Topic: Diabetes and Older Persons
Microlearning Case-based Article for
Interprofessional (IP) Age-Friendly Healthcare

Case Scenario

Marian is a 67-year-old female with a 15-year history of type 2 diabetes and lives in the community with her spouse, who is retired. Marian is still working part time as a mechanical engineer. She has chronic kidney disease, hypertension, dyslipidemia, transient ischemic attack (TIA) without sequelae, known coronary artery disease with previous stenting, obesity, and non-painful peripheral neuropathy on multiple medications. She rarely checks fingerstick glucose. More recently, she has been experiencing falls as noted by her wife, one of which resulted in a wrist fracture. The patient has not self-reported any falls.

Learning Objectives (list only 2 as these are "microlearning" units)

- Understand screening for fall risk in a complex older adult with diabetes and heart disease
- Understand screening for polypharmacy in a complex older adult with diabetes and heart disease

Background

Type 2 diabetes in the U.S. is common, with 34 million people now diagnosed with diabetes, and approximately 90% of those are type 2 diabetes. It is expected that about 1/3 of the population will have diabetes by the year 2050. Over 1 million new cases are diagnosed annually, and there are racial, ethnic, and geographic disparities. There are In addition, 97 million people have prediabetes, and are at risk for conversion to type 2 diabetes. In adults, 4% of those aged 18-44 years of age have diabetes, 17% of those aged 45-64 years of age, and 27% of those aged 65 years or older (ADA 2024, CDC 2024). Macrovascular complications include stroke, heart disease, peripheral artery disease and microvascular complications include retinopathy, neuropathy, and chronic kidney disease. Blood glucose control, blood pressure control, and management of lipids are all key in preventing or slowing complications of diabetes(ADA 2024).

These potential complications are more common in older adults with diabetes, as are other co-existing conditions of functional disability, muscle wasting, cognitive impairment, depression, falls, and premature death. However, the diabetes population in older adults is heterogenous with various degrees of functional disability and complications. As well, depression, frailty, falls, and polypharmacy are also more common in older adults with diabetes. Impaired hypoglycemia awareness may also be a common feature in older adults with diabetes. Persons with type 1 diabetes are also living longer lives, and have special treatment needs such as the use of technology in the form of automated insulin delivery insulin pumps and continuous glucose monitors (ADA 2024).

Evaluation

This person with diabetes has multiple risk factors for falls. Factors can include hypoglycemia, orthostatic hypotension, TIA, coronary artery disease, frailty, cognitive impairment, neuropathy and other neurologic disorders, and infection, among others. An example of a fall screening program is Stopping Elderly Accidents, Deaths, and Injuries (STEADI). An interprofessional team, starting with the primary care provider, is best for diabetes care and related issues, and all adults with diabetes 65 years old and older should be screened annual for cognitive impairment and depression. In this case, the team may also include a diabetes care and education specialist (CDCES), dietitian, physical therapy, occupational therapy, pharmacist, cardiology, nephrology, ophthalmology, and others. Marian had an echocardiogram with carotid ultrasound which revealed mild diastolic dysfunction and less than 50% carotid obstruction bilaterally, with diagnoses of mild orthostatic hypotension, peripheral neuropathy, and loss of muscle mass. In addition, 10 days of continuous glucose monitoring revealed almost daily undetected prolonged hypoglycemia episodes with values <70 mg/dL. A complete medication review with polypharmacy screening (i.e., STOPP and START) noted 3 different antihypertensives, and high dose sulfonylurea combined with metformin. This person with diabetes was not on an SGLT-2 inhibitor or GLP-1 receptor agonist as recommended for those with cardiovascular disease and chronic kidney disease. Marian was on appropriately dosed statin for an adult with diabetes and cardiovascular disease. Lab values showed a GFR of 44, A1C of 7.6%, and LDL cholesterol of 60. She did not have significant cognitive impairment or depression on in-office screening by her primary care provider (ADA 2024, National Institute on Aging 2023). Her BMI is 36 kg/m2.

(Insert information into this table for evidence-based assessment tools)

Assessment tool	Description	Citation
STEADI	Fall risk assessment	Centers for Disease Control and Prevention. STEADI - Older Adult Fall Prevention. https://www.cdc.gov/steadi/index.html (accessed 8/13/24)
STOPP/START	Polypharmacy assessment	O'Mahony D, Cherubini A, Guiteras AR, et al. STOPP/START criteria for potentially inappropriate prescribing in older people: version 3. Eur Geriatr Med. 2023;14(4):625-632
Mini Mental Status	Cognitive Assessment	Folstein MF, Folstein SE, McHugh PR. "Mini-mental state." A practical method for grading the cognitive state of patients for the clinician. J Psychiatr Res 1975;12:189–198
Mini Cog	Cognitive Assessment	Borson S, Scanlan JM, Chen P, Ganguli M. The Mini-Cog as a screen for dementia: validation in a population-based sample. J Am Geriatr Soc 2003;51:1451–1454

Montreal Cognitive Assessment	Cognitive Assessment	Nasreddine ZS, Phillips NA, Bédirian V, et al. The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. J Am Geriatr Soc 2005;53:695–699
PHQ-9	Depression Screening	American Psychological Association.https://www.apa.org/depression-guideline/patient-health-questionnaire.pdf (accessed 8/13/24)
Diabetes Distress Scale	Diabetes Distress Screening	Polonsky WH, Fisher L, et al. Assessing psychosocial distress in diabetes development of the Diabetes Distress Scale. Diabetes Care. 2005;28(3):626-31

Intervention/Treatment

In older persons with diabetes, less aggressive goals may be balanced with issues such as falls, orthostatic hypotension, and hypoglycemia, i.e., blood pressure target of <140/<90, A1C <8, while avoiding hyperglycemia, which may contribute to dehydration, worsen fall risk, and lead to cognitive impairment with other diabetes complications. With three antihypertensives, Marian stayed on her metoprolol and angiotensin receptor blocker (ARB) as indicated for her CKD and CVD, but her diuretic was stopped as recommended by a pharmacist. In addition, her metoprolol was moved to bedtime dosing. The sulfonylurea was stopped to avoid hypoglycemia, and after consideration, she was started on a low dose GLP-1 receptor agonist combined with metformin which has a very low likelihood of hypoglycemia and may benefit those with obesity for weight loss, with a careful eye on maintaining muscle mass. GFR is sufficient for the use of these medications. The pharmacist also recommended daily medication packages to avoid any dosing mistakes at home. Marian saw a CDCES to learn injection technique for the once weekly medication, appropriate fingerstick glucose monitoring and consideration for continuous glucose monitroing, and other general diabetes education and dietitian for appropriate nutritional counseling with a focus on maintaining muscle mass and lowering body mass index (BMI) with multimodal teaching to best benefit Marian and not overwhelm her with too much information. A physical therapist was also consulted for generalized strength and conditioning.

Case Scenario Resolution

In Marian's case an interprofessional approach to the common problem of multifactorial falls in complex older adults with diabetes. A reasonable glycemic goal of an A1C of <8 with no hypoglycemia was achieved, with no hypoglycemia noted on follow-up 10-day continuous glucose monitoring. As well, there was resolution of her orthostatic hypotension with a target blood pressure of <140/<90. Regular follow-up with the CDCES and dietitian was scheduled, and the pharmacist was consulted for routine medication reconciliation.

Although Marian had stopped her low dose aspirin due to bruising from falls, after careful consideration of benefits and risks, it was restarted due to her diagnosis of cardiovascular

disease. The current recommended LDL target for adults with established cardiovascular disease is <55 mg/dL. No additional action was recommended beyond dietary counseling to avoid polypharmacy.

A cane was recommended by the physical therapist for ambulation to further reduce fall risk. Falls ceased with these cautionary measures, resolution of hypoglycemia, and resolution of orthostatic hypotension. The OT and PT were consulted for further home evaluation. Removal of some rugs, change in furniture layout, and handrails in the bathroom were recommended.

Summary

Marian's wife was very involved in the changes to Marian's care, support important for success in achieving goals and desirable outcomes for complex older adult persons with diabetes. The interprofessional team, with careful consideration to individual factors (i.e, health literacy, health numeracy, presence of cognitive impairment or depression, learning style, other co-existing conditions or factors). Appropriate consult of members of the interprofessional team improved Marian's quality of life and improved her personal safety without compromising her overall team-based care.

Marian was placed on a quarterly schedule with her primary care provider for follow-up.

References

1. American Diabetes Association Professional Practice Committee. 13. Older Adults: Standards of Care in Diabetes—2024. Diabetes Care 2024;47(Supplement_1):S244–S257.
2. Centers for Disease Control and Prevention. National Diabetes Statistics Report May 15, 2024. (accessed 8/14/24)

Microlearning Article Reference

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