The other day, I was talking to a physician whose patient wanted insurance. I was clarifying some comments that the physician had inscribed in his patient record and the physician was being somewhat obtuse. As the conversation progressed, I could hardly miss the derision in his tone. He held me, the insurance company medical director, responsible for the increasing physician hassle factor, silly cost containment strategies, mother-may-I games on the telephone and companies which make obscene profits on the backs of the physicians. I explained to him that I am a life insurance medical director, and what it is, exactly, that I do for the proposed insured. After half an hour of enjoyable continuing interchange, we parted, knowing more about each other, understanding our different perspectives and hopefully each possessing a better understanding of our respective client’s need, for the physician, his patient and for me my company’s proposed insured.

Our discipline is like other medical disciplines. There is a core body of knowledge which provides a scientific basis upon which the study of morbidity and mortality is based. The practice of insurance medicine requires clinical experience. The domain is the business world, the responsibilities are to the individual who applies for insurance, the company who employs its services, to the industry and to society at large.

We act as consultants to our companies in risk stratification. Our companies offer insurance to individuals or to groups of individuals who request this service. The insurance offered, a term life, whole life or variable product is entirely voluntary on behalf of the proposed insured. We estimate life expectancy from our own experience and from that of the industry. Most policies are issued at the applied for rate. That rate is based on the life expectancy for age and sex, with a premium calculated from those data. Obviously there are different life expectancies for smokers of tobacco products and for non-consumers and the premiums also reflect this difference.

Although our premiums are based on the overall mortality rates in the insured population, the contribution that underwriting makes to the process in issuing a life insurance policy is assessing the risk in smaller and smaller cohorts. It is, therefore, extremely important to understand the actual causes of mortality, in order to apply the appropriate underwriting focus can be applied. Indeed it is not until the 45-54 age group that accident, suicide and homicide, as causes of death, fall below 20%. From a medical perspective heart disease takes over from cancer as the predominant cause of death in the 65 - 74 year old group.

In the 35 - 44 year olds, the three top causes of death are cancer - 27.3%, accident, suicide and homicide - 26.4% and heart disease - 20.5%. Heart disease, as a cause for death progressively rises; 45 - 54 year olds - 30.6%, 55 - 64 year olds - 34.4%, 65 - 74 year olds - 37.4%, 75 - 84 year olds - 44.6% and for those over the age of 85 - 55.7%. Cancer as a cause for death rises until the 55 - 64 year old group - 43.5% and then gradually decreases, 65 - 74 year olds 40.0%, 75 - 84 year olds - 28.0% and in the over 85s - 15.0%.

It is for mortality causes such as these that
underwriting focuses on life style characteristics. For instance, important information can be gleaned from motor vehicle records and driving under the influence convictions may correlate with an increased risk from death in a motor vehicle. Other life style situations include certain avocations such as sky-diving, bungee jumping, spelunking, scuba diving and foreign travel add a risk that the standard population does not have. Likewise medical conditions such as heart disease, cancer, gastro-enterologic disease, renal disease etc. may have varying effects on life expectancy. Life underwriters review what is known medically about the applicant and from manuals are able to assess broadly the percentage of excess mortality that one or more conditions bestow upon the applicant. These data allow a premium to be calculated. The competitive nature of the business allows market forces to control the premium rate. If the rate is too high, another company will offer a more competitive rate. If the rate is too low it puts the company at a financial risk. From a practical standpoint, most premium requests that exceed ten times the standard premium become prohibitively high for the applicant and any applicant that accepts probably has a medical condition about which the underwriter does not know.

How is the information on mortality gathered? Essentially in the life insurance industry we like to be able to identify groups of people with the same condition, and same age and sex, so that we can estimate the amount of deaths per year. From this number we can calculate the excess death rate and thence the mortality ratio. For instance, the surgical repair of a ventricular septal defect in children with an average age of 3.5 years may have a one year death rate of 5%. This sounds excellent to a cardiologist and magnificent for those of us who remember the days of severe cardiac failure in the very young and experiences with pulmonary artery banding. But what does it mean in life insurance terms? From the US Life Table 1979-1981, the expectation for a cohort of 100,000 children who start the year as three year olds and end it as four year olds is that 49 will die in that year. From the results of the described ventricular septal defect surgery, five of one hundred or 5,000 of 100,000 will die. The mortality ratio is over 100 times the standard rate. In fact, insured populations survive somewhat better than published in the standard table and so we tend, where possible, to use select tables which more reflect the insured population.

Now if we look at a senior population with an average age of 81.5 years, that is they start the year at 81 and are 82 at the end of the year, we would find from the US Life Table that 3,036 would die in the year. If this group were to have a surgical procedure with a similar mortality rate as the children described above, this surgery would cause the ratio of observed to expected deaths to exceed 100%. In other words the mortality ratio (MR) would be 165% (MR = 100 x observed deaths/expected deaths; 100 x 5,000/3,036 = 165%). It would be quite possible that a life insurance company would make a standard offer on this particular risk.

Although the above two examples are fictitious, abundant examples of where the clinical conclusion concerning outcome and the practical insurance estimation of life expectancy are at odds. The author concluded, that the long-term survival of young, asymptomatic survivors of myocardial infarction with conservative therapy is good. The substantiation of this was based upon a 71 month follow up in which 10% died. The clinical approach presumably reflected the study group related to other people with myocardial infarctions rather than the population as a whole. In fact, the mean age at entry to the study was 36 and 77% were male. The author's observed cardiac mortality ratio was 685%5. In fact, if the study had been based upon all female, the cardiac mortality ratio would have been 1163%!
As insurance medical directors, we want to provide as many people with coverage as possible. Since this is a voluntary situation and we aim to stratify the risk of mortality in such a way as to give the maximum amount of coverage for the dollar of premium, it behooves us to be cognizant of the medical advances which affect mortality. Perhaps the opposite can also be true. The clinicians should view their results with the broader denominator of the US population or other national population, and consider age and sex. Hopefully, this journal will continue to contribute to this interdisciplinary approach.

References