ONE FOOT IN THE GRAVE ...

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Executive Summary *Underwriting beyond +400 extra mortality is uncharted territory for many life underwriters and medical directors. This article looks at why you might need to underwrite severely substandard lives and the major differences when it comes to underwriting impaired life annuities.*

Declinature is not an option

Possibly your quickest decision on an average underwriting day is where the risk is clearly unacceptable. An applicant who had a stroke or heart attack last week is an obvious postponement for most insurance products. Metastatic cancer, end-stage major organ failure, severe dementia, terminal AIDS: no such risk is likely to sit on your desk for too long.

But what if you can't postpone or decline?

A growing number of underwriters are assessing mortality risk beyond the traditional maximum limit. Impaired annuity underwriters, specialists taking on high-mortality business, underwriters in markets where declinature is not permitted, viatical or life settlement appraisers, all need to be skilled in the assessment of severely impaired lives.

This article focuses on impaired annuity underwriting and how severely substandard lives are assessed for this product. Impaired life annuities are big business in the UK, and there is increasing interest in other countries where retirees have sizeable funds at their disposal.

Life underwriters and medical directors in the UK are using their skills to diversify into this new and rapidly growing product line. We review how impaired annuity underwriting is different and discuss specific underwriting techniques.

What are annuities and how are impaired life annuities different?

In its simplest form, an annuity is an insurance contract which gives a fixed lifetime income in return for investment of a lump sum, usually a pension. The size of the income depends on the amount invested and the annuity rate. The annuity rate is based on an actuarial calculation taking account of age, gender and interest rates.

An impaired life annuity is different as it pays a higher income if life expectancy is reduced due to the annuitant's health. The lower the life expectancy, the higher the annuity income. The annuity rate might also be affected by product features such as a guarantee period or a spouse's income–these features require actuarial adjustment after the underwriting decision has been made.

Impaired life annuities are big business

Sales of impaired life annuities are growing rapidly in the UK. Around one-third of pensioners are estimated to suffer from a medical impairment or lifestyle risk factor when they retire.

Towers Watson[1] reported an increase in impaired annuity sales from £420 million in 2001 to £1,786 million in 2009. First half sales for 2010 increased by 41% in the preceding 6 months, with sales set to top £2.5 billion in 2010.

Is the glass half full or half empty?

In life underwriting we are concerned with mortality risk, and in impaired annuity underwriting we are concerned with survival risk, but the underlying aim is identical: both types of underwriters strive to estimate mortality and life expectancy as accurately as possible.

At a high level the underwriting process is much the same too. You look at the risk factors, take account of all medical conditions and make an assessment about the extra mortality. The key difference is that instead of charging an extra premium for the extra mortality, you offer an increased (or enhanced) annuity income. A loss is incurred if the annuitant lives longer than estimated.

Apart from the obvious difficulties of estimating life expectancy for severely impaired lives, there are major differences in the following areas: rating methodology, average age of the target market, co-morbidity and medical underwriting evidence.

Severely substandard lives

The most striking difference is the severity of impairments that need to be assessed, as many annuitants are forced into retirement by a severe or life-threatening disease.

Unfortunately, life underwriting manuals are not too helpful. So the first major task is to work out how to deal with severely impaired annuitants. There are three main solutions.

The first approach is to assess each risk individually. This requires highly trained research underwriters or medical directors to evaluate every case. Consistency of underwriting decisions is maintained by close control within a small underwriting team. However, bespoke research is costly in the long term and increases risk of underwriting errors.

An alternative solution is to use broad rating categories. For example, four major risk groups could be identified: diabetes, heart attack, stroke or kidney failure. Applicants are assigned to the most relevant group regardless of severity of condition. An applicant suffering from more than one disease is simply assigned to the highest rated group. Similarly, every breast cancer case could be assigned to the breast cancer rating group, regardless of stage or other prognostic factors.

This uncomplicated approach can be applied by junior staff with minimal underwriting training. It works well as long as the overall rating is correct for each group and there is little or no competition. Clearly, if a competitor can easily identify and win the more substandard risks, poor long-term results are inevitable.

The final option is to develop evidence-based underwriting guidelines. Despite high initial costs, a clearly documented underwriting philosophy allows a rapid and cost-effective underwriting service. Rating tools and calculators can help make the job easier and improve underwriting consistency and accuracy.

Rating methods

Rating methods familiar to life underwriters can be used to express increased mortality, e.g., percentage extra mortality, flat extra (per mil) ratings or years-to-age.

Regardless of the rating method, additional software or rating tools can be used to work out the extra annuity payment. Some rating tools use a median life expectancy (also known as estimated life expectancy or ELE) and a maximum life expectancy or MLE. The MLE is simply a notional estimate of when we expect the majority of lives to be dead–this could be set at 95% or 90%, depending on how much of a margin is to be allowed–see Figure 1 (next page).

It is essential for actuarial calculations to take account of the shape of the survival curve, as this can be quite different according to the disease or its severity. This is fully discussed by Robb and Willetts[2], in their chapter on impaired annuities in *Medical Selection of Life Risks*. In some diseases there is high early mortality, while in others the mortality rate doesn't rise until many years later. Even though the long-term outcome is the same for both diseases, the annuity payment might be drastically different due to the shape of the curve.

Elderly lives

As the target market for impaired life annuities is pensioners, not surprisingly the majority of annuitants are over age 60. This has important implications as life underwriting ratings are not always age-related and tend to be based on the average age of life assurance applicants, which is well below 60 in most markets.

A well-known shortcoming of the numerical extra mortality rating system is its over-sensitivity at older ages. For example, you can rate +50 across most age groups for life assurance, but this rating has a significantly different impact on life expectancy at age 55 compared to age 75. So annuity guidelines need to be age-adjusted wherever possible to ensure a fair and accurate rating.

Also, prognosis can be different for some diseases at older ages. This might be due to a more serious underlying cause or because there is less functional reserve capacity. For instance, complications for some minor medical conditions may be treated surgically at younger ages, but intervention may be thwarted

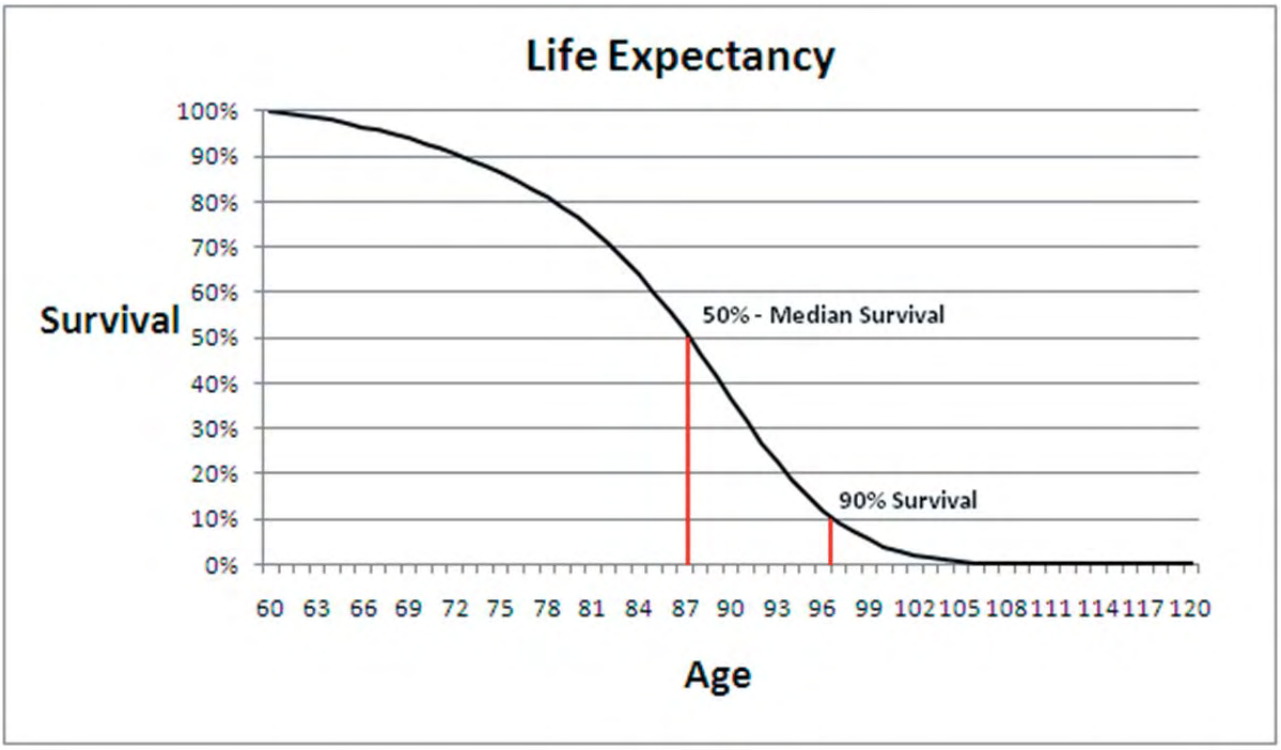

Figure 1 – Life expectancy curve for a healthy male age 60, illustrating 50% and 90% survival points (*adapted from RGA's Annuity Risk and Rating Tool*).

by the frailty of old age.

Co-morbidity

Another major feature in the elderly market is co-morbidity. At older ages many people have two or more major illnesses along with multiple risk factors, e.g., it's not unusual to see a hypertensive annuitant suffering from diabetes, kidney failure and coronary artery disease. As such risks are not usually handled by most life underwriting manuals, it's vital to understand the disease inter-relationships when assessing life expectancy for annuities.

Is the final risk based on the sum of the ratings (2+2=4), are the combined risks worse (2+2=5), or is there an element of double-counting (2+2=3)? If one disease is likely to cause very early death, but the second disease is not expected to impact mortality for quite a few years, a case could be made to only rate for the worst disease (2+2=2).

The approach taken largely depends on the shape of the survival curve, specifics of each disease and also on the source mortality data. For example, if a study quotes a hazards ratio which is adjusted to control for related risk factors, it makes sense to increase the annuity rating for those other factors.

In practice, most mortality data does not account for every co-morbidity and therefore annuity guidelines need to be carefully adjusted to avoid double-counting.

Medical evidence

In annuity underwriting, the problem is over-disclosure, not non-disclosure. This is particularly relevant if the market is highly competitive and applicants are not prepared to wait a few weeks for medical evidence to be obtained.

In the UK most annuity business is underwritten with information provided by the annuitant. To deter fraudulent over-disclosure, medical reports are obtained on a random sample of cases after the policy has been issued. From a traditional underwriting perspective, it seems risky to accept high mortality lives without detailed medical reports. But relying solely on information from annuitants has been successful and over-disclosure has not been an issue. Some over-disclosure is counter-balanced by under-disclosure.

Lack of medical evidence adds to the challenge to assess life expectancy accurately. Applicants are not familiar with all the details of their medical history and sometimes provide scanty information. Annuity underwriters need to make maximum use of disclosures about the degree of disability, symptoms and treatment.

As every life underwriter knows, details of treatment

can provide powerful clues about diagnosis, severity and prognosis. For example, cancer treatments are often highly specific to the type and stage of cancer. You can tell a lot about the cancer just by knowing whether they received chemotherapy, radiotherapy or surgery alone. Similarly, information about previous and current treatment for heart conditions can often confirm the most likely diagnosis and provide important pointers about severity and prognosis. An obvious example is congestive cardiac failure which is usually treated with a well-recognised cocktail of drugs.

Underwriters need to stay abreast of current treatment regimens and recommended doses of medications. For instance, years ago post-MI beta-blocker treatment helped improve mortality in coronary artery disease. But nowadays mini-dose beta-blocker therapy is used to treat congestive heart failure, and is therefore a major marker for a high mortality impairment.

Advice from medical directors is vital for any cases involving unusual or complex treatment combinations. This is particularly the case for tumours, where advice from an oncologist can help identify the histology or stage of unusual cancers.

Factoring in medical advances

The potential for mortality rate improvements is important, and just as for any long-term protection business, actuaries take account of likely future changes. But unlike protection business where improvements work in our favour, a dramatic breakthrough in medicine is a "catastrophe risk" for annuities.

Therefore, the underwriter also needs to consider medical advances. For example, heart failure prognosis has improved significantly over the past few decades, primarily due to more aggressive medical therapy and new surgical approaches. In recent years, implanted cardiac-defibrillator insertion and cardiac resynchronisation therapy have allowed further progress in successful control of congestive heart failure. In impaired life annuities, underwriters need to remain vigilant about medical advances to ensure guidelines remain current.

Lack of industry data

Lack of industry experience data on this relatively new product line means we are heavily reliant on other sources of survival information.

Population studies and clinical research data are not designed for use in insurance and need to be adjusted appropriately. For example, annuitants tend to be from higher socio-economic groups with access to better end-of-life care. This can change survival, particularly for dementia or stroke, where excellent nursing care during the late stages of illness could significantly improve average life expectancy.

High mortality doesn't have to be high risk

As the world population ages and wealth is concentrated in older age groups, impaired life annuities present a new and significant business opportunity. Underwriters and medical directors have an important role as life underwriting experience is highly valuable for this product.

In impaired life annuity underwriting, the key principles and processes are the same, as we're still trying to work out how long somebody is likely to live. But there are important differences and impaired annuities offer an interesting opportunity for life underwriters to expand their knowledge and extend their commercial reach.

Assessing severely substandard lives, particularly at older ages, is a challenge, but it isn't insurmountable. A well-trained underwriting team, backed by a sound underwriting philosophy and evidence-based underwriting guidelines, means high mortality doesn't have to be high risk.

References

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