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Duration of diabetes and advancing age independently predict diabetes complications, risk of death

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The duration of diabetes and advancing age independently predict diabetes severity and risk of death in older adults with type 2 diabetes according to a study by the Kaiser Permanente Division of Research and the University of Chicago currently published in *JAMA Internal Medicine*.

In the study led by Kaiser Permanente and the University of Chicago, researchers investigated contemporary rates of diabetes complications and risk of death then contrasted them across categories of age and duration of diabetes. More than 72,000 subjects aged 60 or older with type 2 diabetes were drawn from the Kaiser Permanente Northern California Diabetes Registry.

"The need to individualize care for older patients with diabetes is widely accepted. However the current approaches do not adequately account for risk differences by age or duration," said senior author Andrew J. Karter, PhD, a senior research scientist with the Kaiser Permanente Division of Research. "For example, the risk of hypoglycemia rose markedly and independently with advancing age and duration of diabetes. This finding is notable because hypoglycemia is known to be caused by the treatment for diabetes. It concerns us that one of the most common negative outcomes in diabetes is a side effect of treatment."

The researchers assessed acute hyperglycemic (high blood sugar) and

hypoglycemic (low blood sugar) events; microvascular complications such as end-stage kidney disease, diseases of blood vessels outside the heart and brain, lower extremity amputation, and advanced eye disease; cardiovascular complications such as coronary artery disease, cerebrovascular disease or stroke, and congestive heart failure; and all causes of death related to diabetes.

For a given age group, rates of each outcome, particularly hypoglycemia and microvascular complications, increased dramatically with longer duration. However, for a given duration of diabetes, rates of hypoglycemia, cardiovascular complications, and mortality increased steeply with advancing age, while rates of microvascular complications remained stable or declined.

"Many older patients are living longer with their diabetes, and longer duration of diabetes is associated with more complications and more difficulty with maintaining glycemic control," said lead author Elbert S. Huang, MD MPH, of the University of Chicago. "Understanding the contemporary clinical course of diabetes in older patients is the critical first step needed to individualize and prioritize care, and target support for future research efforts."

The researchers say these findings suggest the need for increased clinical and research focus on reducing and understanding the incidence of hypoglycemia for older adults with diabetes. For policymakers, the study provides important data that may be used for projecting health care expenditures for a large and growing segment of the Medicare population. More importantly, the data from this study may inform the design and scope of public policy interventions that meet the unique needs of those who live with the disease.

The researchers stressed that prior studies of older patients did not reflect the influence of recent changes in clinical practice or

systematically examine how the course of diabetes differs independently by age and duration of diabetes. These variables have been proposed as two key potential guides to the individualization of care goals and treatments.

This research is part of Kaiser Permanente's body of work focused on better understanding diabetes. Earlier this year, Kaiser Permanente researchers found that patients with diabetes who take certain types of medications to lower their blood sugar sometimes experience severe low blood-sugar levels, whether or not their diabetes is poorly or well controlled.

Provided by Kaiser Permanente

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