

Is diabetes a coronary artery disease equivalent?

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Clinical question

Do patients with diabetes have the same risk of cardiovascular (CV) events as patients with existing coronary artery disease (CAD) do?

Bottom line

Although diabetes does confer an increased risk of CV events, it is not automatically equivalent to having experienced myocardial infarction (MI), and thus does not always warrant aggressive pharmacotherapy. Cardiovascular risk should be predicted and therapy guided by taking into account individual risk factors.

Evidence

- Meta-analysis¹ of 13 observational studies (45 108 patients).
 - Compared with patients with previous MI, patients with diabetes have half the risk of CAD (odds ratio 0.56; 95% CI 0.53 to 0.60).
- Danish cohort study² not included in above meta-analysis.
 - In an analysis adjusting for some CV risk factors, socioeconomic status, and CV drugs:
 - patients with diabetes had a lower risk of MI or CV death (hazard ratio 0.63 in men and 0.54 in women) than patients with previous MI;
 - no adjustment was made for most traditional risk factors (blood pressure, smoking status, etc), which would have likely attenuated the association in patients with diabetes.

Context

- Canadian cholesterol guidelines³ do not consider diabetes an automatic CAD equivalent, but classify patients with diabetes with 1 or more of the following as high-risk patients who might benefit from statins:
 - age 40 years or older;
 - age 30 years or older and duration of diabetes of more than 15 years; or
 - microvascular disease (nephropathy, neuropathy, or retinopathy).
- The observational study⁴ that originally generated the concept of diabetes-CAD equivalence had multiple limitations, including being very underpowered.
- Diabetes approximately doubles the risk of CV events.⁵
 - Associated risk is further increased by longer duration of diabetes,⁶ increasing hemoglobin A_{1c},⁷ and traditional CV risk factors.⁸
- Because most studies were conducted in white patients, the applicability of this evidence to high-risk ethnic populations is unclear.

Implementation

The potential benefit from interventions like acetylsalicylic acid and statins for the average patient with diabetes reflects the lower CV risk compared with patients with previous MI. Statin use reduces substantial CV events over 4.5 years with a number needed to treat (NNT) of 48 for patients with diabetes compared with an NNT of 22 for those with previous CV disease.⁹ Acetylsalicylic acid has not been shown to reduce CV events among patients with diabetes¹⁰ but it reduces events for those with previous CV disease (NNT=30 over 3 years).¹¹ Risk calculators can be used to determine overall CV risk for patients with diabetes. The UKPDS risk engine is designed specifically for patients with diabetes (www.dtu.ox.ac.uk/riskengine) and the Best Science Medicine calculator estimates benefits with varying interventions (<http://bestsciencemedicine.com/chd/calc2.html>).

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The opinions expressed in Tools for Practice articles are those of the authors and do not necessarily mirror the perspective and policy of the Alberta College of Family Physicians.

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