On August 9, 2011, SCOR SE, a global reinsurer with offices in more than 31 countries, acquired substantially all of the life reinsurance business, operations and staff of Transamerica Reinsurance, the life reinsurance division of the AEGON companies. The business of Transamerica Reinsurance will now be conducted through the SCOR Global Life companies, and Transamerica Reinsurance is no longer affiliated with the AEGON companies.

While articles, treaties and some historic materials may continue to bear the name Transamerica, AEGON is no longer producing new reinsurance business.

Archive Materials

The ECG as a Requirement at Older Ages
Reprinted from the December 2008 Messenger newsletter

By David Wesley, Vice President, Medical Research and Development
Can we treat new underwriting tools for the elderly as substitutes for traditional tests like the electrocardiogram (ECG)?

Many arguments for the adoption of new underwriting requirements rely on a favorable comparison with resting ECGs, a traditional age and amount requirement. Usually, the comparison involves a single impairment. While these arguments are generally sound, they fail to acknowledge that ECGs can detect a number of other impairments.

Electrocardiographic abnormalities and cardiovascular disease are more common in older individuals. In the Cardiovascular Health Study, a study of risk factors for stroke and coronary heart disease in adults age 65+, the overall prevalence of any major ECG abnormality was 29 percent. It was 19 percent among those without prior diagnosis of cardiovascular disease.

Unfortunately, for most ECG findings it is difficult to quantify protective value. Consider these common findings: AV block, bundle-branch block, left- and right-axis deviation. None of these is diagnostic of a specific disease. In the setting of acute coronary syndrome, q-waves, ST-segment and T-wave changes on an ECG are clearly significant. Yet, it is often difficult to decide whether the q-wave and T-wave changes seen on a screening ECG have any significance.

Atrial fibrillation (AF) is an exception to the above difficulties. The ECG findings are diagnostic and will not be missed by a qualified ECG interpreter. AF is fairly common in the elderly and it has clear mortality implications. As a first step in assessing the protective value of ECGs, one can estimate a protective value for AF alone and assume more value can be obtained by judicious use of other ECG findings.

Atrial Fibrillation

AF occurs when a chaotic electrical activity replaces the well-ordered sequence of signals (sinus rhythm) that cause the heart to contract normally. This causes an irregular heartbeat and a poor pump performance by the heart. While
some patients are keenly aware of the change to irregular beats, in others it goes unnoticed. The elderly are especially likely to be asymptomatic.

A single ECG done during an episode of AF is sufficient to make the diagnosis, but some cases are paroxysmal (episodic) and AF may not be present at the time a screening ECG is done. Baseline ECG screening for the Cardiovascular Health Study (age 65+) showed AF prevalences of 4.8 percent for women and 6.2 percent for men. A recent survey from Scotland based on office records gave similar prevalences. In this study, only 3.5 percent of AF cases were categorized as paroxysmal.

AF is thought to cause 15 percent of all strokes and is associated with a five-fold increased risk of stroke. AF confers a two-fold increase in all-cause mortality independent of associated cardiovascular disease.

Treatment of AF focuses on rhythm control (reversion to sinus rhythm), rate control (keep heart rate tolerable) and stroke prevention (anti-coagulant therapy). Even when treated, AF is associated with increased all-cause mortality.

**Protective Value**

To calculate protective value, one needs reasonable assumptions for: case detection rate, relative mortality, target age or age band, mortality table, discount rate (interest) and lapse rates. For ECGs and AF, we will assume that the detection rate for new or unadmitted diagnoses is half the prevalence rate. The mortality ratio of two applies across all ages. We will use age 75 as a proxy for ages 65+. The 2008VBT is a plausible if conservative source for a mortality table (age-nearest, non-smoker), and we will arbitrarily use five percent for both interest and lapse rates.

Using the above assumptions, the protective value of an ECG for AF alone is $16 per thousand for men and $11.33 per thousand for women aged 75. Even for a small policy of $100,000, these savings would be $1,600 and $1,133 respectively.

While the protective value of an ECG for other impairments would be difficult to calculate, one can assume some additional savings on top of that for AF alone. Admittedly, our assumptions are crude, but even if the calculations are off by an order of magnitude ($160 and $113 respectively), the cost of the ECG requirement at these ages can be justified.

**Summary**

This discussion of ECGs and AF has focused on older ages. While the development of new underwriting tools for the elderly market is laudable, it may be inappropriate to automatically treat them as substitutes for traditional tests. The elderly have a high prevalence of impairments and the present value of future mortality at older ages is very high. These two facts make it possible to justify adding new tests while retaining those traditional tools that still have merit.

Despite its detractors, the resting ECG still has it place as an underwriting requirement, especially at older ages.

**References**