

Glycemic control and macrovascular disease in types 1 and 2 diabetes mellitus: Meta-analysis of randomized trials.

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BACKGROUND: Uncertainty persists concerning the effect of improved long-term glycemic control on macrovascular disease in diabetes mellitus (DM). **METHODS:** We performed a systematic review and meta-analysis of randomized controlled trials comparing interventions to improve glycemic control with conventional treatment in type 1 and type 2 diabetes. Outcomes included the incidence rate ratios for any macrovascular event, cardiac events, stroke, and peripheral arterial disease, and the number needed to treat intensively during 10 years to prevent one macrovascular event. **RESULTS:** The analysis was based on 8 randomized comparisons including 1800 patients with type 1 DM (134 macrovascular events, 40 cardiac events, 88 peripheral vascular events, 6 cerebrovascular events, 11293 person-years of follow-up) and 6 comparisons including 4472 patients with type 2 DM (1587 macrovascular events, 1197 cardiac events, 87 peripheral vascular events, 303 cerebrovascular events, 43607 person-years). Combined incidence rate ratios for any macrovascular event were 0.38 (95% CI 0.26-0.56) in type 1 and 0.81 (0.73-0.91) in type 2 DM. In type 1 DM, effect was mainly based on reduction of cardiac and peripheral vascular events and, in type 2 DM, due to reductions in stroke and peripheral vascular events. Effects appear to be particularly important in younger patients with shorter duration of diabetes. **CONCLUSIONS:** Our data suggest that attempts to improve glycemic control reduce the incidence of macrovascular events both in type 1 and type 2 DM. In absolute terms, benefits are comparable, although effects on specific manifestations of macrovascular disease differ. [References: 43]