

Underwriting Coronary Calcium

THE CASE

STUDY FOR

THIS MONTH

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Meet Pamela who brings 25 years of brokerage underwriting experience to our Impaired Risk Team. She most recently was an Underwriting Consultant with North American Life.

Case Study: A 50-year-old man obtained a calcium scan that reports his score as 100. He subsequently applies for \$500,000 of term life insurance. On exam his blood pressure is 140/90, cholesterol 245 and family history is unknown.

Coronary artery disease (CAD) is a hardening process of the coronaries. It leads to heart attacks ultimately and is the primary cause of death in both men and women. The most common first symptom is sudden death; so screening for CAD is important to health care and in underwriting when its possibility exists. When two or more positive risk factors like high blood pressure, cholesterol or sugar are present, screening is even more important.

When arteries harden and begin to close there is an accumulation of plaque. The components of the plaque are inflammatory cells, cholesterol, calcium deposits and other materials. The plaque can crack or rupture with a blood clot suddenly forming. The coronary thrombosis or heart attack is the result.

Calcium is not normal in the arteries but it is present when there is CAD. It is known that X-rays are a good way to show calcium (like an X-ray shows bones). A finely tuned X-ray method that measures small calcium deposits has been developed with the computerized tomography (CT). For proper results this must operate extra quickly to image the beating heart, so it is called "ultra fast CT" or "electronic beam CT." This is the coronary scan that quantifies the amount of calcium present as the calcium score. The more calcium, the more CAD is possible (see illustration).

CAD is not strictly related to the aging process itself. It is true that older people have more disease, however, they may or may not have CAD. The calcium score is usually compared with the population. In the case study the calcium score is in the 60 percentile, which means that 60 percent of men have less calcium in their arteries at this age.

When calcium deposits are detected, a treating physician usually investigates the possibility of CAD with time-honored testing such as the stress test, the thallium scan or the coronary arteriogram. Special attention is given to the modification of CAD risk factors. Depending on the amount of calcium, other CAD protection may be used, such as aspirin, fish oil, statins or exercise programs.

The problem faced in underwriting is when there are calcium deposits that have been incompletely evaluated, incompletely treated, or risk factors for CAD that have been inadequately modified as in the case study. The calcium score here is more

Calcium Score	Plaque Burden	Probability of Significant CAD	Annual Cardiac Event Rate*
0 - 10	No identifiable plaque or insignificant plaque burden	Very unlikely, <1%	0.11 % per year
11 - 100	Mild to moderate atherosclerotic plaque burden	Non-obstructive CAD most likely	2.1% per year
101 - 400		Non-obstructive CAD likely, although obstructive disease possible	4.1% per year
> 400	Extensive atherosclerotic plaque burden	High likelihood of at least one significant coronary stenosis	4.8% per year

*Annual event rate is in asymptomatic people, symptomatic people have considerably higher event rates.

than is expected for the age. The likely offer will be standard without further evaluation or attention to the blood pressure or cholesterol.

The calcium scan can help underwriting when the score is low and there are concerns about the EKG, family history, cholesterol, blood pressure, diabetes or CAD symptoms. This improves risk assessment.



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