

LTC Pharmacy



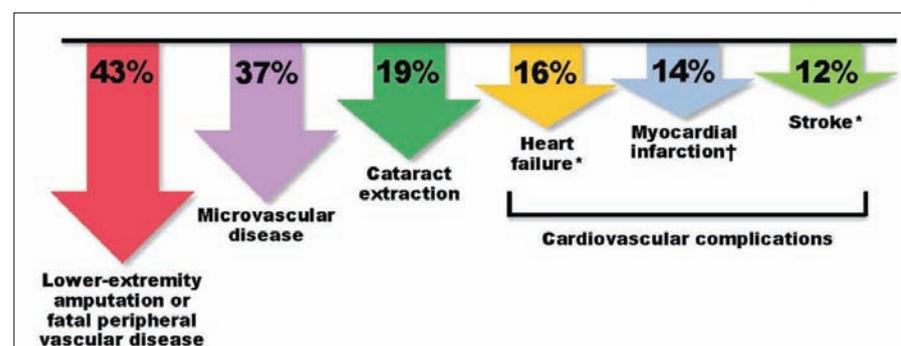
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Teamwork to Improve Medication Safety: Hypoglycemics

Diabetes in adults 65 and older is estimated to be 10.9 million (26.9%) within the U.S. population. Furthermore, the overall prevalence in nursing homes residents from 1995–2004 has increased from 16% to 23%. Increasing trends in older adults are concerning because they are at greater risk for complications and hypoglycemia. They are also at higher risk for polypharmacy, functional disabilities, and geriatric syndromes, such as cognitive impairment, urinary incontinence, and falls. Medications used to treat diabetes have rapidly expanded, as has attention to these high-risk medications. This article highlights the high-risk medications and what consultant pharmacists can do to improve treatment of diabetes for older adults.

Diabetes Care Delivery

When working with older adults who have diabetes in the PA/LTC setting, it is critical to individualize the goals for glycemic control based on their health, goals of care, patient preferences and values, life expectancy, and anticipated benefits of treatment. The updated AMDA Clinical Practice Guideline on Diabetes Management of PA/LTC is an outstanding resource to assist with improving the delivery of this care. Diabetic patients should have goals for blood pressure, cholesterol, screenings for diabetic complications, and diabetic treatment goals for blood sugar. Control of HgA1C is essential in preventing diabetic complications. For every 1% decrease in HgA1C, the following reductions in complications occur:



UKPDS: 1% A1C Decrease and Reduced Risk of Complications

* $P < 0.05$; † $P < 0.0001$. UKPDS = United Kingdom Prospective Diabetes Study. Stratton IM, et al. *BMJ* 2000;321(7258):405–12.

Choosing the right medication to treat diabetes depends on a multifactorial evaluation. Factors to consider include the medications' effect on weight, the amount of glucose lowering, the degree to which HgA1C must be lowered to reach the therapeutic goal, the cost of medication, the patient's renal function, the risk of complications, and the

potential side effects. The list of diabetic drug classes at the bottom of the page illustrates some of these factors.

Consultant pharmacists working with older adults and their care providers can help develop strategies and raise awareness of the signs, symptoms, and dangers of hypoglycemia. Of note, there are multiple signs and symptoms of hypoglycemia; some of these are more prevalent in the elderly, but someone with hypoglycemia may exhibit any of these signs/symptoms. More prevalent in the elderly are irritability, confusion, weakness, dizziness, visual disturbances, behavioral changes, psychomotor aberrancies, and an increased potential for seizures and coma. These signs and symptoms start occurring as the blood sugar approaches and falls below 70 mg/dL; if not corrected, and the blood sugar continues to drop, other symptoms add to this cascade, including increasing confusion, sweating, tremors, palpitations, and somnolence. More severe symptoms can progress to seizures, unconsciousness, and coma.

Treatment for hypoglycemia is simple once the blood sugar is measured, e.g. less than 70 mg/dL: give 4 oz. orange juice, 3 or 4 glucose tabs, 1 tbsp. of honey or 1 tbsp. of sugar dissolved in water, or 4 oz. of non-diet soda. Wait 15 minutes and recheck blood sugar; if still low, repeat treatment and/or drink glass of milk, eat ½ peanut butter/jelly sandwich, cheese and apples, or another protein/sugar combination.

If blood sugar is very low, administer Glucagon per physician orders.

Each diabetic has individual variances; if a resident normally has high blood

optimal based on the patterns of blood glucose readings and their comorbidities (e.g., chronic kidney disease). Ongoing monitoring and changes to care plans are critical because adverse events secondary to hypoglycemia could lead to negative outcomes, including falls or decreases in day-to-day function. Most common causes of hypoglycemia are often related to diet (e.g., not eating enough, missing a meal, not eating well), fever, vomiting, diarrhea, or having insulin administered and then having to wait too long for meal. Pharmacists can help ensure that the proper medications are given at the optimal time, and that avoidance of potentially problematic medications in older adults, such as sliding scale insulin and glyburide, are incorporated into the plan of care. Short acting insulins (e.g., regular insulin, aspart, lispro) have the highest propensity for causing hypoglycemia, as they start acting quickly (in <15 minutes). It is important to note that when insulin is given before a meal, that the meal is served promptly.

We need coordinated teamwork with the entire health care team to prevent, recognize, and treat hypoglycemia. The CNAs and therapists are very important in recognizing hypoglycemic symptoms and notifying the nursing staff. Exercise can trigger hypoglycemia, especially if a meal is skipped or a small amount is eaten. Recognition of signs and symptoms and immediate treatment in the early stages of hypoglycemia are

necessary to prevent escalation to the more severe symptoms.

CMS Initiatives

Medications used to treat diabetes have been highlighted in the recent Survey & Certification Memo 15-47, issued July 17, 2015, are available at: www.cms.gov/Medicare/Provider-Enrollment-and-Certification/Survey-Certification/GenInfo/Downloads/Survey-and-Cert-Letter-15-47.pdf, through the Adverse Drug Events Trigger Tool. This tool, which is under public comment and review, will be used by surveyors and, indirectly, stakeholders to address the problem of adverse drug event identification and resolution in the PA/LTC setting.

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Medication Class	Decrease in HgA1C	Effect on Weight (lb)	Risk of Hypoglycemia	Dose Change Based on Renal Function
Insulin	>2.5	Gain 8.8–11	Yes	No
Inhaled insulin	1–2	Gain 2.2–4.4	Yes	No
Sulfonylureas (glipizide, glyburide, glimepiride)	1.6	Gain 3.5–5.7	Yes	Yes
Metformin	1.5	Lose 10.1–0.88	No	Yes
Meglitinides (nateglinide, repaglinide)	0.8–1.5	Gain 1.54–3.9	Yes	No
Thiazolidinediones (pioglitazone, rosiglitazone)	0.8–1.0	Gain 9.2–10.6	No	Yes
Alpha glucosidase inhibitors (acarbose, miglitol)	0.5–0.8	Neutral 0–0.44	No	No
DPP-IV inhibitors (alogliptin, linagliptin, sitagliptin, saxagliptin)	0.5–1.0	Neutral 0–0.88	No	Yes
GLP-1 agonists (exenatide, liraglutide, albiglutide, dulaglutide)	0.6–0.8	Lose 2.8–6.6	No	Yes
SLGT-2 inhibitors (canagliflozin, dapagliflozin, empagliflozin)	0.7–0.8	Lose 1.2–2.26	No	Yes