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Glucose Control in Type 2 Diabetes: Review of Cardiovascular Outcomes

Intensive control led to fewer nonfatal MIs but no change in 5-year all-cause mortality.

Because recent reports have raised questions about the benefits and risks of intensive control of glucose in patients with type 2 diabetes ([JW Gen Med Jul 30 2009](#)), investigators conducted a systematic review that was focused on cardiovascular disease (CVD; i.e., coronary heart disease, stroke, and peripheral artery disease) outcomes.

In pooled analyses of data from five studies that each involved >500 adults (treatment duration, 3–11 years), intensive glucose control lowered risk for CVD (relative risk, 0.90; 95% confidence interval, 0.83–0.98; 15 fewer events per 1000 patients during 5 years) and coronary heart disease specifically (RR, 0.89; 95% CI, 0.81–0.96; 11 fewer events per 1000 patients during 5 years). No significant differences were noted for stroke, heart failure, CVD-related mortality, or all-cause mortality. Intensive glucose control prevented nonfatal myocardial infarction (RR, 0.84; 95% CI, 0.75–0.94) but not fatal MI, nonfatal stroke, fatal stroke, or peripheral artery disease. Intensive glucose control doubled the relative risk for severe hypoglycemia — an absolute excess of 39 events per 1000 patients during 5 years.

Comment: This systematic review confirms data presented in several recent reviews of intensive glucose control in patients with type 2 diabetes — nonfatal MI is less common with intensive control, other outcomes are not affected significantly, and substantial risk for severe hypoglycemia is incurred. This paper also provides useful information about absolute risks for different outcomes. Like others, these authors recommend lifestyle modification, "glucose control that minimizes hypoglycemia," blood pressure control, and lipid lowering to curtail cardiovascular risk in patients with type 2 diabetes.

— [Richard Saitz, MD, MPH, FACP, FASAM](#)

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Kelly TN et al. Systematic review: Glucose control and cardiovascular disease in type 2 diabetes. *Ann Intern Med* 2009 Sep 15; 151:394.