

# Hypoglycemia and Glucagon Therapy: Comparing Older and Novel Treatments

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## INTRODUCTION

In older adults, the need for maintaining therapeutic hemoglobin A1C must be balanced with possible hypoglycemia. Clinicians must be cognizant of neurocognitive function and decline in this population and recognize medication therapy that could contribute to this decline. Traditional glucagon therapies, including the Glucagon Emergency Kit and the GucaGen Hypokit, have been available for over three decades. Novel Glucagon therapies, including Baqsimi Nasal Powder, the Gvoke HypoPen, and Zegalogue, represent new options for administering glucagon. Providers should counsel patients with diabetes on the role and use of glucagon therapy as part of the overall therapeutic plan.

## PURPOSE

The purpose of this poster is to discuss the impact of hypoglycemia when maintaining therapeutic hemoglobin A1C levels, especially in older adults, and to compare the use of medications delivering glucagon therapy.

## OVERVIEW

What is the cost of aggressively lowering hemoglobin A1C, especially in older patients?

- Increased risk of severe hypoglycemia
- Patients may fear hypoglycemia and fear/stress can become a barrier
- Heavier treatment burden
- Higher costs of care
- Increased prevalence of polypharmacy



What is the link between hypoglycemia and cognitive function?

- Poor glycemic control is associated with cognitive functional decline
- Cognitive decline increases risk of hypoglycemia and severe hypoglycemia is linked to increased risk of dementia

Medications to watch: sulfonylureas, insulin, thiazolidinediones, and metformin

What are the three levels of hypoglycemia?

Level 1 Glucose concentration 54 mg/dL – 69 mg/dL

Level 2 Glucose concentration < 54 mg/dL

Level 3 Severe event characterized by altered mental and/or physical status requiring assistance

## TREATMENT GOALS IN OLDER ADULTS

Otherwise healthy w/ few co-existing chronic illnesses and good cognitive function

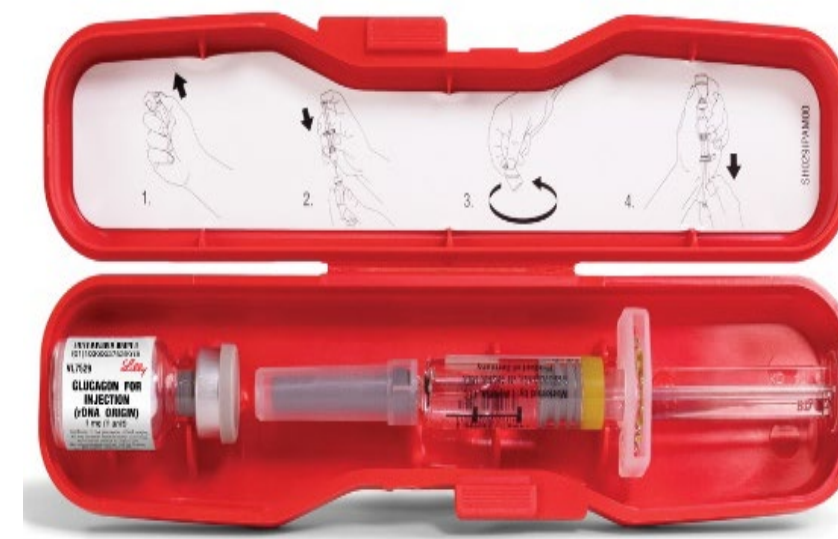
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Less stringent goals for those with cognitive impairment and coexisting chronic illnesses

< 8%

Reduce hyperglycemia w/complications

## TRADITIONAL GLUCAGON KITS



Glucagon Emergency Kit	Glucagen Hypokit
FDA approved – 1988	FDA approved – 1988
Drug Class/MOA – structurally identical to the 29-amino acid human glucagon	Drug Class/MOA – structurally identical to the 29-amino acid human glucagon
Indication – severe hypoglycemia, no age limitations	Indication – severe hypoglycemia, no age limitations

Advantages

- Possibly avoid an ED visit
- Relatively quick to regain responsiveness
- No age restrictions

Disadvantages

- Complicated to perform
- Must be taught to individuals other than the person with diabetes
- Several steps needed
- Undertaught and underutilized
- Brand formulations still as expensive as newer treatments

## NOVEL GLUCAGON TREATMENTS



Baqsimi Nasal Powder	Gvoke HypoPen and Pre-filled Syringe	Zegalogue (dasiglucagon)
FDA approved – 2019	FDA approved – 2019	FDA approved - 2021
Drug Class/MOA – structurally identical to glucagon but uses a promoter	Drug Class/MOA – structurally identical to glucagon but dissolved in the solvent dimethyl sulfoxide	Drug Class/MOA – structurally similar to glucagon but 7 substituted amino acids
Indication – severe hypoglycemia in those 4 years of age and above	Indication – severe hypoglycemia in those 2 years of age and above	Indication – severe hypoglycemia in those 6 years of age and above

Advantages

- Possibly easier to use and carry vs. traditional kits
- Comparative studies show equal clinical efficacy vs. traditional kits
- More options; may be perceived as easier to use

Disadvantages

- Must be taught to individuals other than the person with diabetes
- Age restrictions

## CONCLUSIONS

- While goal attainment of A1C is ideal, there is a cost associated with hypoglycemic events, especially in older patients.
- Traditionally available glucagon formulations have been difficult to implement during level 3 hypoglycemic episodes.
- Novel glucagon treatments may offer an easier option, but providers should still discuss treatment of hypoglycemia as part of the overall therapeutic plan.

## DISCLOSURES

The author has nothing to disclose concerning possible financial or personal relationships with commercial entities.