



## Diabetes and Cardiovascular Risk: Challenges and Opportunities

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### Abstract

Diabetes has already reached epidemic proportions in 2010, with an estimated 284.6 million adults (aged 20–79 years) worldwide, accounting for 6.4% of the global adult population. However, the prevalence of diabetes has increased by 15% since 2007, with forecasts estimating that 438.4 million persons would have diabetes in 2030, up 54% from 2010 [1]. Diabetes is on the rise as a result of lifestyle-related issues (such as nutrition, lack of exercise, and obesity), and it is now recognized as one of the leading causes of mortality and morbidity.

Cardiovascular Disease (CVD), stroke, neuropathy, renal impairment, retinopathy, and blindness are all common diabetic consequences. More than a third of persons born in the United States in the year 2000 will get diabetes 2, and type 2 diabetes is becoming more common at an earlier age [2]. The rising prevalence of diabetes and its consequences, as well as the disease's early onset, would significantly raise current healthcare costs. As a result, diabetes will surely become a global public health disaster in the twenty-first century [3].

### Diabetes and Cardiovascular Disease

Diabetes patients are also more likely to develop heart failure. Heart failure is a critical ailment, but it does not mean that your heart has stopped beating; it simply means that your heart is unable to adequately pump blood. This can cause limb edema and fluid buildup in the lungs, making it difficult to breathe. Heart failure tends to worsen over time, although early detection and treatment can help ease symptoms and prevent or delay the worsening of the illness.

Diabetes increases the risk of Cardiovascular Disease (CVD) significantly, and diabetes patients have far higher mortality rates than those who do not have the disease. Four-fifths of diabetic patients die from cardiovascular complications, and their life expectancy is lowered by up to ten years when compared to people who do not have diabetes [4]. The risk of a future Myocardial Infarction (MI) among diabetic patients with no history of Coronary Artery Disease (CAD) is comparable to that of non-diabetic persons with established CAD6–8, and having diabetes has been predicted to impose a cardiovascular risk equivalent to ageing 15 years.

As a result, treatment recommendations currently propose treating diabetes as if it were a coronary artery disease [5].

CVD is the greatest cause of death and disability in the world, and it, like diabetes, has contributory lifestyle-related variables that are currently more prevalent in industrialised countries. More than 80 million persons in the United States have at least one type of CVD.

CVD was found to be the underlying cause of mortality in nearly half of all fatalities in North Dakota between 1992 and 2006, while diabetes was found to be the underlying cause of death in 15% of deaths. Furthermore, diabetic people had a 2.6-fold greater age-adjusted relative risk (RR) of death than non-diabetic participants. A prospective study in Finland compared 15-year mortality in newly diagnosed diabetic patients aged 45 years–64 years (n=133) with non-diabetic participants in the same age range (n=144). Total mortality was nearly five times greater in participants with diabetes than in their respective control groups in both male and female groups (age-adjusted odds ratio (OR) 5.0 and 5.2, respectively; p0.001 in both cases) [6].

Male diabetic patients had a six-fold increase in cardiovascular mortality, whereas female diabetic subjects had an 11-fold increase (age-adjusted OR 6.2 and 11.2, respectively; p0.001 in both cases). Additionally, hyperglycemia or lipid abnormalities associated with diabetes were predictive of cardiovascular death at baseline, five years later, and ten years later.

### Glucose Perturbations in Cardiovascular Disease

People who have a problem with their glucose metabolism are more prone to developing cardiovascular disease. This risk begins before diabetes is diagnosed, according to current definitions. Early identification of reduced glucose tolerance, as well as target-driven multifactorial therapy that includes all risk variables in a broad sense, may help these people have a better prognosis. Early diagnosis of glucose disturbances, as well as avoiding or delaying eventual diabetes in patients with impaired glucose tolerance, are all part of management [7]. Hypertension, hyperlipidemia, and hyperglycemia are all critical factors to monitor in patients with diabetes and to treat if they are over the acceptable ranges, initially with lifestyle-oriented guidelines and then with pharmacological therapies.

Considering people with impaired glucose tolerance and type 2 diabetes are becoming increasingly widespread, glucose disturbances as a cause of cardiovascular disease symptoms will become more common. The occurrence of macro vascular problems has a significant impact on health-care expenses, thus proper management of these patients will not only reduce human suffering but also have a significant impact on health-care costs.

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