

deprescribing.org | Antihyperglycemics Deprescribing Algorithm

October 2018: Algorithm modified by the Endocrine Society and Avalere Health in accordance with the Bruyère Deprescribing Guidelines Research Team's Modification Policy. Original naterials available at https://tinyurl.com/yag638uz.

Yes

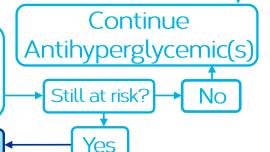
Does your elderly (>65 years of age) patient with type 2 diabetes meet one or more of the following criteria:

- At risk of hypoglycemia (e.g. due to advancing age, tight glycemic control, multiple comorbidities, drug interactions, hypoglycemia history or unawareness, impaired renal function, or on sulfonylurea or insulin)
- Experiencing, or at risk of, adverse effects from antihyperglycemic
- Uncertainty of clinical benefit (due to: frailty, dementia or limited life-expectancy)

No

Set individualized A1C and blood glucose (BG) targets (otherwise healthy with 10+ years life expectancy, A1C < 7% appropriate; considering advancing age, frailty, comorbidities and time-to-benefit, A1C < 8.5% and BG < 180mg/dL^a may be acceptable; at end-of life, individualize BG target to avoid symptoms and complications from glycemic management^a

Address potential contributors to hypoglycemia (e.g. not eating, drug interactions such as trimethoprim/sulfamethoxazole and sulfonylurea, recent cessation of drugs causing hyperglycemia – see reverse)



Recommend Deprescribing

- Reduce dose(s) or stop agent(s)
 - most likely to contribute to hypoglycemia (e.g. sulfonylurea, insulin; strong recommendation from systematic review and GRADE approach)^b or other adverse effects (good practice recommendation)^c
- Switch to an agent
 - with lower risk of hypoglycemia (e.g. switch from glyburide to glipizide or non-sulfonylurea; change NPH or mixed insulin to a long-acting basal insulin analog^a to reduce nocturnal hypoglycemia; strong recommendation from systematic review and GRADE approach)^b
- Reduce doses
 - of renally eliminated antihyperglycemics (e.g. metformin, sitagliptin; good practice recommendation)^c See guideline for recommended dosing

Monitor daily for 1-2 weeks after each change (TZD - up to 12 weeks):

- For signs of hyperglycemia (excessive thirst or urination, fatigue)
- For signs of hypoglycemia and/or resolution of adverse effects related to antihyperglycemic(s) Increase frequency of blood glucose monitoring if needed

A1C changes may not be seen for several months

If hypoglycemia continues and/or adverse effects do not resolve:

Reduce dose further or try another deprescribing strategy

If symptomatic hyperglycemia or blood glucose exceeds individual target:

Return to previous dose or consider alternate drug with lower risk of hypoglycemia

 ${ ilde{ t G}}$ Use freely, with credit to the authors. Not for commercial use. Do not modify or translate without permission .



Contact deprescribing@bruyere.org or visit deprescribing.org for more information

modifications conform to ADA guideline

targets, American measurement units, and

b see guideline publication for description

based on clinical/ expert consensus



drug availability





Farrell B, Black C, Thompson W, McCarthy L, Rojas-Fernandez C, Lochnan H, et al. Deprescribing antihyperglycemic agents in older persons. Evidence-based clinical practice guideline. Can Fam Physician 2017;63:832-43 (Eng), e452-65 (Fri



deprescribing.org | Antihyperglycemics Deprescribing Notes

October 2018: Algorithm modified by the Endocrine Society and Avalere Health in accordance with the Bruyère Deprescribing Guidelines Research Team's Modification Policy. Original materials available at https://tinyurl.com/yag638uz.

Antihyperglycemics and Hypoglycemia Risk

Drug	Causes hypoglycemia?
Alpha-glucosidase inhibitor	No
Dipeptidyl peptidase-4 (DPP-4) inhibitors	No
Glucagon-like peptide-1 (GLP-1) agonists	No
Insulin	Yes (highest risk with regular insulin and NPH insulin)
Meglitinides	Yes (low risk)
Metformin	No
Sodium-glucose linked transporter 2 (SGLT2) inhibitors	No
Sulfonylureas	Yes (highest risk with glyburide and glimepride and lower risk with glipizide) ^a
Thiazolidinediones (TZDs)	No

Drugs affecting glycemic control

- Drugs reported to cause hyperglycemia (when these drugs stopped, can result in hypoglycemia from antihyperglycemic drugs) e.g. quinolones (especially gatifloxacin), beta-blockers (except carvedilol), thiazides, atypical antipsychotics (especially olanzapine and clozapine), corticosteroids, calcineurin inhibitors (such as cyclosprine, sirolimus, tacrolimus), protease inhibitors
- Drugs that interact with antihyperglycemics (e.g. trimethoprim/sulfamethoxazole with sulfonylureas)
- Drugs reported to cause hypoglycemia (e.g. alcohol, MAOIs, salicylates, quinolones, quinine, beta-blockers, ACEIs, pentamidine)

Engaging patients and caregivers

- Some older adults prefer less intensive therapy, especially if burdensome or increases risk of hypoglycemia
- Patients and/or caregivers may be more likely to engage in discussion about changing targets or considering deprescribing if they understand the rationale:
 - Risks of hypoglycemia and other side effects
 - Risks of tight glucose control (no benefit and possible harm with A1C (< 6.5%)^a
 - Time to benefit of tight glucose control
 - Reduced certainty about benefit of treatment with frailty, dementia or at end-of-life
- Goals of care: avoid hyperglycemic symptoms (thirst, dehydration, frequency, falls, fatigue, renal insufficiency) and prevent complications (5-10 years of treatment needed)
- Many countries agree on less aggressive treatment of diabetes in older persons
- Reviewing options for deprescribing, as well as the planned process for monitoring and thresholds for returning to previous doses will help engage patients and caregivers

Hypoglycemia information for patients and caregivers

- Older frail adults are at higher risk of hypoglycemia
- There is a greater risk of hypoglycemia with tight control
- Symptoms of hypoglycemia include: sweating, tachycardia, tremor BUT older patients may not typically have these
- Cognitive or physical impairments may limit older patient's ability to respond to hypoglycemia symptoms
- Some drugs can mask the symptoms of hypoglycemia (e.g. beta blockers)
- Harms of hypoglycemia may be severe and include: impaired cognitive and physical function, falls and fractures, seizures, emergency room visits and hospitalizations

Tapering advice

- Set blood glucose & A1C targets, plus thresholds for returning to previous dose, restarting a drug or maintaining a dose
- Develop tapering plan with patient/caregiver (no evidence for one best tapering approach; can stop oral antihyperglycemics, switch drugs, or lower doses gradually e.g. changes every 1-4 weeks, to the minimum dose available prior to discontinuation, or simply deplete patient's supply)
- Doses may be increased or medication restarted any time if blood glucose persists above individual target^a or symptomatic hyperglycemia returns

© Use freely, with credit to the authors. Not for commercial use. Do not modify or translate without permission .



This work is licensed under a Creative Commons Attribution-Noncommercial-ShareAlike 4.0 International License. Contact deprescribing@bruyere.org or visit deprescribing.org for more information.

Farrell B, Black C, Thompson W, McCarthy L, Rojas-Fernandez C, Lochnan H, et al. Deprescribing antihyperglycemic agents in older persons. Evidence-based clinical practice guideline. Can Fam Physician 2017;63:832-43 (Eng), e452-65 (Fri

modifications conform to ADA guideline targets, American measurement units, and drug availability

b see guideline publication for description

based on clinical/ expert consensus





