



Diabetes Mellitus Complications

Diabetes Mellitus Part I (*Rx for Success #12*) discussed the types of diabetes, diagnostic criteria and general underwriting approach. This issue will look at the long-term complications of diabetes mellitus. All types of diabetes of sufficient duration can develop long-term complications of **nephropathy** (*kidney disease*), increased **atherosclerosis** (*cardiovascular disease*), **neuropathy** (*nervous system disease*), and **retinopathy** (*eye disease*). Poorly controlled diabetics will have a greater number and more rapid development of complications. Thus, the degree of complications gives some indication of long-term diabetic control.



Kidney Diagram

Nephropathy: This is the diabetic complication associated with the highest mortality. Diabetic kidney disease develops only in 35-45% of patients with Type 1 (*insulin-dependent diabetes mellitus*) (*IDDM*) and less than 20% of patients with Type 2 (*non-insulin-dependent diabetes mellitus*). In the U.S., diabetes is the leading cause of end stage renal disease requiring dialysis or transplant. Nephropathy starts with the development of microalbuminuria which is a small amount of albumin (*type of protein*) in the urine detected by the microalbumin test (*normal range 0-3 mg/dL*). This may occur as early as 5 years from the onset of diabetes. It usually takes another 5-10 years for overt proteinuria to develop (*noted by a positive random routine urinalysis or greater than 300 mg of albumin on a 24-hour urine collection*). The average time from overt proteinuria to needing dialysis is only 5-6 years. The risk of cardiovascular

disease is much greater in a diabetic with renal disease vs. no renal disease. Hypertension accelerates the kidney disease. The presence of persistent protein in the urine of a known diabetic would have additional rating and may call for a decline on an individual basis. Survivorship policies would be highly rated.



Heart Failure Diagram

Cardiovascular: Atherosclerosis is implicated in 80% of all diabetic mortality. Coronary artery disease develops at a younger age in diabetics (*especially if they also have renal disease*). Also, the usual protective effect of female gender is lost. Diabetics more often have atypical angina and the mortality rate is higher following myocardial infarction than in non-diabetics. The total rating for coronary artery disease in a diabetic will range from high substandard to a decline on an individual basis.

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Neuropathy: The most common form of neuropathy in diabetes is a peripheral neuropathy (*stocking-glove distribution: loss of sensation in hands and feet*). Electromyography (*EMG*) studies show some degree of abnormality in most patients within 5-10 years from the onset of diabetes. Loss of sensation in the feet can lead to foot trauma and diabetic ulcers. Diabetes is the leading cause of lower extremity amputation in the U.S. The presence of neuropathy will lead to a mildly increased diabetic rating.

Retinopathy: Changes include microaneurysms, hemorrhages, and exudates (*fluid collection*). Neovascularization and proliferative retinopathy refers to the development of new blood vessels in an ischemic area which can grow out into the vitreous cavity. These new vessels are fragile and often bleed. Late changes also include scarring and retinal detachment. After 7 years, half of all patients with insulin-dependent diabetes mellitus have some degree of retinopathy—by 15 years it reaches 95%. Diabetic retinopathy will lead to a mildly increased diabetic rating.

The presence of any diabetic complication will lead to an increased rating above the basic diabetic rate (see *previous Rx for Success #12*). The most serious complications are the kidney disease and presence of atherosclerosis.

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