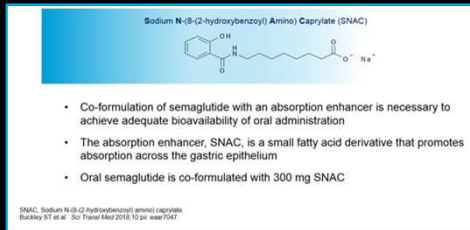
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## Oral Semaglutide (Rybelsus)

FDA Approved Sept 2019



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## Some Practical GLP-1RA Tips

- Nausea is very common
  - Usually gets better w/in a month
  - Reduce meal size by ~50%
  - If vomiting, stop the med!
- Reduce insulin ~20% if starting when diabetes is already fairly well-controlled
- It's an injection – lots of videos online to educate
  - Needle is small!

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## Sodium Glucose Transporter 2

### Inhibitors

Kidneys Filter + Reabsorb Glucose: 180 g/day  
SGLT2 (proximal tubules): 90%

Normal



Glycosuria

BG > 180 mg/dl

SGLT2 Inhibitor



Glycosuria

BG > 80 mg/dl

Glucose Loss  
80-100 g/day  
320-400 kcal/day

Blood Glucose ↓  
Weight Loss

No Renal Damage

GU Infections / UTI

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### **Sodium/Glucose Co-Transporter 2 Inhibitors**

Generic	Trade Name	Doses
Canagliflozin	Invokana	100, 300 mg
Dapagliflozin	Farxiga	5, 10 mg
Empagliflozin	Jardiance	10, 25 mg
Ertugliflozin	Steglatro	5, 15 mg

DKA with BG 150-250 mg/dl Occasionally with These Agents

**Most Common Precipitants:** Low Carb Diets, Fasting

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### **Cardiovascular Disease Benefit Proven**

**SGLT2 Inhibitors** High Risk ASCVD Patients

- Empagliflozin (Jardiance)
- Canagliflozin (Invokana)
- Dapagliflozin (Farxiga)

**GLP-1 Analogs**

- Liraglutide (Victoza)
- Semaglutide (Ozempic)
- Dulaglutide (Trulicity)

Davies MJ. Diabetes Care 2018; 41:2669-2701  
Diabetes Care 2020 (Jan); 43 (Suppl 1). S1-S204

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### **Heart Failure Benefit Proven** **SGLT2 Inhibitors**

- Empagliflozin (Jardiance)
- Canagliflozin (Invokana)
- Dapagliflozin (Farxiga)
- Ertugliflozin (Steglatro)

Davies MJ. Diabetes Care 2018; 41:2669-2701  
Diabetes Care 2020 (Jan); 43 (Suppl 1). S1-S204

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## Chronic Kidney Disease Benefit

### Proven SGLT2 Inhibitors

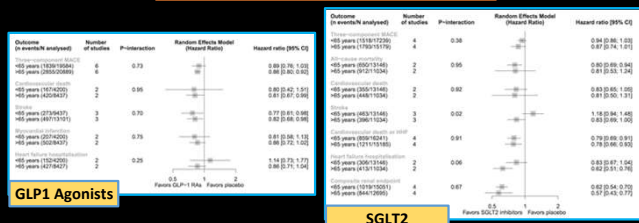
- Empagliflozin (Jardiance)
- Canagliflozin (Invokana)
- Dapagliflozin (Farxiga)
- Ertugliflozin (Steglatro)

Davies MJ. Diabetes Care 2018; 41:2669-2701  
Diabetes Care 2020 (Jan); 43 (Suppl 1). S1-S204

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## Meta-Analysis of GLP-1 Agonist and SGLT2 Inhibitors in Older Adults

11 studies with >91,000 patients were included



Karagiannis, et al. Diabetes Res Clin Pract. 2021 Apr;174

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## Review of GLP-1 Agonist and SGLT2 Inhibitors in Older Adults

Table 2. Meta-analysis results versus placebo for patients 75 years or older and patients younger than 75 years.					
Outcome	Number of trials	Age categories (n events/N analysed)	RR	95% CI	P-interaction
GLP-1 receptor agonists versus placebo	2	All patients	0.87	0.79 to 0.97	0.07
		<75 years (2796/22,006)	0.82	0.65 to 0.99	
		≥75 years (448/2086)	0.75	0.61 to 0.92	
SGLT2 inhibitors versus placebo	2	All patients	0.91	0.83 to 0.99	0.16
		<75 years (2075/22,432)	0.83	0.65 to 1.02	
		≥75 years (256/1748)	0.77	0.60 to 0.99	
CVD	2	All patients	0.78	0.58 to 1.06	0.94
		<75 years (891/22,432)	0.79	0.52 to 1.20	
		≥75 years (112/1748)	0.77	0.40 to 1.46	
CVDHBP	2	All patients	0.76	0.62 to 0.90	0.83
		<75 years (1089/22,432)	0.76	0.63 to 0.91	
		≥75 years (107/1748)	0.71	0.40 to 1.27	
HbA1c	2	All patients	0.71	0.61 to 0.83	0.70
		<75 years (807/22,432)	0.72	0.61 to 0.84	
		≥75 years (102/1748)	0.64	0.36 to 1.12	
Renal composite outcome	2	All patients	0.59	0.52 to 0.65	0.49
		<75 years (1147/21,667)	0.59	0.51 to 0.68	
		≥75 years (133/1668)	0.51	0.36 to 0.65	

Abbreviations: RR, hazard ratio; CI, confidence interval; GLP-1, glucagon-like peptide-1; SGLT2, sodium-glucose co-transporter 2; p-MACE, 3-point composite of major adverse cardiovascular events; CVD, cardiovascular death; CVDHBP, cardiovascular death or hospitalization for heart failure; HbA1c, hospitalization for heart failure. Number of events (n) and patients analysed (N) are both for intervention and placebo arms.

Karagiannis, et al. Diabetes Res Clin Pract. 2021 Apr;174

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### What About CGMs in Older Adults?

- Medicare expanded CGM coverage and rule changes have made it easier to prescribe
- CGMs can aide “deprescribing” by helping to focus on how diet impacts glucose readings
- CGMs can make insulin use safer

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### Polling Question

[PollEv.com/travisneill338](https://poll-ev.com/travisneill338)

Do you currently prescribe continuous glucose monitors (i.e. Dexcom CGM or Freestyle Libre) to your patients >65 years old?

- ☐ Yes  
☐ No

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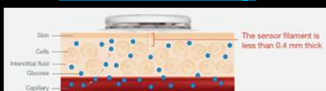
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### Freestyle Libre & Dexcom G6



Interstitial Glucose Readings



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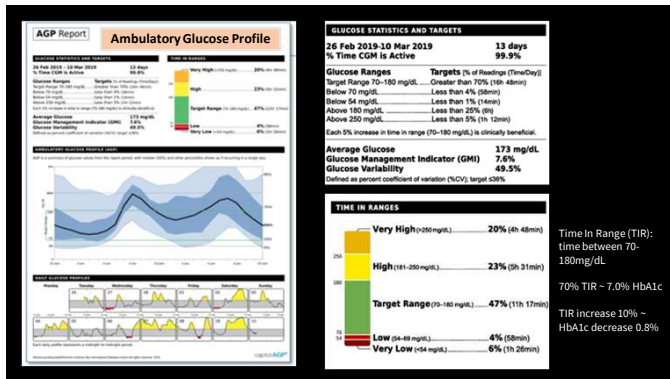
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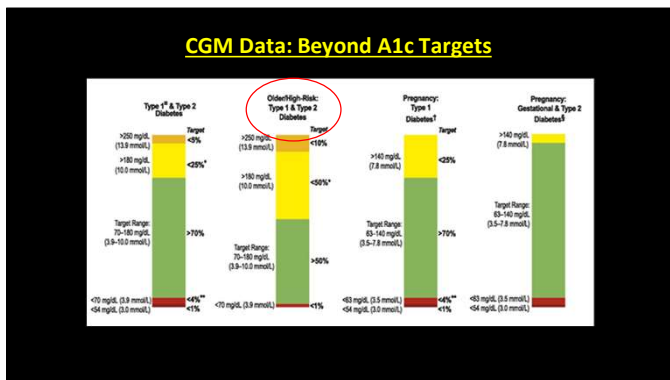
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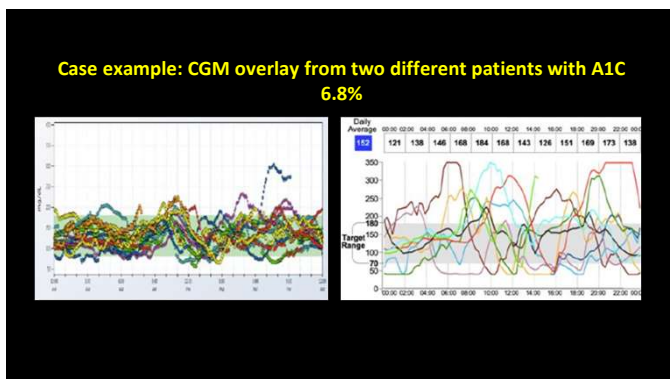
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## Wireless Innovation for Seniors with Type 1 Diabetes Mellitus (WISDM) Study

- 203 participants (median age 68, 52% female)
- A1c 7.5%, 53% on insulin pumps

### With CGM:

- Median time with glucose levels less than 70mg/dL was **5.1%** (73 minutes per day) at baseline and **2.7%** (39 minutes per day)
- Mean HbA1c **decreased** in the CGM group compared with the standard BGM group (adjusted group difference, **-0.3%**; 95%CI, -0.4% to -0.1%; P < .001).

Pratley RE. JAMA 2020 Jun 16;323(23):2397.

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## Acceptability of Continuous Glucose Monitoring in Elderly Diabetes Patients Using Multiple Daily Insulin Injections

MDI-treated elderly (n = 25, mean age 67.6 – 1.2 years, HbA1c = 7.1% – 0.2%, 56% type 1 diabetes) were instructed to use a CGM device.

### Results

- Satisfaction w/ CGM was "high" and annoyance was "modest"
- 95% had improved sense of security with CGM use
- 68% with improved sleep quality
- 82% wanted to use CGM after study completion



Volčanšek S. Diabetes Technol Ther. 2019 Oct;21(10):566.

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## Potential Benefits & Disadvantages of CGM in Elderly

### Benefits

1. Reduction in fingerstick glucose checks (comfort)
2. Alarms to detect hypoglycemia and hyperglycemia
3. Remote monitoring by caregivers / family
4. Better glycemic control

### Disadvantages

1. "Too much data": alarm fatigue and anxiety
2. Cost
3. Technological challenges

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## Summary

- Several guidelines exist regarding management of diabetes in older adults
- Deintensification is important, but that's not all we should do
  - "Intensify to de-intensity" in some patients
- SGLT2 inhibitors and GLP-1 RAs at the forefront of our care
  - Think about these meds based on co-morbidities
- New technologies – like Freestyle Libre & Dexcom CGM – are revolutionizing glucose monitoring and management
  - Great way to mitigate hypoglycemia risk

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## Thank you!

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ADA Standards of Medical  
Care: Older Adults (2022)



Treatment of Diabetes in  
Older Adults: An  
Endocrine Society Clinical  
Practice Guideline (2019)



CGM Time in Range  
Webinars

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