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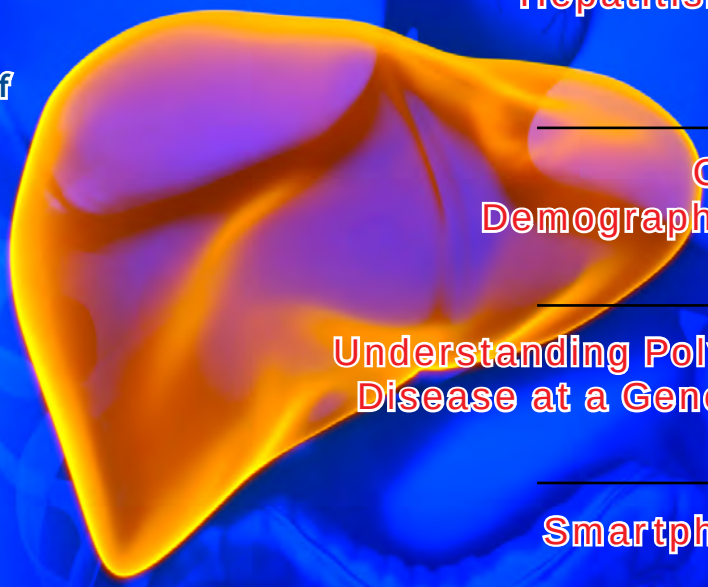

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THE NEED TO EVOLVE PREFERRED UNDERWRITING

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Executive Summary *This article will focus on the development of preferred underwriting criteria and its 35-year history. The author will dissect the criteria, pointing out strengths and weaknesses. The intent is to urge readers to re-think preferred underwriting criteria and incorporate the new information available today. Epigenetic testing to determine smoking pack-years, information on nutrition, fitness, metabolic health, data analytics and high-risk behaviors are proposed as new criteria.*

If preferred underwriting had a birthday, it would be a little more than 35 years old – that pre-dates the internet and cellphone. Back then, the rules used to create this new form of underwriting were made without specific knowledge of their validity or data modeling. Preferred underwriting as we know it began in the early 1980s. At the time, the emerging AIDS crisis induced life insurers to begin securing blood profiles and looking at T-cell counts until an HIV infection test became available and approved for use. Although preferred underwriting criteria will differ by company, the categories tend to be the same, and the ranges don't vary significantly.

The blood profile made available a wealth of new information for underwriters: lipids, blood sugar, renal function and liver function represented the most informative values. Having been at the forefront of the longevity industry during this crisis, I recall actuaries and underwriters joining forces to find uses for this information beyond screening for HIV. This was the birth of preferred underwriting.

With new tools in hand, the standard pool could now be split into preferred and residual standard. At the time, this was innovative but held the risk of unknown long-term mortality impact. As underwriters we must all ask ourselves, "Do we continue without meaningful change because of competitive pressure or just plain apathy?"

Preferred criteria can be distilled into 10 underwriting categories, six of which are considered medical components.

Tobacco Use

Smoking status is determined by a negative urine cotinine test and self-reported representations of having not smoked for the preceding 12 months. With the eventual implementation of super preferred, longer self-reported representations of smoking abstinence became required. Smoking tobacco is the most critical component of underwriting, as it is the single biggest contributor to cancer, as well as a significant contributor to vascular disease. We will revisit this topic further in the article.

Family History

Because a preferred risk is supposed to represent a lower cardiovascular and cancer risk, family history has been a key risk factor. Having a self-reported representation that neither parent died before age 60 of heart attack or cancer was required. Heredity plays a role in disease – whether through genetics, shared environment or adopted behaviors – and represents ~30% of the aforementioned vascular and cancer risks. The accuracy of family history's overall role in longevity is questionable as diet, vices and exercise have a much more direct and important role in lifespan.

Physical Build

Height and weight measurements for body-mass calculations (BMI) taken during a paramedical exam could be viewed on a chart indicating pass or fail for preferred. If an applicant is 6 feet tall and weighs 210 pounds, the individual can be considered to have a

normal BMI and receive preferred risk class. However, the differences in normal BMI between males and females is rarely factored. And, competitive pressures have led to increases in allowable weight, which would not appear to be consistent with "fitness."

Blood Pressure

A single set of readings taken during a paramedical exam normally determines qualification here. As a measurement of fitness, a single blood pressure measurement is more of a snapshot than a true measure of sustained good health. The assumption has been that a single measurement could provide significant insights into individual health. The reality is blood pressure, like many biological measurements, is subject to volatility depending upon an individual's recent behavior.

Lipids

A cholesterol level of 300 or lower, combined with an HDL ratio of six or less, qualifies for preferred, whereas a cholesterol level of 275 with an HDL ratio of five qualifies for super preferred. Most physicians would consider these levels elevated and recommend treatment. As a measure of a preferred risk, these levels are not ideal, but competition has defined the bar for preferred risk classification.

Remaining Lab Values

Blood sugar, renal function and liver function tests need to be within normal ranges or very close to them.

These six categories represent what underwriters refer to as the "medical" components of preferred underwriting. They are heavily weighted to screen out cardiovascular risk and incidentally screen out cancer risk with the tobacco and family history. Cardiovascular and cancer account for more than half of all deaths in the general population, with vascular disease being the dominant cause of death in the general population. In life insurance death claims, cancer is the number one cause of mortality.

The other four categories that make up what underwriters refer to as the "non-medical" component of preferred underwriting, are as follows:

Automotive Driving Record

Individuals are asked to self-report whether or not they have had more than two automotive moving violations in the past 3 to 5 years, or if they have had a driving while impaired (DWI) in that same period. When available, a motor vehicle report (MVR) is secured as a way to confirm the applicant's answer. Provided the individual meets this requirement, he or she will qualify for the preferred risk category.

Avocations

Scuba diving to depths greater than 100 feet and certain other risky sports can mean exclusion from a preferred risk classification. There is no real objective screen for this category, and the risk level involved in certain avocations has changed over the last 35 years.

Aviation

Outside of commercial pilots, most preferred classes exclude private pilots due to the perceived risk. As with avocations, a lot has changed in the aviation field over the last 3 decades.

Travel

Individuals who travel to locations deemed as high risk are excluded from the preferred risk class. Most companies have a chart of high-risk areas across the globe they reference for this purpose.

Experience demonstrates that these four groupings account for about 8% of overall all-cause mortality. This percentage can vary significantly based on age.

Other Factors

Individual lifespan is determined by physical health; however, studies have shown factors such as emotional health, spiritual connection, affinity and mental attitude can be nearly as impactful for extending life.[1] These influences have been studied by researchers to identify biological age vs. chronological age estimates. Elements such as income, education and cohabitation have also been shown to add years to individual lifespan. When looking at improving non-medical guidelines, these aspects need to be included in updated criteria where they would be allowed.

The preferred underwriting criteria that started in the early 1980s has, for the most part, not evolved. As a screen for vascular mortality, the criteria are good but could be better. As a screen for cancer mortality, the criteria would receive a failing grade. We are an industry that is over-indexed in cancer mortality, as evidenced by the cause of death reversals in life insurance claims compared to the general population. Anti-selection likely plays a role in this outcome, but a lack of objective screening tools must be the primary shortcoming in underwriting assessment.

Chronological Age at Application

Years of remaining life are impacted by attained chronological age. Causes of death vary by attained age. Preferred risk should include criteria that differ based on age at application. Foreign travel may present an extra mortality risk at younger ages. At older ages, foreign travel may be an indication of good health, dexterity and a sharp mind. Biological aging is

the primary cause of disease and death. As underwriters, our ultimate goal is to predict biological age and to recognize risk factors and weightings that better reflect health, chronic illness and disease states.

Knockout vs. Point System

No evaluation of preferred underwriting would be complete without addressing the shortcomings of the knockout system deployed by companies. The National Center for Health Statistics[2] reports heart disease (32%) and cancer (29%) were responsible for 61% of deaths. Accidents (8%), suicide (2%) and other medical causes were responsible for 29% of deaths, with stroke and diabetes dominating that category.

Clearly superior preferred criteria would assign weightings or point values to each category and determine preferred qualification by a point value. The knockout system adopted by most companies offers four non-medical categories, any one of which can disqualify an individual for preferred based on factors that account for no more than 10% of all-cause mortality.

It is time to MODERNIZE preferred underwriting using the current available science and knowledge.

Smoking and Tobacco Use

Research has shown it is the cumulative pack-years of smoking tobacco that have the biggest impact on health and lifespan. Self-reported claims of tobacco abstinence used as measures for preferred underwriting seem inadequate in the face of emerging science. Objective scientific testing can now measure pack -years of use along with the recency of last use. We finally have a way to qualify individuals based on real data relative to smoking history. This is the opportunity for the industry to correct its imbalance in cancer deaths. Imagine a new class of preferred with insureds confirmed to have never smoked.

Build, Blood Pressure and Lipids

Keep build, blood pressure and lipids as basic cardiovascular risk screens, but go further. Markers are in development to measure levels of fitness and general nutrition, which should weigh more heavily in finding individuals who will live longer.

Family History

Family history has value but not with a high level of predictability. Because of the completely self-reported nature of this declaration, we as underwriters should question the level of confidence the industry puts into it.

Non-Medical Factors

Updating the non-medical components of preferred underwriting is likely the greatest area for improvement. Motor vehicle driving is the only element most individuals have in common, and new statistics claim opioid overdoses now exceed motor vehicle deaths. We should screen for drugs of abuse in preferred underwriting, which includes alcohol. At a minimum, we need to screen for methamphetamines, cocaine, opioids and alcohol if we want to truly underwrite for high-risk behaviors. Testing exists for these, along with new testing that can have a longer look back at duration of use and amounts used. With so few life insurance applicants participating in risky avocations, aviation or high-risk foreign travel, we should keep them as general screening criteria but less important ones.

Information available that relates to fitness, nutrition, pack-years of smoking, substance abuse and metabolic health is here and can be used to more accurately underwrite preferred lives. The real goal of preferred criteria is the determination of biological age vs. chronological age. New measures of biological aging at a cellular or molecular level are proving to be reliable indicators of overall lifespan.[3] The exciting potential of new testing such as epigenetics may be a critical addition in determining metabolic health and a closer assessment of biological age.

Should two individuals who just shared their 16th birthday share the same risk class, if their biological ages differ by 20 years? Better mortality, more competitive life insurance rates and a new classification of "never smokers" are on the horizon. Innovation stands to begin encompassing these measures into preferred underwriting risk classification.

Underwriters and actuaries should investigate the availability, cost and effectiveness of current and emerging technology. Keeping preferred underwriting fresh and effective will lead to greater opportunities.

Notes

1. "Healthy Lifestyle Stress Management," Mayo Clinic; June 27, 2018.
2. "What are the leading causes of death in the U.S.?", Vincent J. Tavella, MPH. *Medical News Today*; July 4, 2019.
3. "Epigenetic clock analysis of diet, exercise, education and lifestyle factors," Brian H. Chen contributing author; *Aging*; February 2017.

About the Author

William E. Moore, FLMI, has spent 45 years working in Life Reinsurance and direct Life Insurance. Bill is the Chief Underwriter for FOXO BioScience and has been in that role since August 2018. In addition, he is the President of Underwriting Innovations since September 2016, as well as the Director of Underwriting Strategy at Health IQ since March 2017. He is also a member of the Board for TractusMed since March 2017. Bill served as Managing Director and Chief Underwriter for Swiss Re Americas from 1998 to April 2016, Executive VP and Chief Underwriter of Life Re 1988 to 1998, and Assistant VP Underwriting at General Reassurance Corporation. Bill has been active in the industry, having given the keynote address at AHOU in Toronto and presented on elderly underwriting and preferred underwriting at the SOA, AHOU, IRUA and SEHOUA.