

Top Ten Things To Know Sex Differences in the Cardiovascular Consequences of Diabetes Mellitus

1. Currently, approximately 1 in 13 people living in the United States has diabetes, and 90% to 95% of these individuals have type 2 diabetes mellitus (T2DM). The prevalence of T2DM in the United States is similar in women and men aged 20 years or older—about 12.6 million (10.8%) women and 13 million (11.8%) men.
2. Among individuals with T2DM, cardiovascular disease (CVD) is the leading cause of morbidity and mortality and accounts for >75% of hospitalizations and >50% of all deaths. Although non-diabetic women have fewer CV events than non-diabetic men of the same age, this advantage appears to be lost in the context of T2DM.
3. This scientific statement provides the current state of knowledge about sex differences in the CV consequences of T2DM and identifies important research gaps about sex differences in T2DM and CVD.
4. Further research is needed to elucidate whether sex steroids may influence risk and clustering of CVD risk factors in women and men. In postmenopausal women, the CVD risk of diabetes is compounded by the combined impact of obesity and aging. Additionally, factors such as differences in central adiposity, hypertension, HDL-cholesterol, ethnic or racial group, and treatment may also contribute to risk of diabetic heart disease in women.
5. The risk of heart failure is higher in women than men with diabetes. The underlying reason for the increased risk of developing heart failure in women with DM compared to men with DM is not entirely clear, but most likely relates to the gender disparities at play in coronary heart disease diagnosis and treatment.
6. Approximately 26.3% of strokes are attributable to DM. Furthermore, DM is classified as a risk factor for stroke that is stronger or more prevalent in women than men. In a study of 30,000 people with T2DM, women with glycated hemoglobin A1C (A1C) levels ≥ 8.0 had a significantly elevated risk of stroke, whereas men did not.
7. Polycystic ovary syndrome (PCOS) and gestational diabetes (GDM) are both female-specific conditions that are associated with CV risk factors and higher risk of DM. GDM is associated with a 7-fold increased risk of developing DM later in life and several subclinical measures of CVD are more abnormal in women with PCOS. However, very limited data on the relationship between GDM and subsequent risk of CVD are available.
8. Historically, women with diabetes are less consistently prescribed medication for CV risk than men; however, many more women will qualify for treatment with statins using the newer guidelines, which state that all individuals (regardless of sex) over the age of 40 with diabetes should be treated. Additionally, further studies are needed to assess the safety, efficacy, and outcomes of pharmacotherapy (e.g., statins, metformin) during pregnancy.
9. While further analysis is needed, the available data suggest that lifestyle interventions may improve CV mortality more in women with prediabetes than their male counterparts. Women with diabetes may require greater frequency and intensity of physical activity than men with diabetes to reduce CV events, which can be achieved by meeting the current physical activity recommendations for adults.
10. While DM is a well-recognized risk factor for cardiovascular disease and stroke, there are numerous opportunities to learn more about how women are uniquely affected and also a need to know much more about the sex differences so that treatment strategies can be optimized.

Regensteiner JG, et al; on behalf of the American Heart Association Diabetes Committee of the Council on Lifestyle and Cardiometabolic Health, Council on Epidemiology and Prevention, Council on Functional Genomics and Translational Biology, and Council on Hypertension. [Sex differences in the cardiovascular consequences of diabetes mellitus: a scientific statement from the American Heart Association](#) [published online ahead of print December 7, 2015]. *Circulation*. doi: 10.1161/CIR.0000000000000343.