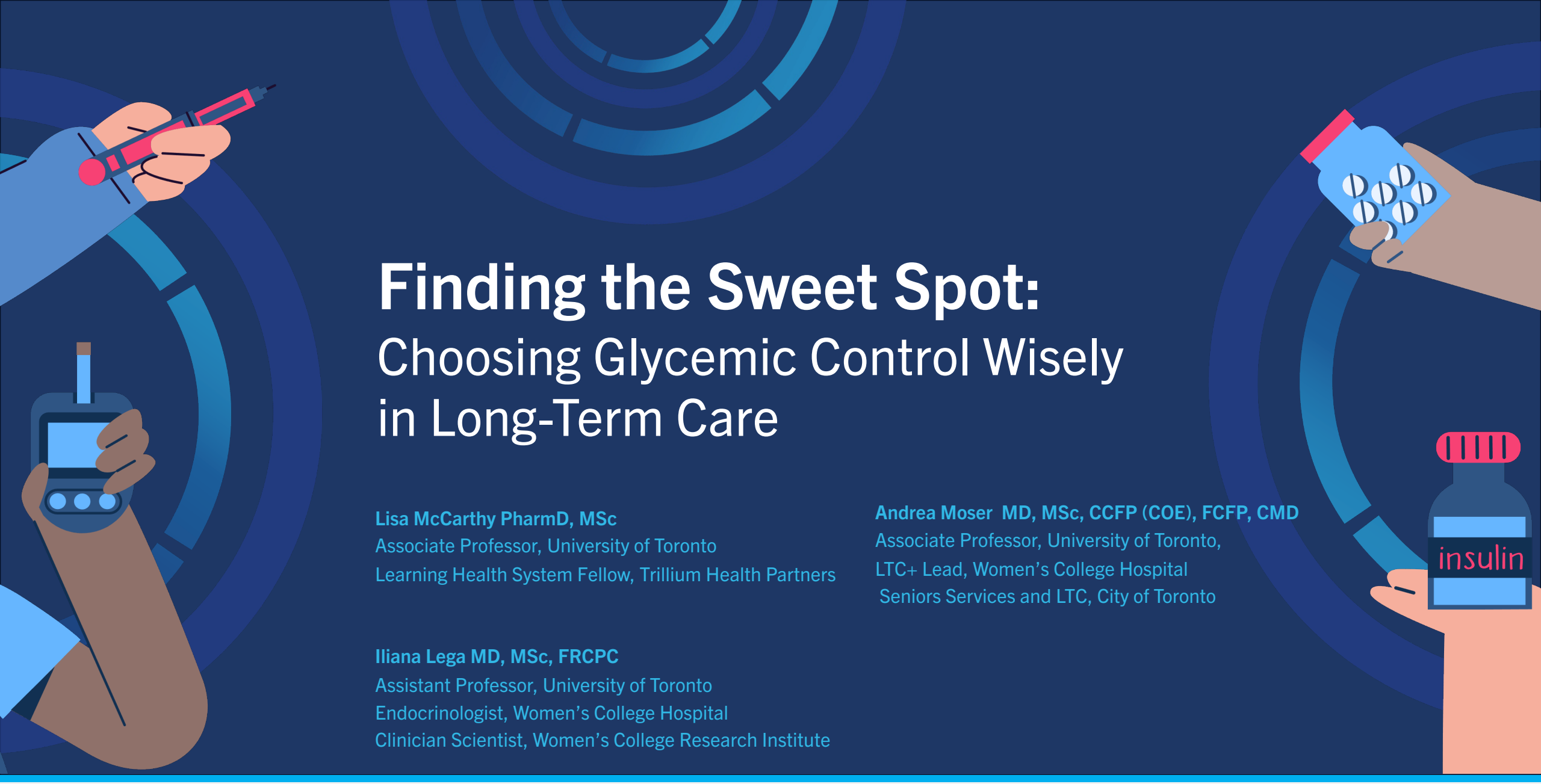

Finding the Sweet Spot:
Choosing Glycemic Control Wisely in Long-Term Care

Lisa McCarthy PharmD, MSc
Associate Professor, University of Toronto
Learning Health System Fellow, Trillium Health Partners

Iliana Lega MD, MSc, FRCPC
Assistant Professor, University of Toronto
Endocrinologist, Women's College Hospital
Clinician Scientist, Women's College Research Institute

Andrea Moser MD, MSc, CCFP (COE), FCFP, CMD
Associate Professor, University of Toronto,
LTC+ Lead, Women's College Hospital
Seniors Services and LTC, City of Toronto

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ONTARIO CLRI Centres for Learning, Research & Innovation in Long-Term Care
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Bruyère

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DIAL

Getting to know you

Why Diabetes? Why Now?

- Prevalence of diabetes among LTC residents is rising
- Complexity of residents is rising
- Options for managing and monitoring diabetes are increasing
  - New agents
    - DPP-4 inhibitors, SGLT2 inhibitors, GLP-1 agonists, new insulins
  - Continuous glucose monitors

DIAL

Objectives

1. Highlight the evidence supporting new Canadian Society for Long-Term Care Medicine (CSLTCM) recommendations regarding avoiding sliding scale insulin and focusing on relaxed glycemic targets
2. Discuss the role of novel antihyperglycemic medication options and new monitoring technologies for LTC residents
3. Describe approaches for having conversations with residents and families regarding goals of diabetes care

Diabetes in Canada's LTC Homes

>35% of Ontario LTC home residents (2021)

The prevalence of diabetes among LTC residents in Ontario, by sex

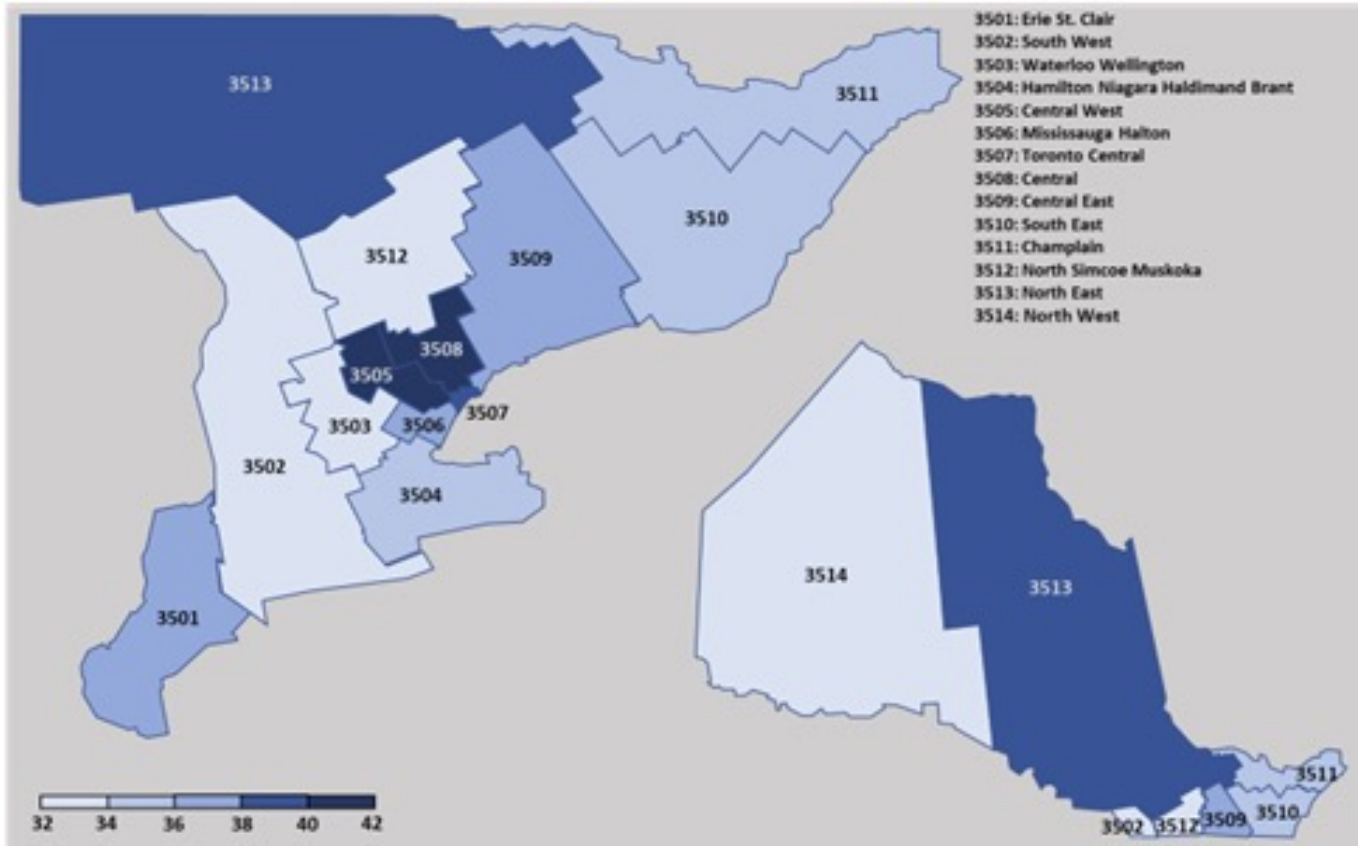
	2017	2018	2019	2020	2021
Female	22.81%	23.00%	23.20%	23.27%	23.22%
Male	12.71%	12.99%	13.09%	13.07%	13.51%

Farahvash A, McCarthy L, Thompson W, Podolsky S, Lega IC. J Am Ger Soc 2023;72:627-630

DIAL

Regional Variability of Diabetes in LTC Homes

32.9 - 42.1% of Ontario LTC homes (2021)



Farahvash A et al. J Am Ger Soc 2023;72:627-630

Diabetes Overtreatment

- Treatment that is unlikely to lead to benefit, and may incur harm
  - Inconsistent definitions in research studies

- High prevalence of diabetes overtreatment in LTC homes
  - Veterans Affairs (USA)
    - > 40% residents are overtreated
    - A1c < 6.5% with insulin/oral DM meds; < 7.5% with insulin
  - Ontario LTC homes
    - 50% of residents treated for diabetes had an A1c < 7%

Lederle L et al. J Am Ger Soc 2022;70:2019
Lega IC et al. JAMA Int Med 2021;181:992

DIAL

Challenges in LTC

- High prevalence of diabetes
- More crisis and admissions from acute care
- Education for clinicians/residents/families
- Variability in practice
- Role of newer agents in older adults living in LTC
- ?role of continuous glucose monitoring (interstitial glucose)

Canadian Society for Long Term Care Medicine (CSLTCM) - Choosing Wisely Canada Recommendations

Don't target stringent A1c values in older adults living with frailty in LTC homes, instead use modified glycemic goals that focus on avoiding hypoglycemia and symptomatic hyperglycemia.

Don’t use sliding scale insulin for older adults living with frailty in LTC homes.

Let's get to the cases!

Case 1

- 81 M, BMI 21, admitted to LTC from community 6 weeks prior
- Long standing diabetes, started on sliding scale 2 weeks after admission due to multiple high readings

Past Medical History

- Diabetes, dementia, hypertension, history of prostate cancer

Diabetes Medications

- metformin 500 mg bid, gliclazide MR 90 mg
- Rapid-acting insulin:
  - 10-13 mmol/L: 4 units, 13-15 mmol/L: 5 units, > 15-19 mmol/L: 7, > 20 mmol/L: 8 units

Labs (1 month prior to admission):

- A1c 8.6%
- eGFR 38 mL/min/1.73m^2

Last 3 days of Blood Glucose Readings

Day	AC Breakfast	AC Lunch	AC Supper	QHS
1	13	5	15	5
2	12	8	16	6
3	15	3	20	4

DIAL

What clinical issues do you see?

High A1c?

Wide glucose excursions

Use of high-risk agents

(i.e., gliclazide, insulin) and sliding scale

What would you do in your practice?

Limitations of A1c

- A1c cannot be used to evaluate daily glycemic patterns so cannot be used to detect hypoglycemia or glycemic variability
- A1c unreliable with various health conditions

Falsely elevates A1c	Falsely lowers A1c
Chronic kidney disease	Chronic blood loss
Chronic liver disease	Hemolytic anemia/sickle cell anemia/thalassemia
Recent blood transfusion	HIV, other chronic infections
	Hemodialysis
	Malignant hypertension

A1c and hypoglycemia

- In older adults with frailty, A1c is not consistently a predictor of severe hypoglycemia
  - High A1c does not “protect” against severe hypoglycemia, some studies report a higher risk
- A1c should never be sole parameter for reducing hypoglycemia risk
- High risk agents for hypoglycemia (i.e. insulin/secretatogues) are most important modifiers of hypoglycemia risk

Lipska K et al. J Amer Geriatr 2023;71:3692
Munshi M et al. J Diabetes Complications 2017;31:1197

DIAL

CLINICAL FRAILTY SCALE

1 **VERY FIT** — People who are robust, active, energetic and motivated. They tend to exercise regularly and are among the fittest for their age.

2 **FIT** — People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g., seasonally.

3 **MANAGING WELL** — People whose **medical problems are well controlled**, even if occasionally symptomatic, but often are **not regularly active** beyond routine walking.

4 **LIVING WITH VERY MILD FRAILTY** — Previously "vulnerable," this category marks early transition from complete independence. While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being "slowed up" and/or being tired during the day.

5 **LIVING WITH MILD FRAILTY** — People who often have **more evident slowing**, and need help with **high order instrumental activities of daily living** (finances, transportation, heavy housework). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation, medications and begins to restrict light housework.

6 **LIVING WITH MODERATE FRAILTY** — People who need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 **LIVING WITH SEVERE FRAILTY** — **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~6 months).

8 **LIVING WITH VERY SEVERE FRAILTY** — Completely dependent for personal care and approaching end of life. Typically, they could not recover even from a minor illness.

9 **TERMINALLY ILL** — Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise living with severe frailty.** (Many terminally ill people can still exercise until very close to death.)

SCORING FRAILTY IN PEOPLE WITH DEMENTIA

The degree of frailty generally corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

In **very severe dementia** they are often bedfast. Many are virtually mute.

DALHOUSIE UNIVERSITY

Rockwood K et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489–495.

For older adults, Diabetes Canada and American Diabetes Association suggest glycemic targets guided by frailty status

Rockwood K et al. Can Ger J 2020;23(3): 210

DIAL

Glycemic Targets for Older Adults with Diabetes

Status	Functionally independent	Functionally dependent	Frail and/or with dementia	End of life
Clinical Frailty Index*	1–3	4–5	6–8	9
A1C target *Low-risk hypoglycemia* (i.e. therapy does **not** include insulin or SU)	≤7.0%	<8.0%	<8.5%	A1C measurement not recommended. Avoid symptomatic hyperglycemia or any hypoglycemia.
A1C target *Higher-risk hypoglycemia* (i.e. therapy includes insulin or SU)		7.1–8.0%	7.1–8.5%	
CBGM				
Preprandial	4–7 mmol/L	5–8 mmol/L	6–9 mmol/L	Individualized
Postprandial	5–10 mmol/L	<12 mmol/L	<14 mmol/L	

A1C, glycated hemoglobin; *CBGM*, capillary blood glucose monitoring; *SU*, sulfonylurea.
*Clinical Frailty Score (1 - very fit to 9 - terminally ill). Please see Figure 1.

Table 1. Meneilly et al. Can J Diab 2018;42 (Suppl 1):S283

Hypoglycemia – The Risks

More common and particularly dangerous for older adults

- Associated with ↑ morbidity and mortality in older adults with both type 1 + type 2 diabetes

Moderate to severe hypoglycemia can lead to:

- Falls, confusion, worsening cognitive status, seizures, cardiac arrhythmias and cardiac ischemia and even death

DIAL

Hypoglycemia Presents Differently

- Older adults may not experience typical neurogenic symptoms of hypoglycemia
- Hypoglycemia may present with behaviour changes
- Asymptomatic hypoglycemia is possible

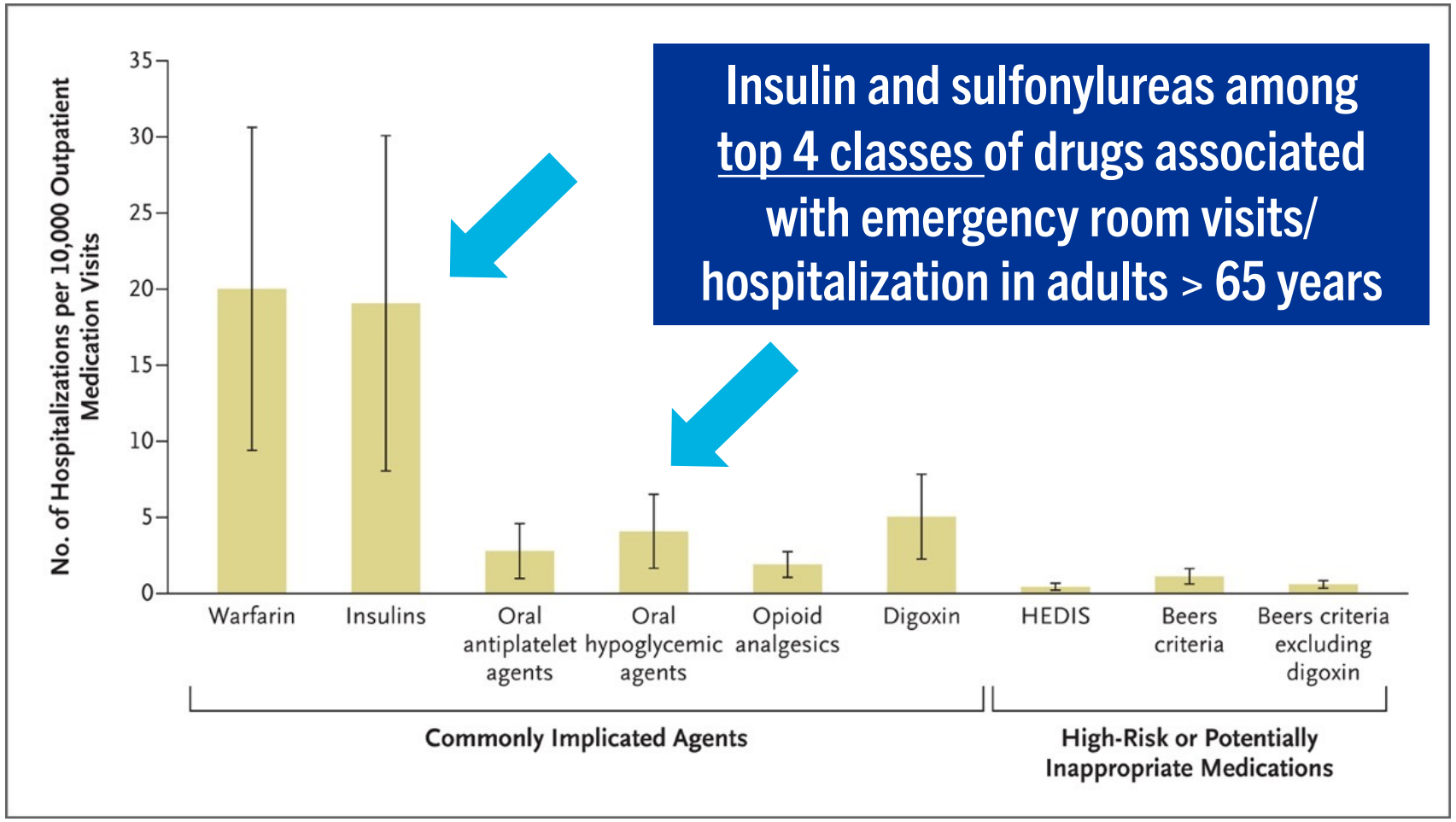
Symptoms of Hypoglycemia

Neurogenic	Neuroglycopenic
Trembling	Difficulty concentrating
Palpitations	Confusion, weakness, drowsiness, vision changes
Sweating	Slurred speech, headache, dizziness
Anxiety	
Hunger	
nausea	

Table 1 - Lega IC et al. Can J Diab 2023;47:P548
Abdelhafiz AH et al. Aging Dis 2015;6: 156

DIAL

Insulin and Sulfonylurea are High Risk Agents



Budnitz D et al. NEJM 2011;365:2002

Risk of Hypoglycemia with High Risk Agents

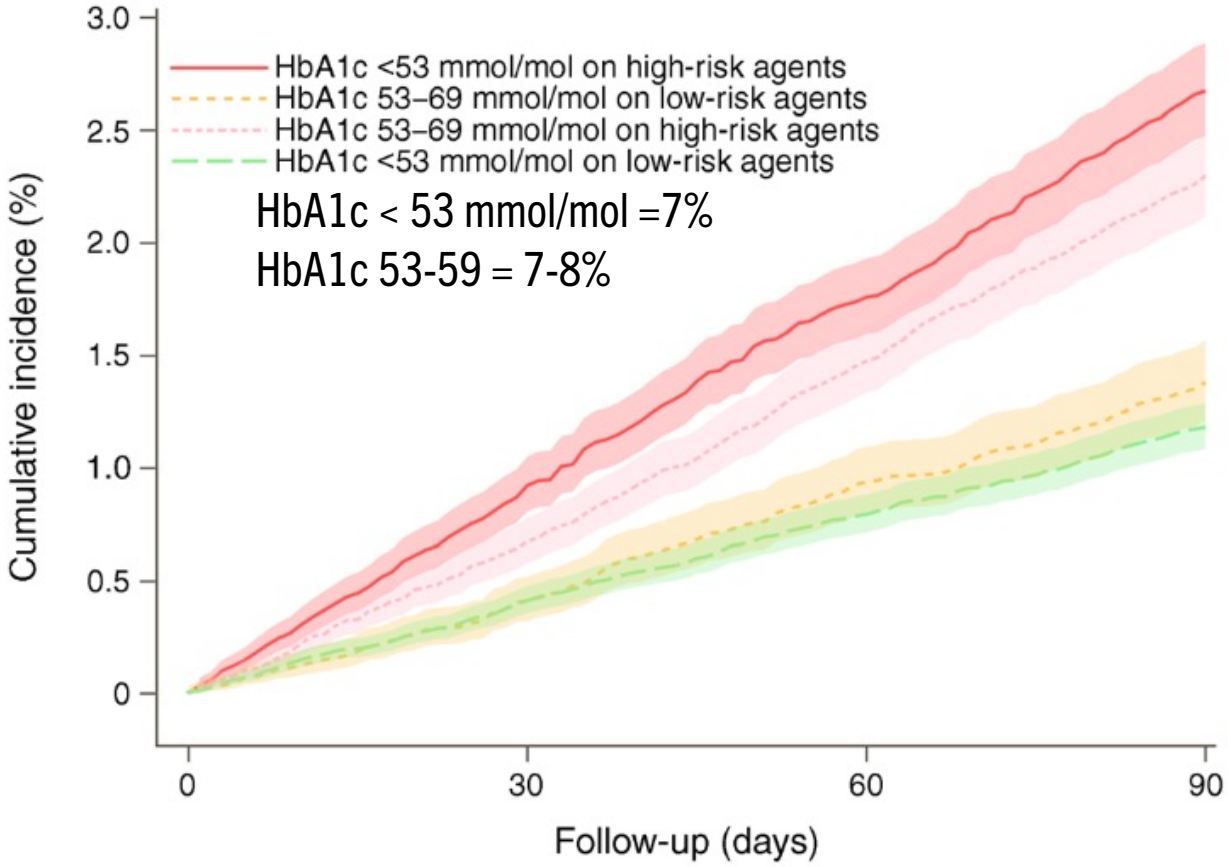


Fig. 1 Crude cumulative incidence of the composite of diabetes-related ED visit/hospitalisation or all-cause death over 90 days among older adults with diabetes. The shaded regions indicate the upper and lower 95% CI

Adults > 75 years treated with high-risk agents (insulin, sulfonylureas) had the greatest risk of ED visit/hospitalization for hypoglycemia

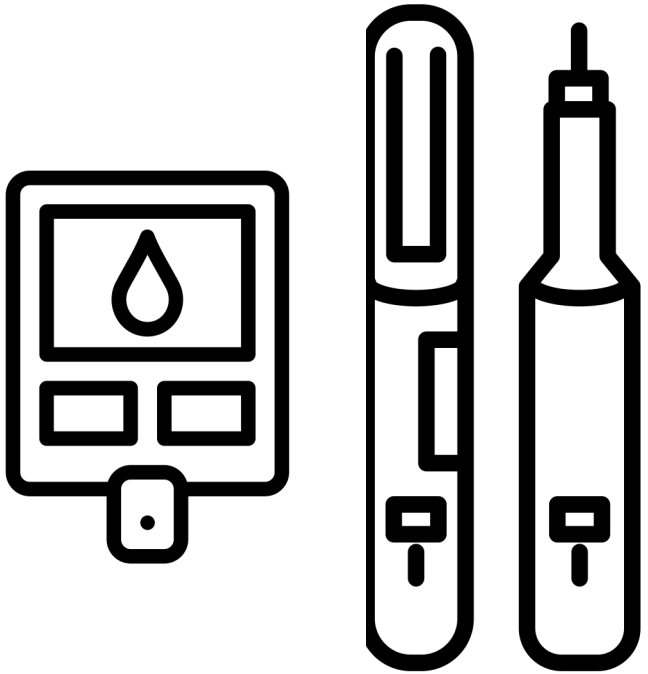
- Those with HbA1c < 7% had the highest risk

Lega IC et al. Diabetologia 2021;64:1093

DIAL

Sliding Scale – The Risks

- ↑ risk hypoglycemia without improvement in hyperglycemia management
  - Treats hyperglycemia **after** it has happened
    - Treatment goal should be to *avoid* hyperglycemia
  - Leads to **more hypoglycemia** + fluctuating BG levels
- Risk for dosing errors
- Complexity when dosing for accurate food intake



Pandya N et al. J Am Geriatr Soc 2013;61:2103
Van Brunt K et al. J Am Med Dir Assoc 2013;14:809

DIAL

Sliding Scales - Alternatives

- If insulin required, start with basal insulin alone
  - To start: once daily basal, long-acting added + continue oral glucose lowering meds
    - Dose: 10 units or 0.2 u/kg in the morning, adjust weekly
    - Titrate dose as required

- If symptoms of hyperglycemia, can add prandial insulin

Key Points – Case 1

Don’t pursue stringent A1C targets for older adults with frailty in LTC homes

- Focus on avoiding hypoglycemia + symptomatic hyperglycemia

Avoid use of secretagogues due to high risk of hypoglycemia

Avoid use of insulin sliding scales

Next Steps – Case 1

- Eliminate episodes of low blood glucose
  - Discontinue gliclazide
- Reduce wide glucose excursions
  - May need dose of long-acting insulin once daily
- Focus on reducing hypoglycemia + symptomatic hyperglycemia
  - A1c < 8.5%

Case 2

- 78 F, recent readmission after hospitalization for ?stroke

Past Medical History

- DM, Parkinson's disease (ambulates with walker, frequent falls, incontinent), hypothyroidism

Diabetes Medications

- Prior to admission: metformin 500 mg bid (discontinued in hospital)
- Post discharge: sitagliptin (Januvia) 100 mg daily, empagliflozin (Jardiance) 25 mg once daily

Labs

- A1c prior to hospitalization 7.8% (normal Hb)
- eGFR > 55 mL/min/1.73m^2

Course in Hospital

- Experienced acute renal failure in the context of being kept NPO (metformin discontinued)
- Episodes of hyperglycemia (capillary glucose 10-14 mmol/L)
- Discharged back to LTC on sitagliptin and empagliflozin

Current Status

- Upon return to LTC, vulvar irritation and pruritus leading to decline in ambulation

DIAL

What clinical issues do you see?

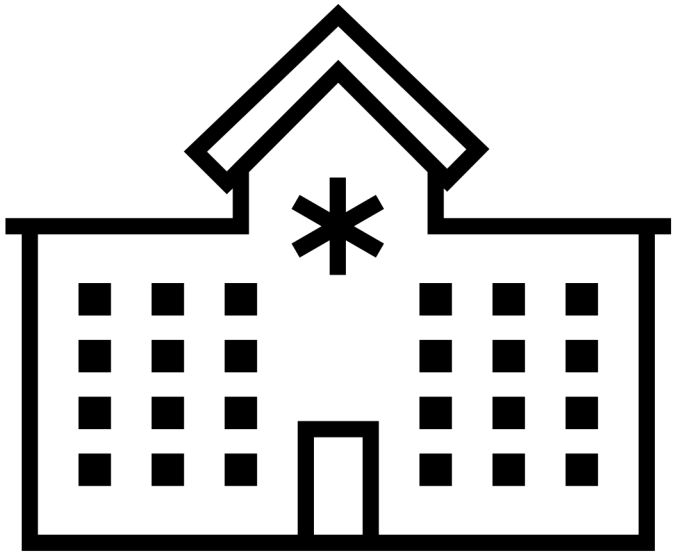
- Interpretation of hyperglycemia during hospitalization
- Role of SGLT2 inhibitor and DPP4 inhibitor in LTC residents
- Risks of metformin

What would you do in your practice?

Hyperglycemia and Hospitalization

- Why does it happen?
  - Acute illness creates physiological changes that can ↑ blood glucose
    - ↑ in circulating concentrations of stress hormones
    - therapeutic choices (e.g. glucocorticoid use)
  - Hyperglycemia, in turn, causes physiological changes that can exacerbate acute illness
    - ↓ immune function and increased oxidative stress.
  - Change in diet and routine

Hyperglycemia during hospitalization is common both for people with and without diabetes, often transient.



DIAL

Intensifying Diabetes Medication at Hospital Discharge can lead to Harm

- VA study
  - DM intensification after hospitalization associated with:
    - ↑ risk of hypoglycemia (HR 2.17) after 30 days
    - No difference in long term outcomes
- Ontario study
  - New insulin use at discharge associated with:
    - ↑ risk of mortality (HR 1.6)
    - ↑ risk of re-hospitalization (HR 1.2)

Andersen T et al. JAMA Netw Open;2021:4(10)
Lysy Z et al. J Gen Intern Med 2019;34:575

DIAL

Hyperglycemia and Hospitalization

- Elevations in glucose level during hospitalization are typically transient

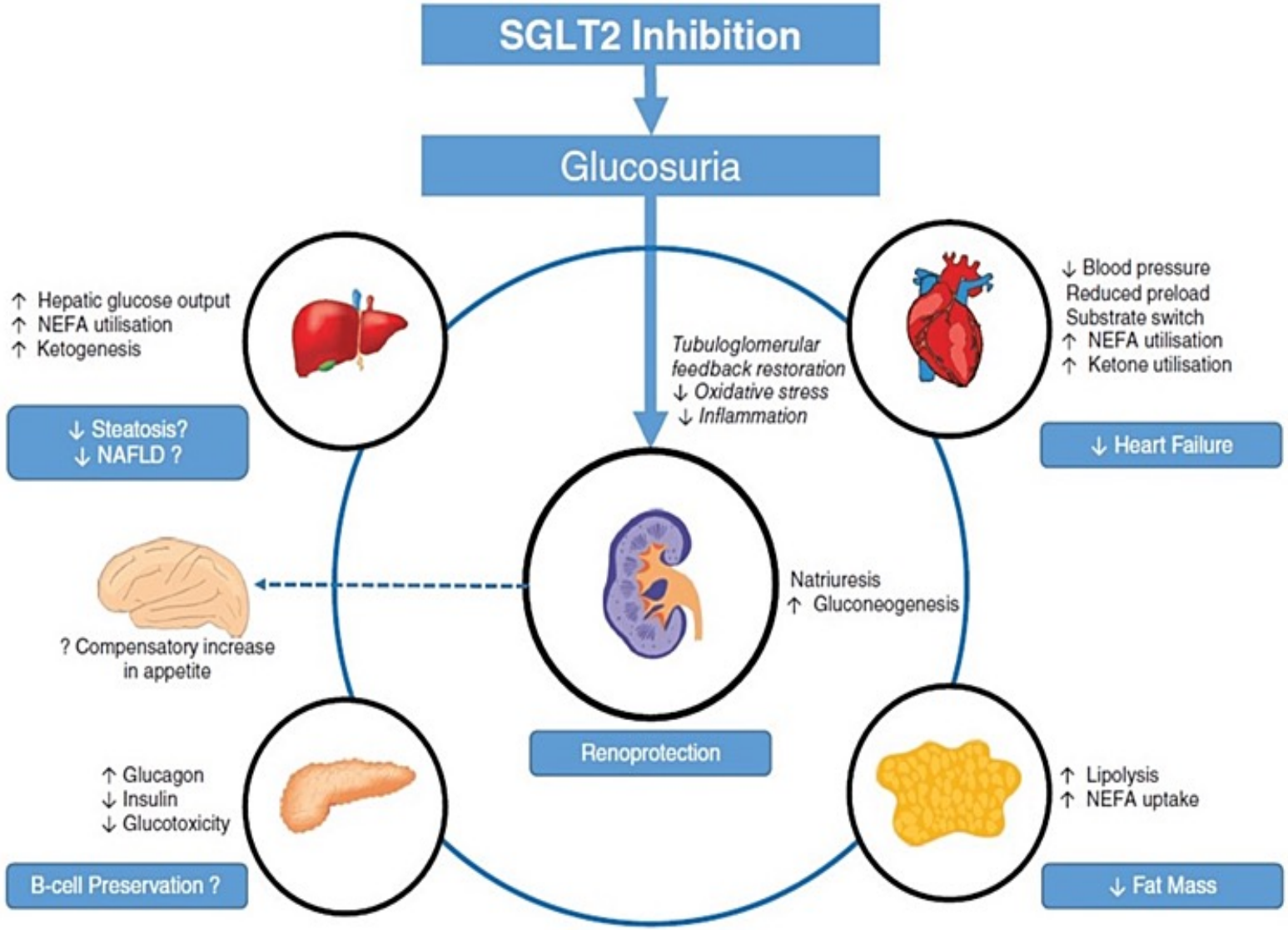
- Changing chronic diabetes medication as a response to levels during hospitalization may lead to hypoglycemia

- Carefully reassess need for new diabetes medication once resident has returned baseline medical status

DIAL

SGLT2 Inhibitors in Older Adults

- Effectively lower blood glucose independent of insulin action through urinary excretion of glucose
- Cardiovascular and renal benefits
  - BUT limited number of participants > 70 years in studies, and participants lacked comorbidities
- Glucose lowering lessened when eGFR < 60 mL/min

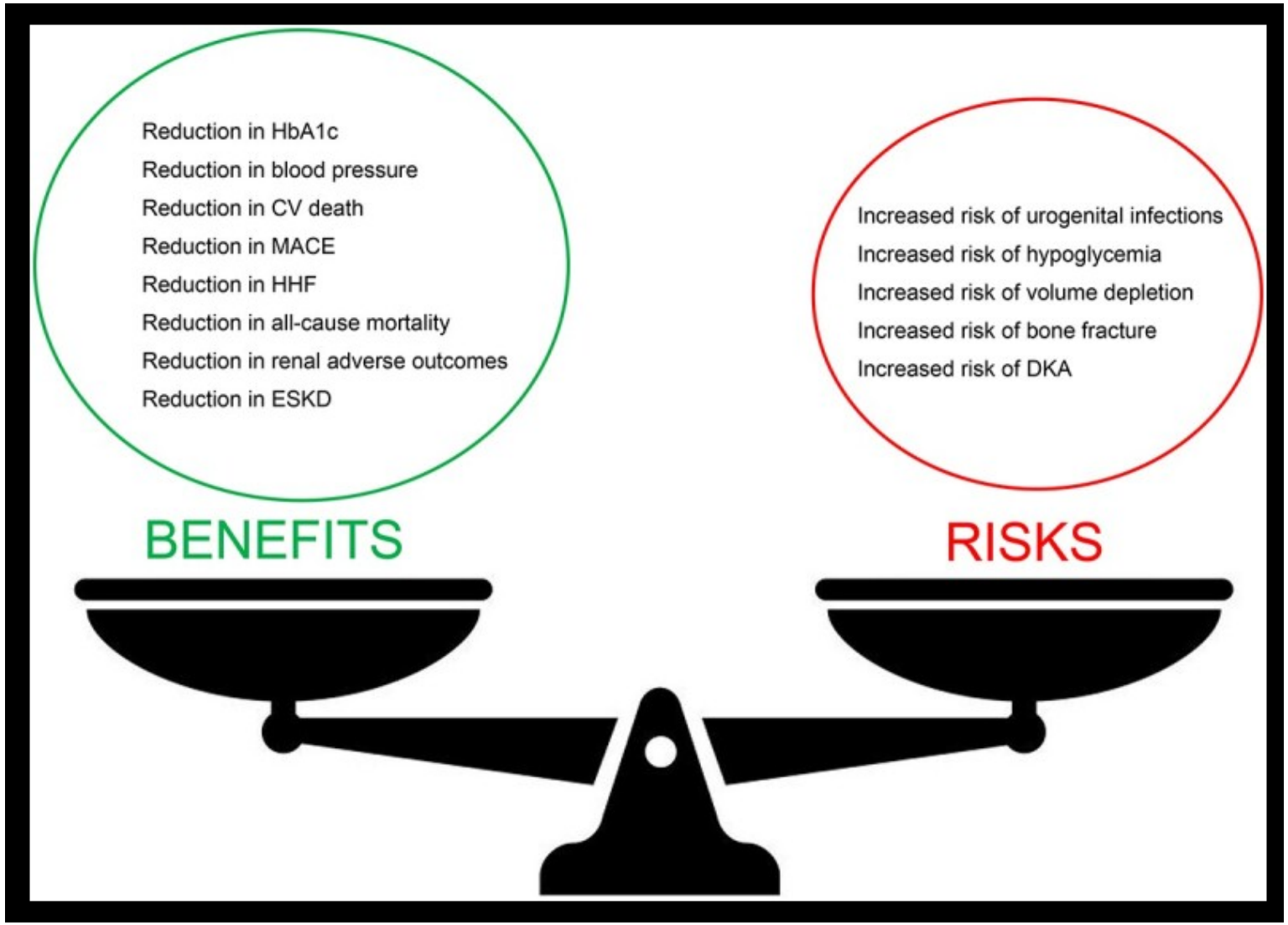


Jasleen B et al. Cureus 15(1): e33939. doi:10.7759/cureus.33939

SGLT2 Inhibitors in Older Adults with Frailty

EMPA-REG
Mean age 63
72% men
9 % (n=652) > 75 years

DECLARE
Mean age 63
62% men
6.3 % (n=1096) > 75 years



Few participants in older age groups leading to wide confidence intervals

Evans et al. Age Ageing 2022;51(10).

SGLT2-inhibitors in LTC

- High baseline risk of urogenital infections, volume depletion, falls, frailty
  - 'minor' side effect of genital mycotic infection can have significant impact in LTC population
  - Risk of genital infection higher in women
- Discontinuation rates twice as high in frail, older adults > 80 years
- Likelihood of cardiovascular and renal benefit may be lower but is unknown
- **No studies evaluating efficacy or safety in LTC residents with frailty**

Lega IC et al. Diabetes Obes Metab 2019;21:2394
Koufakis T et al. Expert Rev Clin Pharmacol 2023;16:771

DIAL

Using SGLT2-i in Older Adults

Consider monitoring

- BP after initiation
- renal function ~ 1 month after initiation

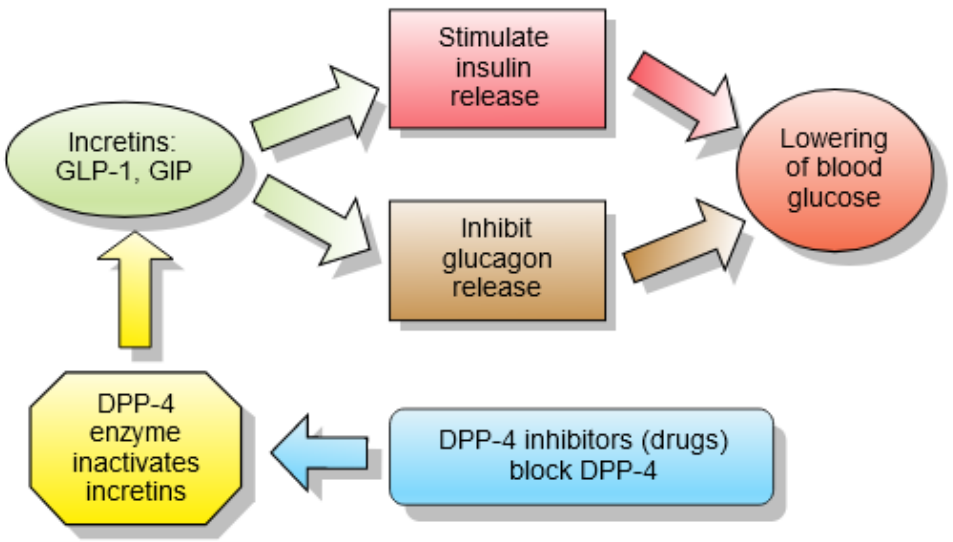
ACEI/ARB: ↑ risk hyperkalemia when used in combination

Diuretic: Consider ↓ dose or discontinuing due to risk of hypotension

Insulin or Sulfonylurea: May contribute to hypoglycemia if insulin or sulfonylurea dose not ↓

Renal Function: Discontinue empagliflozin and canagliflozin when eGFR <30; ertugliflozin, dapagliflozin when eGFR < 45

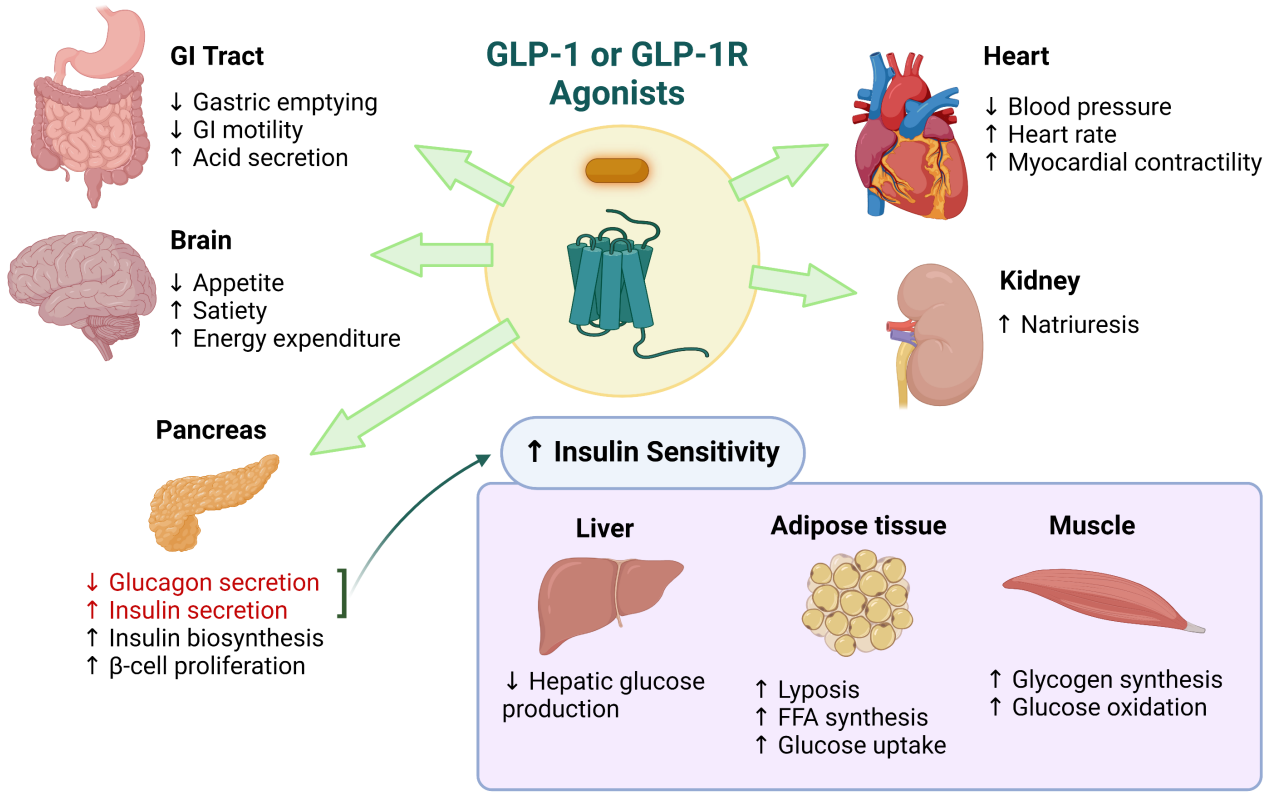
Dipeptidyl peptidase-4 (DPP4) inhibitors



- Modest glucose lowering (0.5-1%)
- Minimal side effects and contraindications, but also minimal benefit beyond glucose lowering
- ? Neuroprotective effect
- Well tolerated
- No data in older adults with frailty

Schott G et al. BMC Geriatr 2017;17:226

GLP-1 Agonists



Injectable, weekly medication

- Benefits: glucose lowering, weight loss, cardiovascular and renal protection
- Side effects:
  - Significant GI side effects (nausea, vomiting, diarrhea) when starting therapy
  - Appetite suppression
  - Muscle loss
  - Risk of pancreatitis

GLP1 Agonists in Older Adults

- Weight loss and appetite suppression need to be carefully considered against possible benefits
- Avoid for individuals with a history of pancreatitis or medullary thyroid cancer
- Unknown whether cardiovascular benefits exist for older adults with frailty
- No studies using GLP1 agonists in LTC population

Metformin in Older Adults

- Shown to ↓ all cause mortality in adults with T2DM
  - not specifically older adults
- Not cause hypoglycemia, weight neutral, inexpensive, reduces weight gain from insulin + ↓ insulin requirements up to 20%
- Guidelines say to avoid if CLcr < 30 mL/min
  - sometimes used cautiously with stable function CLcr 15-30mL/min

DIAL

Metformin and Lactic Acidosis

- Metformin-induced lactic acidosis is rare (~9 cases/100 000 patient years)

- Consider **holding** metformin in those experiencing risk factors for lactic acidosis:
  - Acute heart failure
  - Acute renal injury (e.g., use of contrast media)
  - Acute hepatic dysfunction
  - Respiratory failure
  - Sepsis
  - Hypovolemia/dehydration

DeFronzo R et al. Metab 2016;65:20

Key Points – Case 2

Hyperglycemia is common during hospitalization and may be transient

SGLT2i associated with important side effects like mycotic genital infections

- Significant impact on quality of life in older adults with frailty, especially common in women

Resident may not need additional diabetes medications + if acute renal failure now resolved, could return to pre-hospital regimen

Next Steps - Case 2

- Stop SGLT2 inhibitor because significant GU side effects
- Now that acute renal failure has resolved, likely safe to resume metformin
- Unclear benefit of sitagliptin given pre-hospitalization A1c
- Don't target aggressive glycemic targets

Case 3

- 85 F, BMI 20, resident x 2 years

Past Medical History

- History of mixed dementia, BPSD with resistive behaviours, heart failure, osteoarthritis, diabetes

Clinical Course

- Functional decline over past year
  - Increased assistance for transfers, personal care and feed
  - Diet recently downgraded to minced texture
- Gradual weight loss over past year
- Current stage 1 coccygeal pressure ulcer

Diabetes Medications

- Glargine 20 units hs
- Insulin sliding scale pc meals due to inconsistent oral intake
  - If >50% of meal taken, give insulin by sliding scale:
    - BS 7-10, give 2 units,
    - >10-15, give 4 units,
    - >15-20, give 6 units,
    - > 20 call physician/NP

Labs

- A1c 7%
- eGFR 37mL/min/1.73m^2

Day	AC Breakfast	AC Lunch	AC Supper	HS
1	6	10	4	8
2	5	5	11	6
3	4	8	16	4

What clinical issues do you see?

Change in status due to progression of dementia

- Need to review goals of diabetes management
  - In context of advanced dementia + goals of care discussion with substitute decision maker

Challenge of glucose excursions

- Sliding scale insulin + inconsistent oral intake

Role/frequency of glucose testing

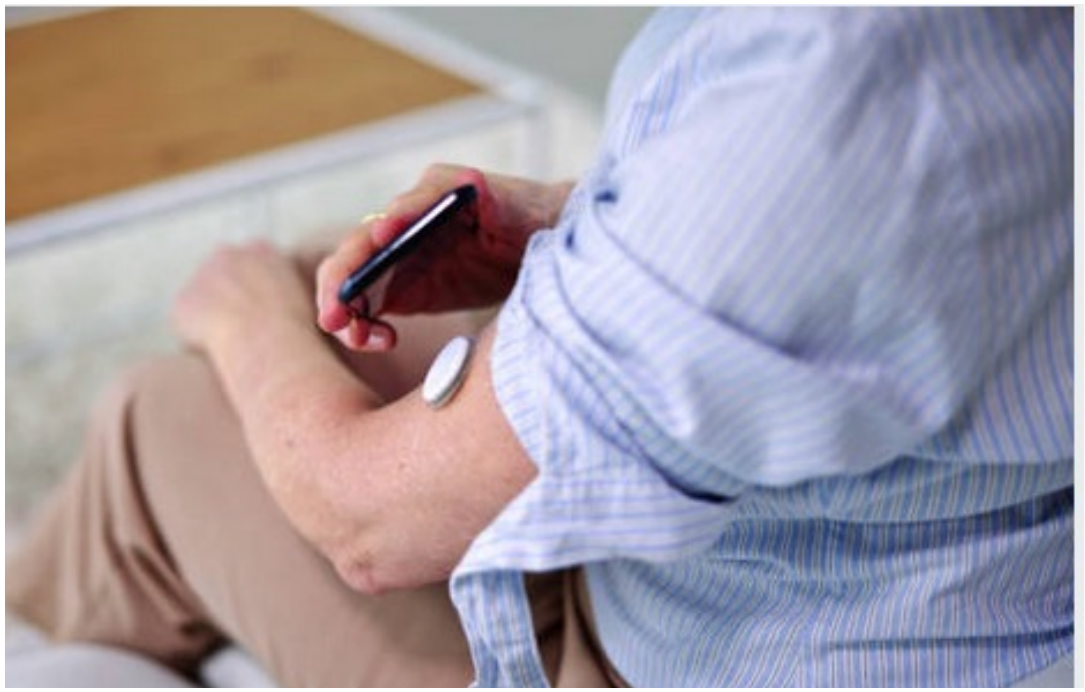
What would you do in your practice?

Targets (and Testing) for Residents with Advanced Dementia

- Priorities:
  - Minimize hypoglycemia + symptomatic hyperglycemia

- Blood glucose monitoring complements A1c for clinical decision making
  - Test only when necessary

Blood Glucose Monitoring Options



Role of Continuous Glucose Monitoring in LTC

- Role is evolving
  - Directed by resident's goals of care
  - Short-term use:
    - When concerned about symptoms of glycemic variability
    - Support treatment adjustments
- Tolerability?
- Generates so much data!
  - Responsibility to monitor and interpret if being collected

Detecting Symptomatic Hyperglycemia

Monitor for:

Frequent urination

Increased thirst

Generalized fatigue

Blurry vision

Headache

Recurrent infections

Poor wound healing

May be more challenging to identify in residents with more severe cognitive impairment

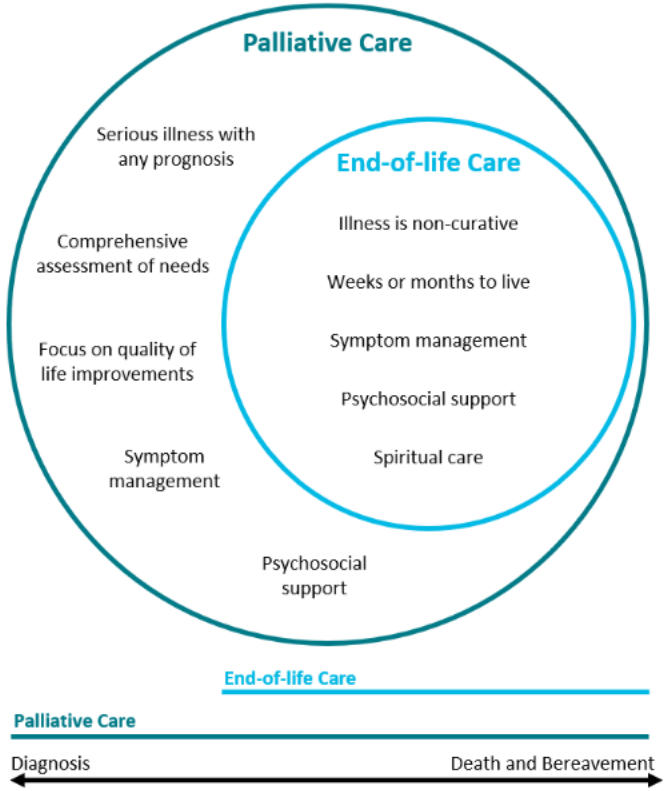
When a Resident has Variable Food Intake
(esp. if on high-risk agents)

- Engage interprofessional team including dietitian
- Administer long-acting insulin in the morning
- If prandial insulin still needed (i.e., glycemic targets not met):
  - Textbook:
    - Consider prandial administration after meals
      - To allow adjustment based on carbohydrate intake - ?feasible
  - Real World:
    - Consider whether able to discontinue prandial insulin
      - one meal at a time + monitor

DIAL

Older Adults Living with Frailty in LTC

- Early Palliative Approach to Care



- Goals of Care Discussions

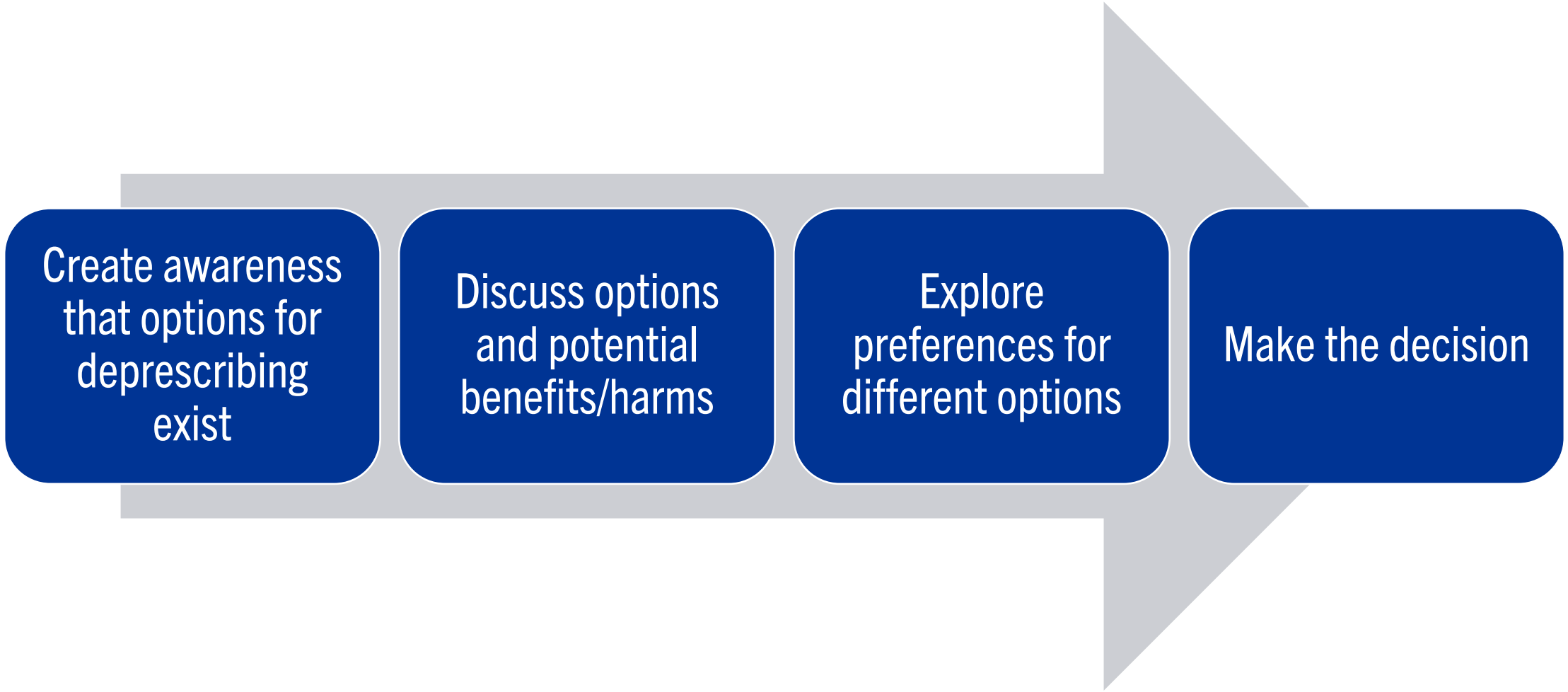
- Focus on avoidance of side effects

https://choosingwiselycanada.org/serious-illness-conversations/

Ontario Provincial Framework for Palliative Care

DIAL

Deprescribing through Shared Decision-Making



Jansen J et al. BMJ (Online) 2016;353

DIAL

Helpful Phrases to Engage People in Deprescribing

Instead of treating a drug's side effect with another drug, the better option is to see if we can reduce or stop the first drug.

Sometimes the risk of a medication outweigh the benefit.

Medications that made sense before, may not be as useful now.

People handle and respond to drugs differently as they get older.

People become more sensitive to side effects as they get older.

It's normal practice to reduce doses as people get older.

Compiled by Dr. Barbara Farrell and deprescribing.org; used with permission

Green AR et al. JAMA Netw Open 2021;4(4): e212633

DIAL

Deprescribing Antihyperglycemics

English

Français

deprescribing.org | Antihyperglycemics Deprescribing Algorithm

August 2018

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)

Yes

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 < 12mmol/L may be acceptable; at end-of life, BG < 15mmol/L may be acceptable) (good practice recommendation)

- 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)

Continue Antihyperglycemic(s)

Still at risk? → No

Yes

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) or other adverse effects (good practice recommendation)
- **Switch to an agent**
  - with lower risk of hypoglycemia (e.g. switch from glyburide to gliclazide or non-sulfonylurea; change NPH or mixed insulin to detemir or glargine insulin to reduce nocturnal hypoglycemia; strong recommendation from systematic review and GRADE approach)
- **Reduce doses**
  - of renally eliminated antihyperglycemics (e.g. metformin, sitagliptin; good practice recommendation) – 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

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 (Fr).

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Deprescribing Antihyperglycemics

English

Français

deprescribing.org | Antihyperglycemics Deprescribing Notes

August 2018

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 lower risk with gliclazide)
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%)
  - 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 (12-15 mmol/L) or symptomatic hyperglycemia returns

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Monitoring Antihyperglycemic Deprescribing Efforts

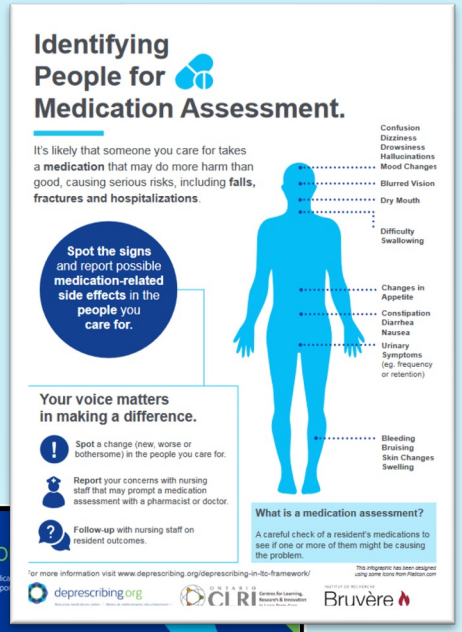
- Slow and steady with medication changes e.g., weekly or less frequent
- Monitor for symptomatic hyperglycemia
  - Low threshold for glucose checks if concerns about symptoms
  - If symptoms persist, ↑ dose or restart medication as needed
- Consider repeat A1c in 3 months?
  - Depends on resident status

DIAL

Deprescribing in LTC

Co-designing resources together with LTC stakeholders

SCAN ME



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DIAL

Key Points – Case 3

Engage families/residents/SDM in palliative approach to care + goals of care

Set appropriate glycemic targets

- Avoid hypoglycemia + symptomatic hyperglycemia

Incorporate deprescribing/deintensification approach

Next Steps – Case 3

- Set up family meeting to review goals of care
  - Discuss goals of diabetes management given frailty + cognitive impairment
- Change glargine to am administration
- Discontinue sliding scale
- ↓ frequency of CBG monitoring

DIAL Study

AIM

Achieve the most beneficial diabetes treatment for older LTC residents

APPROACH

Partner with LTC clinicians, teams, residents, caregivers to develop + implement practical + sustainable strategies to address diabetes overtreatment

CIHR IRSC
Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

Contact us:
diabetesinLTC@utoronto.ca

DIAL

Summary

Don't target stringent A1c values in older adults living with frailty in LTC homes. Instead use modified glycemic goals that focus on avoiding hypoglycemia and symptomatic hyperglycemia.

Don’t use sliding scale insulin for older adults living with frailty in LTC homes.

Talk about deintensification with residents and families early and often.

DIAL

Resources

- American Diabetes Association Guidelines (Chapter on Older Adults)
  - Diabetes Care 2022;45(Suppl 1): S195
  - Doi: 10.2337/dc22-S013
- RxFiles www.rxfiles.ca
  - Perspectives on glycemic targets
  - Geri-RxFiles "Diabetes in Older Adults"
- Antihyperglycemic Deprescribing Guidelines
  - Farrell B et al. Can Fam Physician 2017;63:832
    - https://deprescribing.org/resources/deprescribing-guidelines-algorithms/

DIAL