Critical Illness Protection

By Sylvain Goulet, & Dharmendra K. Pandit

Abstract:
Critical Illness product in their simplest form are insurance riders that offer cash payments at the time of a serious illness which is predicted by the attending physician to cause the death of the person affected within a very short period of time, up to 6 to 12 months. The proceeds are usually deducted from the sum assured of the policy to which this rider is attached. This type of rider requires little pricing and in reality produces little value to the consumers.

A more sophisticated form of Critical Illness protection is a stand-alone product or a rider that provides the payment of the sum assured at the onset of a critical illness, such as heart attack, stroke, most cancers, etc., but where the insured can be expected to survive the illness (the latter is not a necessary condition). This form of protection, which is really considered health insurance in most jurisdictions, is advantageous for several reasons:

I. it can provide the insured with the necessary funds to seek expensive medical care in a traditional clinic or alternative care of their choice;

II. it can provide the insured with supplementary cash for themselves and their family while unemployed as a result of receiving intensive medical care; and

III. it can also provide some funds to permit the insured to change their lifestyle following the onset of and the recovery from a critical illness.

However, this type of product is not easy to price or reserve for.

A *first* major difficulty is the reliance on relevant statistics on which to base the calculations. While most countries may have mortality statistics going back many years, the information available for certain illnesses is not always readily available. In addition, the quality of the data may not be sufficient to provide a reliable basis. This may be due to the grouping of ages in quinquennial or decennial groups, to the evolving definition of certain illnesses, to the common lack of differentiation between non-smoker and smoker, and to the general variations of the underlying rates.

A *second* difficulty is the nature of the underlying illnesses. For example, cancer is considered one of the major critical illness today. However, if a general cure for cancer is discovered, then cancer may not be considered “critical” anymore so what will this mean for existing coverages?

A *third* difficulty is to obtain reinsurance capacity for larger face amount policies. Most reinsurers now offer only non-guaranteed rates which force the direct writers to offer only non-guaranteed rates as well.

The authors of this *Critical Illness Paper* will explore all the above aspects of the Critical Illness products offered today. They will contrast what is being offered in India as well as other parts of the world. The authors will also try to offer some possible solutions to these questions.

INTRODUCTION

Critical Illness ("CI") products in their *simplest* form are insurance riders that offer cash payments at the time of a serious illness which is predicted by the attending physician to cause the death of the person affected within a very short period of time, up to 6 to 12 months. The proceeds are usually deducted from the sum assured of the policy to which this rider is attached. This type of rider requires little pricing and in reality produces little value to the consumers.

A more sophisticated form of Critical Illness protection is a stand-alone product or a rider that provides the payment of the sum assured at the onset of a Critical Illness, such as heart attack, stroke, most cancers, etc., but where the insured can be expected to survive the illness (the latter is not a necessary condition). This form of protection, which is really considered health insurance in most jurisdictions, is advantageous for several reasons:

I. it can provide the insured with the necessary funds to seek expensive medical care in a traditional clinic or alternative care of their choice;
II. it can provide the insured with supplementary cash for themselves and their family while unemployed as a result of receiving intensive medical care; and
III. it can also provide some funds to permit the insured to change their lifestyle following the onset of and the recovery from a Critical Illness.

However, this type of product is not easy to price or reserve for.

A *first* major difficulty is the reliance on relevant statistics on which to base the calculations. While most countries may have mortality statistics going back many years, the information available for certain illnesses is not always readily available. In addition, the quality of the data may not be sufficient to provide a reliable basis. This may be due to the grouping of ages in quinquennial or decennial groups, to the evolving definition of certain illnesses, to the common lack of differentiation between non-smoker and smoker, and to the general variations of the underlying rates.

A *second* difficulty is the nature of the underlying illnesses. For example, cancer is considered one of the major Critical Illnesses today. However, if a general cure for cancer is discovered, then cancer may not be considered "critical" anymore so what will this mean for existing policies?

A *third* difficulty is to obtain reinsurance capacity for larger face amount policies. Most reinsurers now offer only non-guaranteed rates which force the direct writers to offer only non-guaranteed rates as well.

This paper will explore all the above aspects of the Critical Illness products offered today. They will contrast what is being offered in India as well as other parts of the world. The author will also try to offer some possible solutions to these questions.

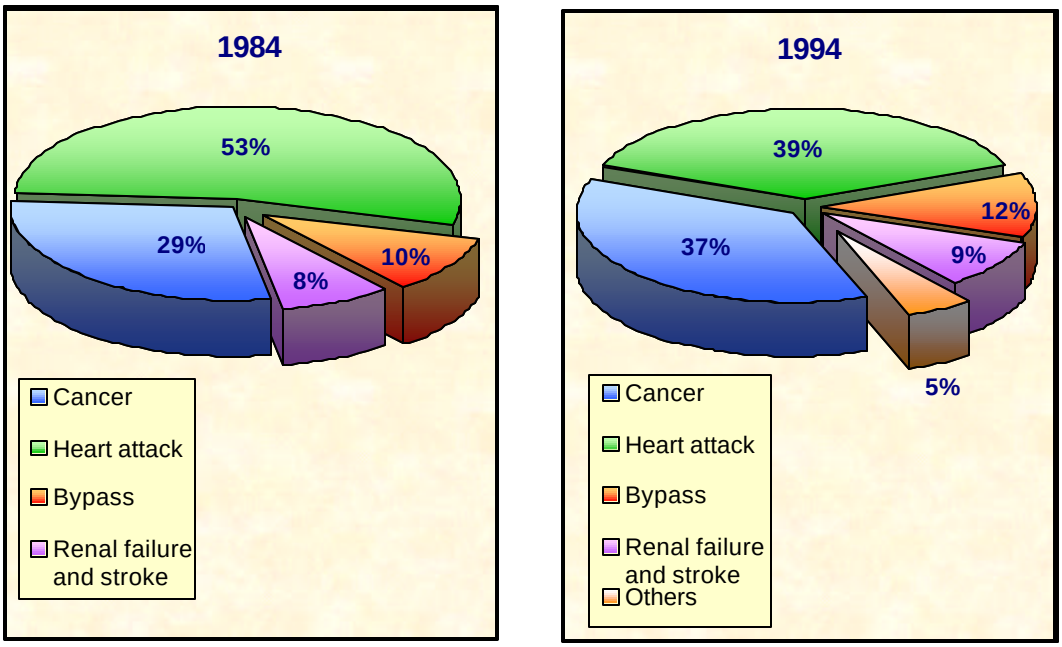
A BRIEF HISTORY

From it's origin in South Africa, Critical Illness coverage has steadily been adopted in insurance markets worldwide; its appeal, the dreaded thought of *surviving* and bearing through a financially ruinous disease. Unlike healthcare products designed to mitigate proven medical expenses, Critical Illness products at their simplest require the insured to survive a waiting period, post-diagnosis, for payout of a benefit. The insured has the freedom to use the funds where needed. As the design becomes more and more complex with benefits determined as a

function of the degree of the illness and the product resembles health cover, it begs the question of whether Critical Illness should remain the purview of life insurance or health insurance.

South Africa

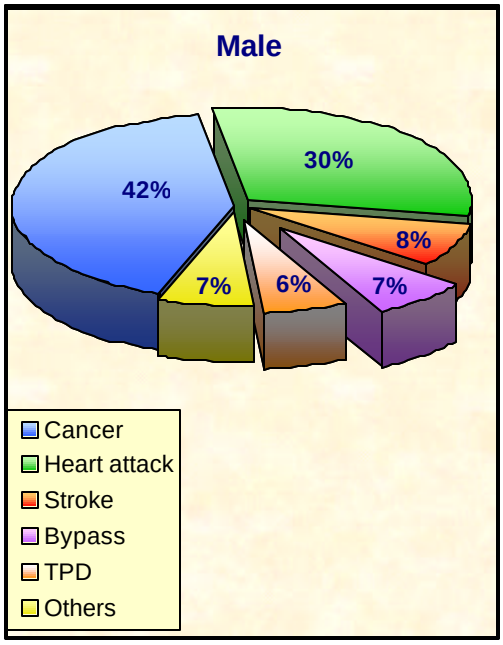
In 1983, cardiologist Dr. Marius Barnard helped develop the first Critical Illness product to help families facing a major illness. Initially 4 major conditions were covered but a few years later the market for CI extended coverage to include as many as 20 conditions. It is suggested that in the early years, cancer and multiple sclerosis coverage were targets of anti-selection as subsequent unfavorable claims experience showed. The industry responded by making definitions of illnesses more specific, improving underwriting and including waiting periods of 3 to 4 months. Today South Africa's CI has moved closer in design, and therefore in competition, to Major Medical Expense ("MME") cover; the CI benefit is now tied to severity of illness and expected cost of medical care. Unlike current CI products, MME's are cheaper, protect the insured against more events and have options for family cover.

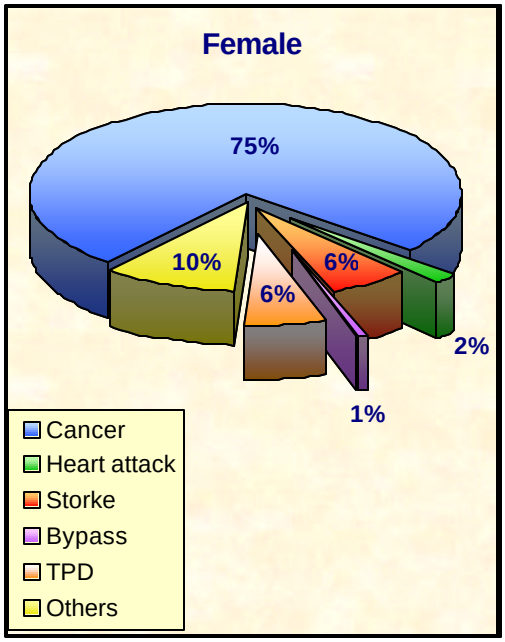


Source: Study of Critical Illness by Actuarial Society of South Africa, 1997.

United Kingdom

In the United Kingdom, Critical Illness insurance initially gained momentum when sold with mortgages. The CI benefit was positioned as a source of funds to repay a mortgage in the event of a serious illness. A combination of aggressive competition and little historical precedence saw the introduction of guaranteed premium rates, broad disease definitions, liberal underwriting requirements, and the absence of waiting periods on cancer. As a result, there was a high level of anti-selection and non-disclosure particularly where total & permanent disability coverage was also included. Claims experience bore out to be very unfavorable and premiums saw increases of around 37% with reinsurers exiting the guaranteed rates market.

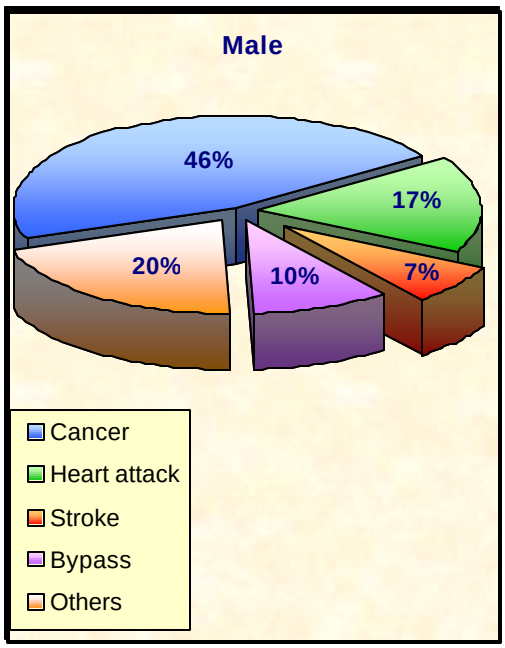


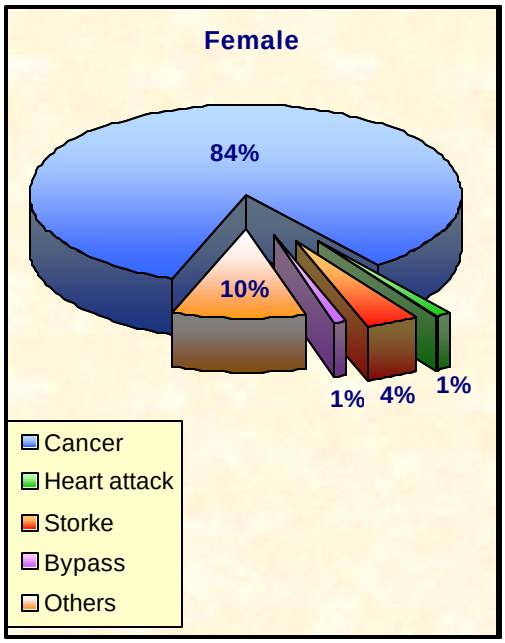


Source: Study of Critical Illness by the Critical Illness Healthcare Study Group, 2002

Australia

The Australian insurance market took a more prudent approach having learned from South Africa and the UK. Introduced in 1987, Critical Illness products, referred to also as Trauma Cover, did not carry the guarantees of the UK products. Instead premiums were guaranteed renewable only, and definitions of disease were not guaranteed at all. As one would expect, the initial experience was favorable but there was increasing pressure for competitive rates and improving product design. Insurance companies responded by improving benefits to include higher limits, adding conditions at no extra cost and liberalizing medical & financial underwriting.





Source: Study of Critical Illness by the Institute of Actuaries of Australia,1995-1997.

Canada

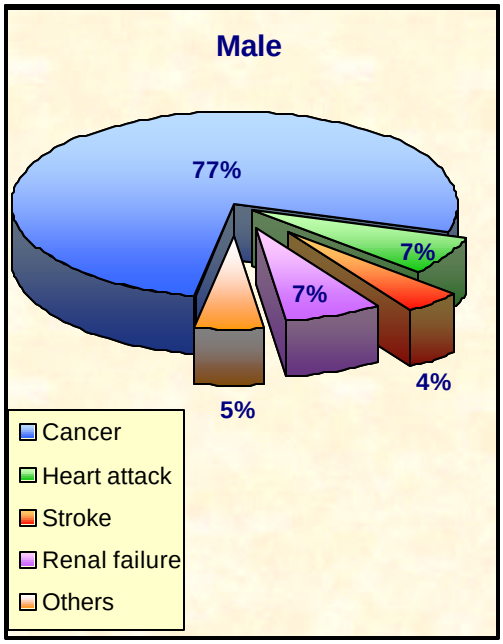
A more recent (1993) entrant to the Critical Illness arena, Canada's initial products contained many of the protective measures as implemented in other markets but additionally insurers capped the sum assured at around $2 Million and excluded Total and Permanent Disability coverage ("TPD"). Claims experience played out relatively as expected.

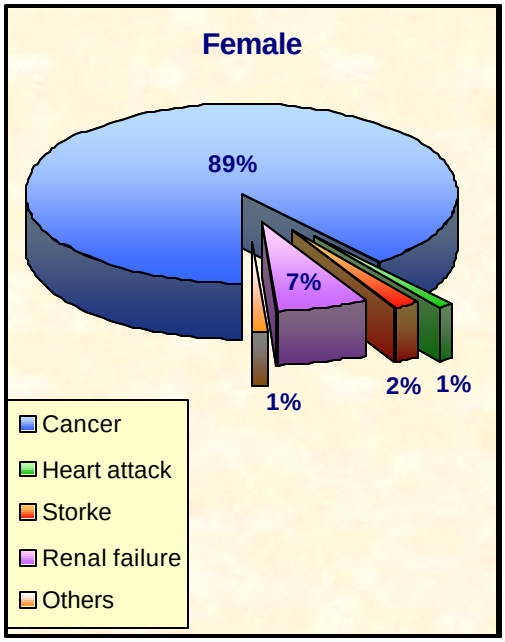
After a slow start, sales of CI insurance started to heat up. Competition caused insurers to ease underwriting requirements, reduce premium rates, increase the number of conditions covered, increase coverage limits and add product features such as Return of Premium ("ROP") on death if no claim was made. In recent years, insurers found they needed to scale back some of the previous aggressive changes.

Currently CI enjoys a consistent high growth catering to an aging population. More than 75% of buyers are between the ages of 35 and 54 and split evenly between the genders. They are aware of their health, 84% of buyers are non-smokers, understanding that with advances in medical science, people live longer but may suffer from seriously debilitating diseases.

Southeast Asia

The countries of Malaysia, Singapore, Hong Kong and Taiwan introduced Critical Illness cover as early as the late 1980's. CI policies offer coverage on as many as 36 diseases with "loss of independent existence and terminal illness" and TPD responding as a sweep-up covering those diseases not included in the 36. The significant number of coverage has been the main reason for the popular sale of CI. Since 1996, a million new policies have been sold yearly. However, claims experience indicates well over 85% of claims arising from cancer, heart attack and stroke. Benefits are mainly accelerated and partial payments dependent on the illness diagnosed.





Source: Study of Critical Illness by the Life Insurance Associaiton of the Republic of China, 1996.

India
"In India, LIC offered Critical Illness in the form of a rider as early as 1992. With private insurers entering the market, a variety of Critical Illness insurance was introduced, again mainly as riders."

The typical rider policy is attached to a base plan that can be any of the various types of savings products, protection products or pension products.

The number of conditions covered average around 10 critical illnesses. All policies cover the major illnesses that account for over 80% of expected claims. They are cancer, stroke, surgery to coronary arteries and heart attack or myocardial infraction. Many insurers also provide coverage for aorta surgery, kidney/renal failure, paralysis and major organ transplant as recipient. A host of other illnesses and conditions such as blindness, deafness, and Alzheimer's disease expand coverage of some rider policies upwards of 17 covered conditions.

Age at issue is usually between ages 20 and 55 with the maximum age for receipt of critical illness benefit at around age 65.

The critical illness benefit must usually be less than the sum assured of the base policy. Also, most riders have a minimum amount that can be as low as Rs. 50,000 and as high as 20 laks depending on the base plan and capacity of the insurer. The Indian market has a mix of accelerated benefit plans with both the possibility that the base plan terminates or the base plan continues at a reduced amount of death benefit. Additional payment benefit plans equally exist in the market with and without the continuation of premiums. All critical illness rider benefits have a waiting period and/or a survivor period from 30 days to 90 days before an approved illness claim can be made and then the CI rider terminates.

There are currently two true stand-alone products in the market offering pure critical illness insurance and 4 bundled policies offering a combination of various benefits. For example, one such policy provides multiple benefits on death, critical illness, hospital cash and other events all sold under one policy.

An interesting product introduced recently and also popular in Southeast Asia is critical illness coverage specifically designed for women. In this policy, the major illnesses are covered along with two or three other serious conditions that are of concern particularly to women. Examples of these conditions are lupus, pregnancy complications, breast reconstruction due to breast cancer and congenital anomalies in newborns. Studies have shown that men and women equally purchase critical illness insurance and these plans provide additional coverage for women's concerns bundled for marketing appeal.

CRITICAL FACTORS

Design
Worldwide, a variety of Critical Illness products have developed as a result of sales pressures within a country. There are, however, some common elements.

Conditions Covered
Driven by competition, many CI products have broadened the scope of coverage from an initial set of 3 to 5 major illnesses to as much as 36 illnesses in Southeast Asia. In and of itself, the

inclusion of multiple conditions is relatively straightforward when the corresponding risk is built into the price. The practical application, however, has exposed a few issues.

If we revert to the main objective of Critical Illness insurance and the protection customers seek, there is a strong case for focusing coverage on those severe conditions affecting one's life expectancy. The major, serious illnesses that represent well over 80% of expected claims are cancer, heart attack, stroke, coronary artery surgery and bypass surgery. Other adult conditions include Alzheimer, kidney failure, major organ transplant and paralysis. Childhood debilitating diseases include cerebral palsy, cystic fibrosis and Down's syndrome. In recent years, conditions have been introduced that beg the question of what is considered "Critical". Emphysema and diabetes are such examples which even if priced appropriately lead one to consider, "Is it time for a General Illness product?"

Multiple conditions further exacerbate the difficulty of communicating coverage definitions to customers. An educated sales force is necessary with the incumbent expenses for training. A broad coverage list often leads the customer to believe that they have cast their protective net adequately without understanding the limitations. It is counterintuitive to the sales process, which is driven on "closing the deal", to point out gaps that the customer may face under each coverage.

However, specific and clear definitions are the foundation of a well designed Critical Illness product impacting on accurate pricing and avoiding surprise future declinations for the customer. Definitions should describe the degree of severity of the condition. Multiple sclerosis and Total and Permanent Disability are examples of conditions where a poor understanding of the definitions has led to unexpected declinations for customers.

Waiting Period and Survival Period
Applied particularly to cases of cancer and multiple sclerosis, waiting periods, also known as moratorium periods, allow time for discovery to reduce the risk of anti-selection. Waiting periods are normally 3 to 5 months long and overlap the survival period of 30 days. Survival periods reflect the underlying nature of the CI survivorship benefit.

Lumpsum Payment
The attractive feature of CI insurance is the lumpsum payout on diagnosis of a Critical Illness or condition. No disability income is paid and no proof of "need" is required, just proof of the condition. In some plans however, the payout may be made over a few number of installments.

Type of Plan
There are two main forms of Critical Illness products: a Stand-alone Policy and a Rider attached to a base life insurance policy.

Critical Illness Riders are attachments to a base policy. Under the form of an Accelerated benefit, the base sum assured or a lesser amount is payable in advance (accelerated) of the risk (death) of the base policy on the diagnosis of a covered Critical Illness and after a waiting period. Any remaining base sum assured is payable further on death. Premiums usually continue but reduce in proportion to the corresponding adjusted sum assured. The Rider benefit can also be an add-on to the base sum assured.

Stand-alone policies in their simplest application pay a benefit, post waiting period, on diagnosis of one of the Critical Illnesses covered by the policy. Varieties of stand-alone products include

packaged benefits payable on the occurrence of a combination of different risks. Under a combined risk policy, one example of a payout model would be the payment of a proportion of the sum assured accelerated to the first risk event. The continuing sum assured and premium would then be reduced accordingly.

Accelerated benefits have the advantage of being more affordable. As the underlying cause of death is related to the major illnesses, earlier Critical Illness payouts very likely represent the death benefit that would have been paid out later and so the morbidity incidence attributable to Critical Illness is likely sufficient to cover the Critical Illness risk.

Waiver of Premium
In the accelerated payment plans described above, the policy can be designed such that the adjusted premiums for the continuing death benefit are waived.

Return of Premium
More current design features are the return of premium option. This is where all premiums are returned at death if no CI claims have been made. Care must be taken to properly price this feature.

Guaranteed Renewable Rates
Guaranteed rates were added as a competitive feature only to be strongly discouraged by reinsurers because of the lack of reliable experience statistics and unpredictable factors such as advances in medical science affecting the credibility of current morbidity rates. Instead, insurers can offer policyholders guaranteed premiums for a short duration, from 1 to 5 years, but have the flexibility to renew premiums to accommodate any changes in the morbidity incidence.

Pricing
The characteristics of pricing CI insurance are much like a life insurance product. The incidence rates are low at younger ages, increasing rapidly at older ages. The rate curve for smokers is higher than non-smokers due to the onset of related illnesses such as lung cancer and heart disease, and males display overall higher rates of morbidity than females. Unlike life insurance, the profit margin is higher to allow for the higher risk associated with CI insurance.

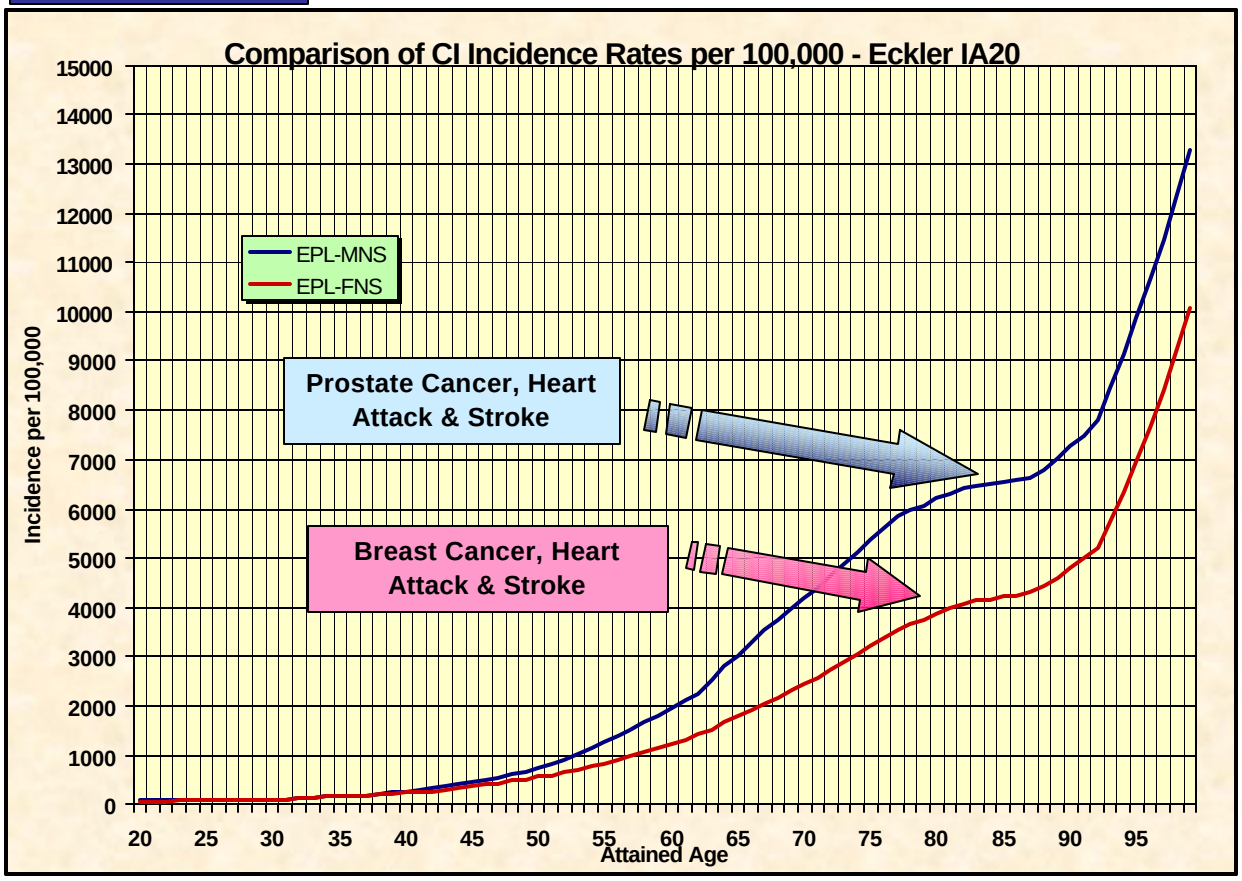
With very little country-specific data, CI has developed globally on borrowed statistics. Until such time that credible country-specific experience becomes available, caution should be exercised when adjusting one country's experience based on another.

Having said that, let's look at some trends from the Canadian experience as summarized and shown in the following graphs:

Differences by Sex
- Male incidence rates are almost always higher than female incidence rates.

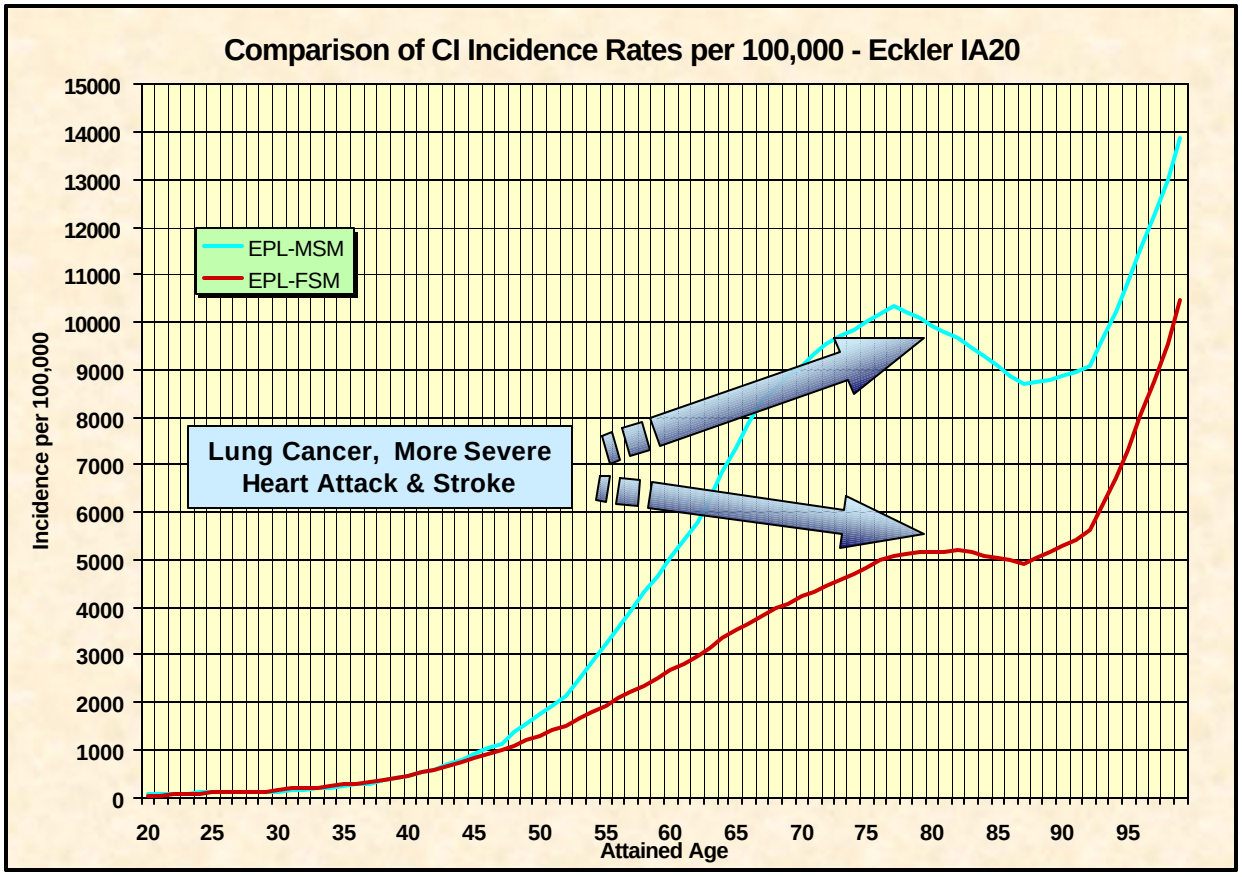
Differences by Smoking Status
- There is a big increase in rates around ages 60-75,
- Slowing down (non-smoker) and reaching a plateau or decreasing (smoker) around ages 80-90, and
- Then increasing very quickly at older ages.

Male vs Female Non-Smoker



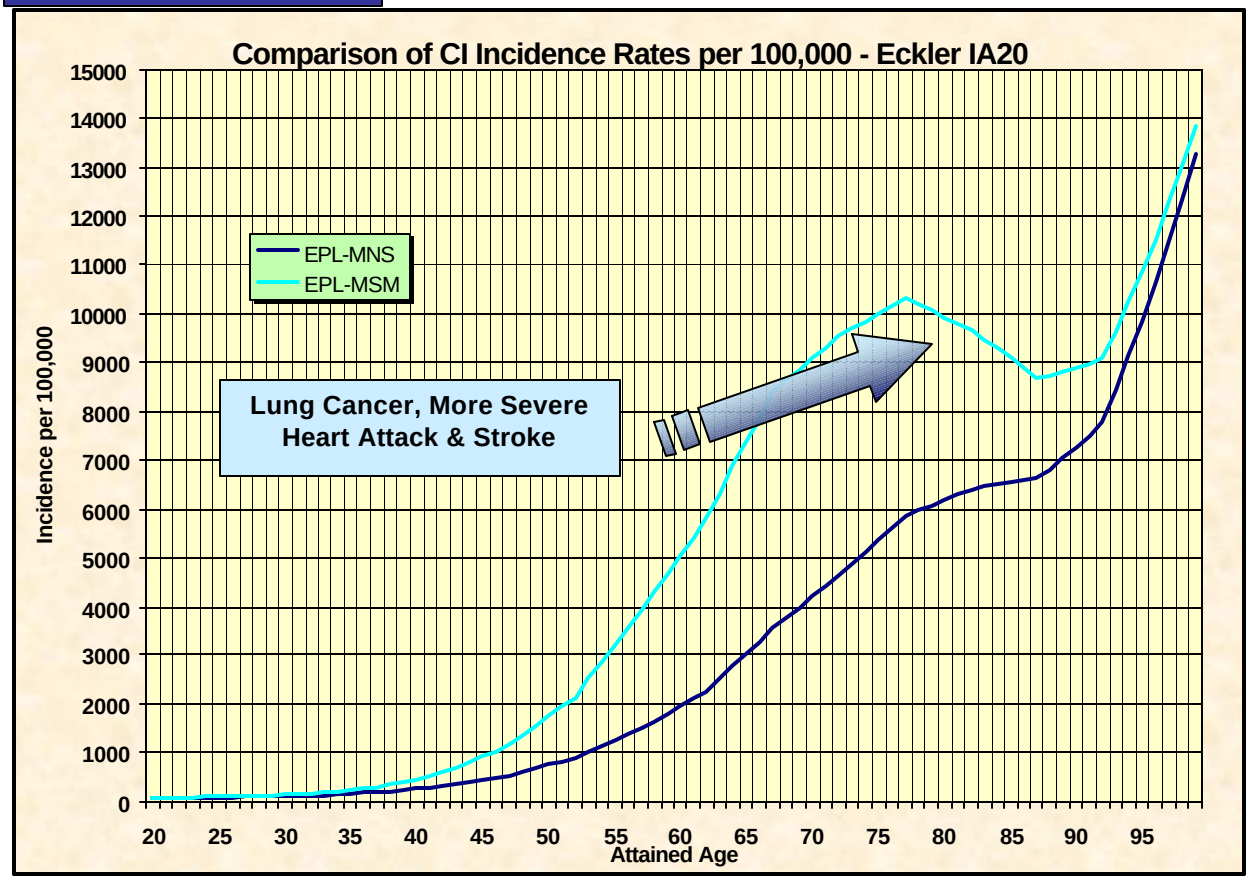
Written for and presented at 8th GCA, Mumbai 10-11 March, 2006

Male vs Female Smoker



Written for and presented at 8th GCA, Mumbai 10-11 March, 2006

Non-Smoker vs Smoker (Male

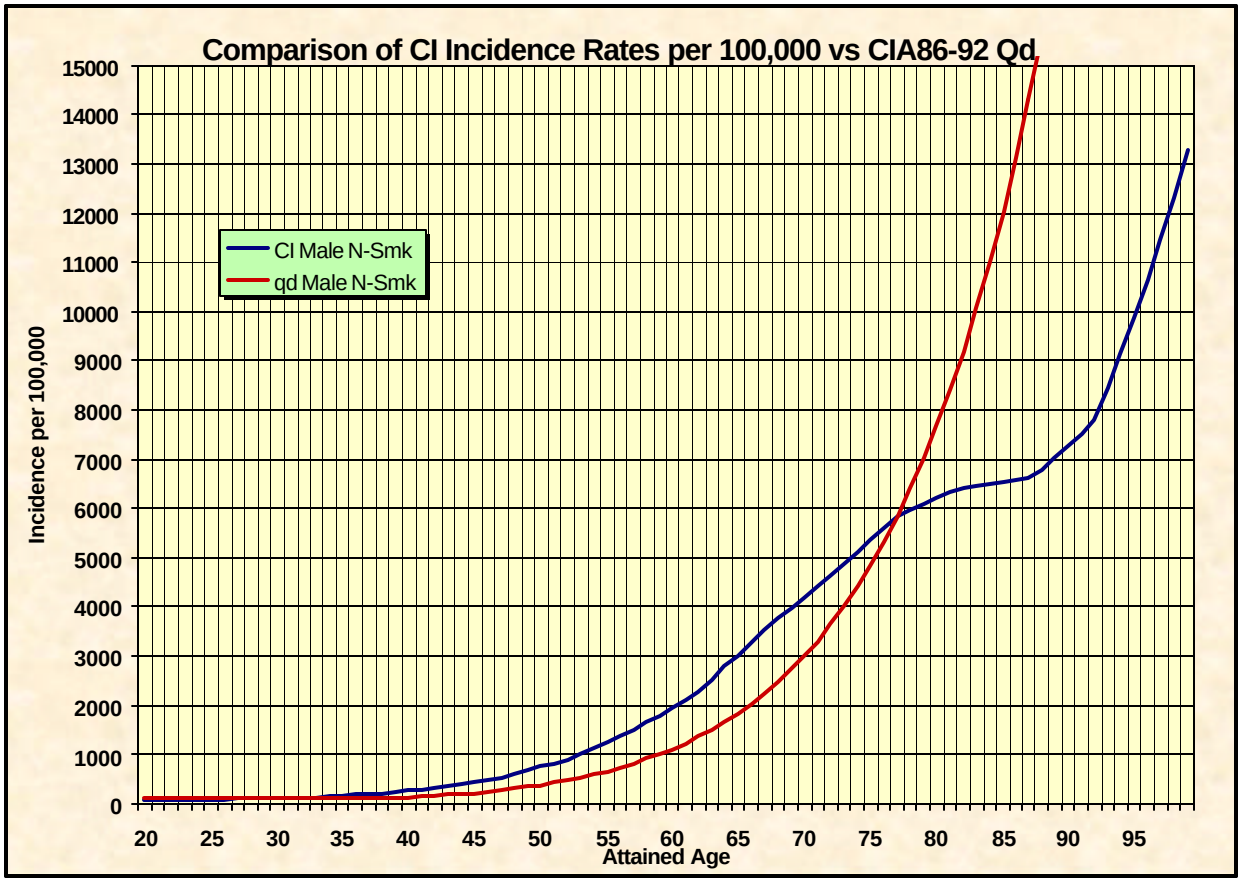


Written for and presented at 8th GCA, Mumbai 10-11 March, 2006

Male Non-Smoker issue age 20, ultimate

- Morbidity is almost always higher than mortality, but not so at the much older ages
  - 20-29: -12%
  - 30-39: +33%
  - 40-49: +94%
  - 50-59: +87%
  - 60-69: +63%
  - 70-79: +14%
  - 80-89: -42%
  - 90-99: -64%

CI Incidence vs Mortality (Male NS)



Written for and presented at 8th GCA, Mumbai 10-11 March, 2006

Sales and Marketing
Critical Illness is more difficult to sell than life insurance. There is a higher cost associated with educating agents and promoting the product. With CI insurance, agents need to understand the many conditions with their specific definitions. Their understanding will help collect valuable information in the application process and help customers understand their coverage to avoid any false expectations. Insurers as well need to have reasonable sales expectations based on reviews of case studies and identified expense recovery mechanisms.

Underwriting
The underwriting process is crucial and the corresponding costs significantly higher than life insurance. Care is required to classify risks, avoid anti-selection and identify any non-disclosures. Again, training is essential and in this case lengthy as a deeper understanding of the medical conditions is required. Further, more medical specialist assessments are needed.
The due diligence process actually begins at the point of sale with the pre-underwriting questionnaire. The questionnaire is essential to reducing declination rates later during the policy issue process. Unfortunately agents find the use of such questionnaire challenging and cumbersome in the sales process.

With a sound underwriting system, insurers can be assured of building a pool of largely standard lives that will experience a manageable number of declined, postponed or substandard cases.

Claims
On diagnosis of a condition, most insurers require a waiting period for confirmation that a survivorship benefit should be paid. If during the examination of the claim file any serious concerns arise, then the claim is directed to an internal claims committee for adjudication. Medical specialist assessments are requested and experienced assessors with a medical background examine the case. A greater degree of medical information is needed to catch misrepresentation and qualification of the definition of the condition as set in the policy.
In general there are more declinations of claims under Critical Illness policies than under life insurance. Claims must meet the definitions of the condition as specified in the policy and be certain that no exclusions apply. Misrepresentation is a common reason for declination in multiple sclerosis, stroke and cancer as well as death during the waiting period in a cancer claim. Declined claims have a greater chance of leading to litigation largely on interpretation of definition. Therefore thorough medical underwriting is crucial to avoiding disputes at the time of claim.

PROFITABILITY AND RISK CONSIDERATION

With its unique and unpredictable set of uncertainties, how can an insurer mitigate the costs of Critical Illness insurance?

What is difficult in pricing CI is not the technical aspect of it. This is roughly equivalent to the process of pricing a life insurance policy. However, while mortality rates are usually well documented, reliable and generally decreasing over time, and also where a state of death is easily demonstrable, CI incidence rates are not based on long historical and reliable statistics and the onset of a critical illness may or may not meet the conditions.

Therefore, we need to find ways to mitigate the costs by bundling certain benefits that offset each other so that if one benefit suddenly increases then another benefit would decrease to some extent.

Package Conditions Covered

The "big 4" conditions, cancer, stroke, heart attack and bypass surgery account for well over 75% to 80% of the cost. Covered conditions can be "packaged" in two tiers:

1. A base plan of the "big 4", and
2. A rider covering all other conditions.

Usually, the incidence rates for the "big 4" conditions are more reliable and therefore this base plan should experience more stable and predictable costs. In addition, packaging the extras conditions will also help to avoid anti-selection. For example, packaging such conditions from a marketing point of view could be sold as a "bronze" version (basic), a "silver" version (intermediate) and a "gold" version (all conditions).

The following represent some of the most popular insurable critical illnesses:

- Aorta Surgery
- Benign Brain Tumor
- Blindness
- Cancer – various forms
- Coma
- Coronary Artery Bypass Surgery
- Deafness
- Heart Attack
- Heart Valve Replacement
- Kidney Failure (Renal Disease)
- Loss of Limbs
- Major Organ Transplant
- Major Organ Transplant Waiting List (% of Transplant Rates)
- Motor Neuron Disease (ALS)
- Multiple Sclerosis
- Occupational HIV
- Paralysis
- Parkinson's Disease
- Severe Burns
- Stroke

There are also some illnesses that are specific for children:
- Congenital Heart Conditions
- Cerebral Palsy
- Cystic Fibrosis
- Down's Syndrome
- Muscular Dystrophy

Recognize the Impact by Smoking Status
As most conditions show a higher incidence for smokers than non-smokers, smoker rates will have to be significantly higher than for non-smoker rates. There is a big increase in the morbidity incidence for smokers around ages 60-75 but most Critical Illness coverage in India terminates around 60 to 65 years of age.

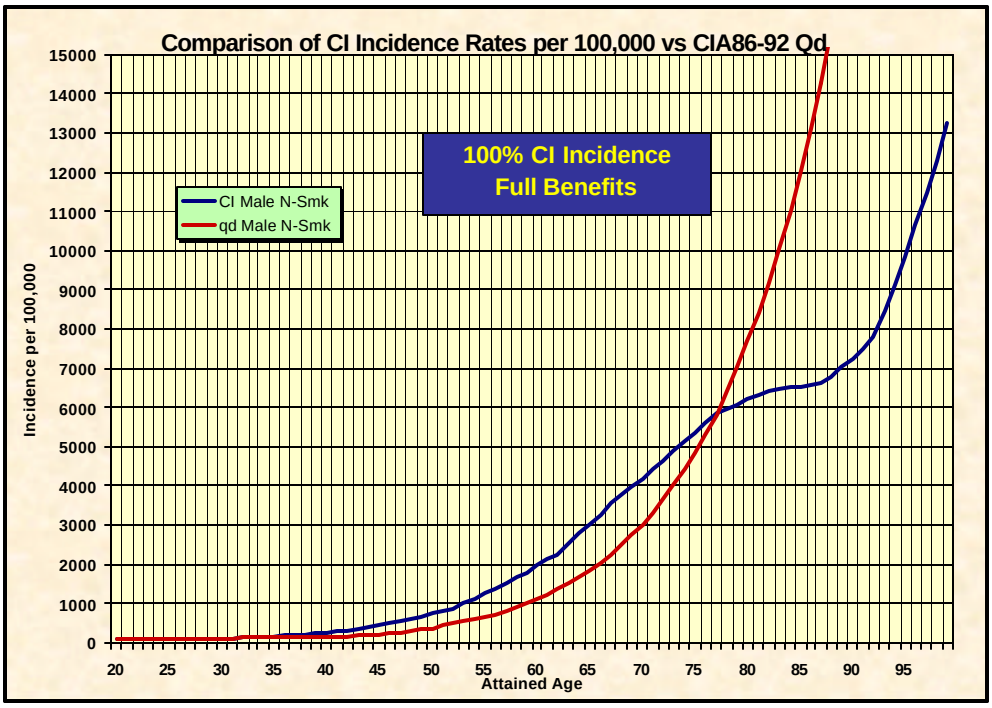
Offer Other Benefits to "Even Out" the Costs
One way to mitigate the cost of CI is to design and price the product to include cash surrender values ("CSV"). Although this will increase the price overall, the insured will also receive more benefits. If the insured makes a claim, then the policy terminates without payment of the cash value. If the insured surrenders the policy, then no CI claim is made.
A variation of the above is to offer a benefit that will return the premiums ("ROP") on death or on surrender. In both cases of course, no claims would have been made.

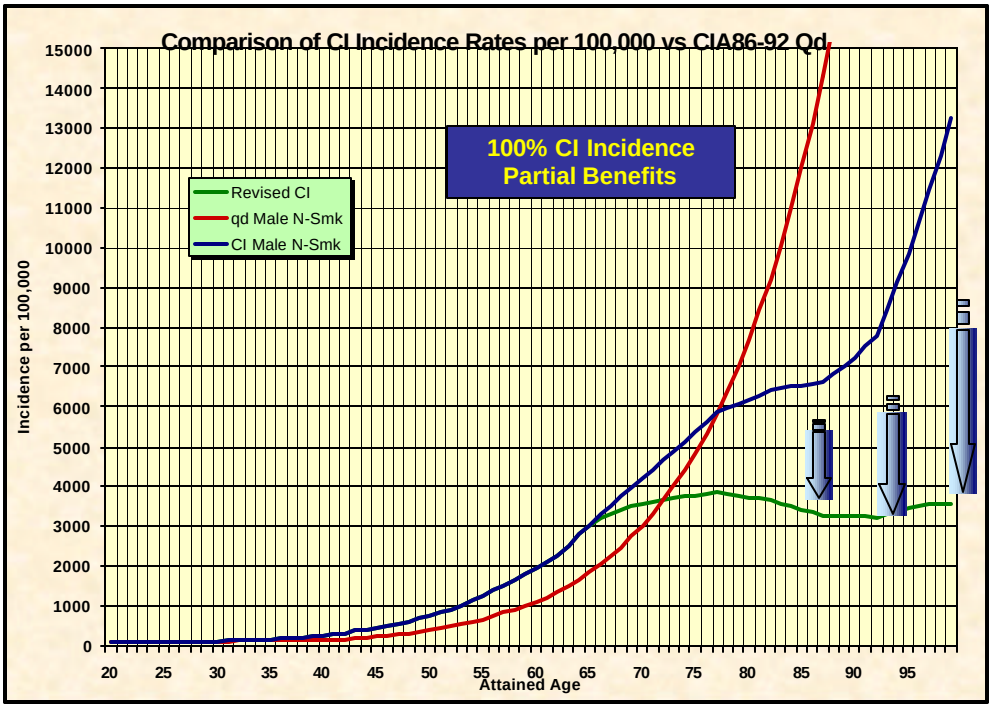
Protect the Downfalls
Offer CI insurance protection on a non-guaranteed rate basis priced competitively and appropriately. Guaranteed protection can then be purchased as a rider and priced conservatively, for example, $8.00/1000 + $2.50/1000 for guaranteed rates.

Change the Benefits Structure
The product could also be offered on a whole life basis but by varying the percentage of benefit payments by attained age, reducing if when the incidence rates increase sharply. For example, the following pattern would certainly help to mitigate the cost and reduce the fluctuations when rates increase:
- For attained ages 20-65: 100% of the original benefits,
- grading to 70% at 75,
- grading to 60% at 80,
- grading to 45% at 90, and
- grading to 25% at 100.

The impact would be to lower ultimate costs at older ages, which is consistent with the reduced financial needs of a typical insured (children gone, house paid, etc.). Overall, premium rates would be lower for all issue ages, especially older lives. Further, a graded benefit structure greatly reduces the lapse supported nature of Critical Illness products.

Although, most CI policies in India currently terminate benefit payments around age 65, the following graphs illustrate the dramatic effect of grading benefits and open the potential for expanding the range of ages covered.


Comparison of CI Incidence Rates per 100,000 vs CIA86-92 Qd
100% CI Incidence
Full Benefits
CI Male N-Smk
qd Male N-Smk
Incidence per 100,000
Attained Age


Comparison of CI Incidence Rates per 100,000 vs CIA86-92 Qd
100% CI Incidence
Partial Benefits
Revised CI
qd Male N-Smk
CI Male N-Smk
Incidence per 100,000
Attained Age

Offer Renewable & Convertible Term Premiums
Guaranteed premiums are an attractive feature for customers but a luxury that insurers of Critical Illness coverage need to be wary of because of the unpredictable nature of future changes to the incidence rates curve. A more palatable approach is the use a renewable and convertible form of coverage, for example, the T10 R&C where premiums remain constant for a 10-year period but increase every 10th anniversary. Premiums going-in are lower and increase rapidly at renewal. Possible variations could include:

- Premiums guaranteed for the first 10 or 20 years, then non-guaranteed.
- Premiums increasing to age 70, then convertible to whole life rates.

Currently in Canada, 40% of Critical Illness policies are R&C, 39% Level, 18% Permanent, 3% Others (source: Munich Re Survey).

Differences by Country
Extending one country's experience to another country must be done carefully. The way to achieve this is to focus on common characteristics. The "big 4" conditions account for 75%-80% of expected claims but this may not be the case in all countries. In this case, it will be appropriate to allow for higher profit margins, or non-guaranteed rates in those countries with less empirical experience.

REINSURANCE ISSUES
Reinsurer's requirements are naturally more stringent for Critical Illness products than life insurance for the reasons discussed previously. There are some ways that insurers can design their products to make them more acceptable to reinsurers

Non-Guaranteed Rates
In the two-tier non-guaranteed/guaranteed structure suggested earlier, the insurer could offer non-guaranteed premium rates which could fluctuate based on the reinsurer's own experience and view. The insurer could then also offer as a rider guaranteed rates at a cost of, say, 25%-30%. This higher limit could be based on a negotiated maximum that the reinsurer could increase the rates to. Until the reinsurer increases the rates, the insurer keeps the rider premium for themselves. By negotiating upfront the maximum reinsurance rates the cost of the rider is then determined.

"Extension" Rider
Currently, Critical Illness coverage in India is limited to around age 65. The "Extension" rider would extend coverage to older lives with reduced benefits after age 65. Cash surrender value benefits or the ROP benefits would help to mitigate the cost.

Lower Face Amounts
Typically reinsurers force lower face amounts and so there may not be as much need for reinsurance, depending on individual retention limits. The reinsurance cost per 1000 is usually more expensive than what the insurer is prepared to assume.

Step Down Reinsurance

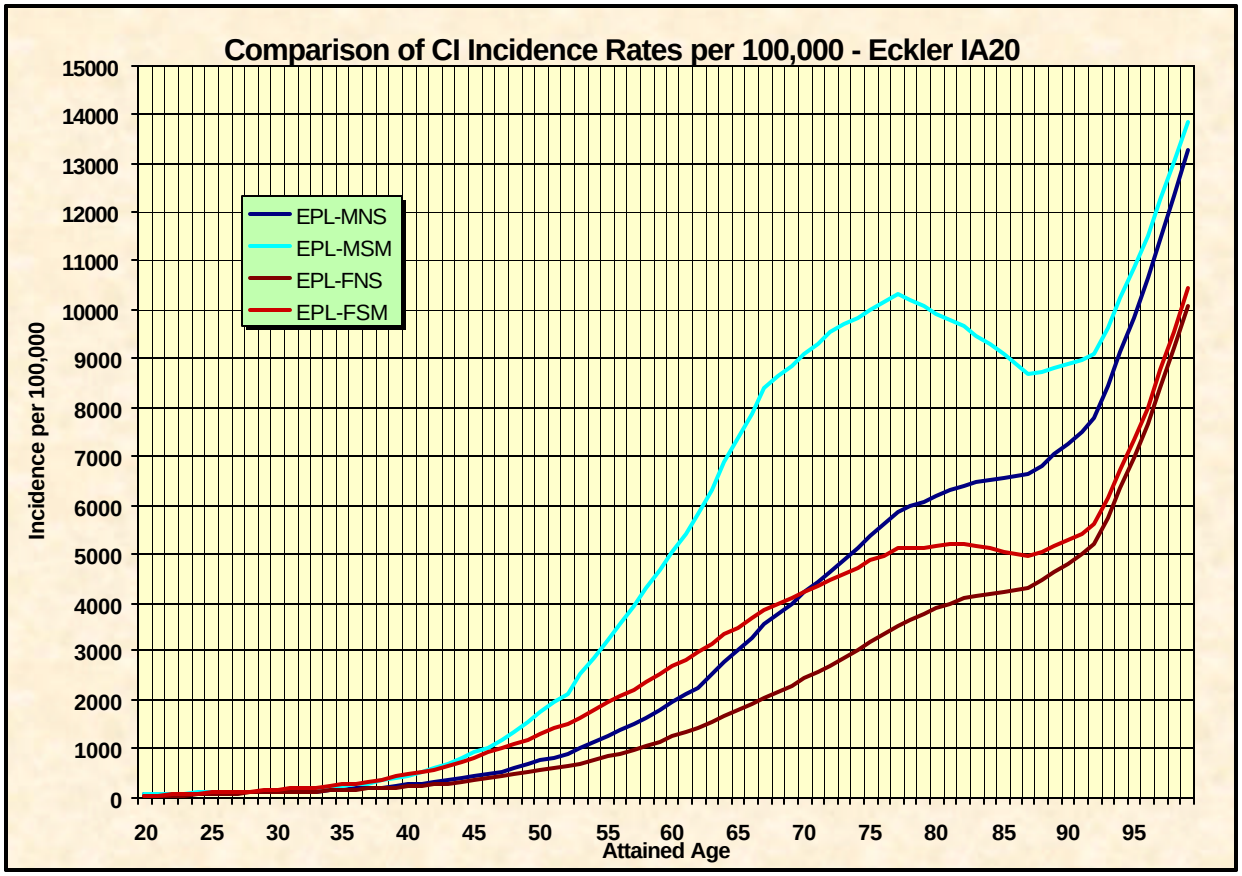
The insurer could negotiate steps down ceding percentages that may be linked to declining benefits, for example, 75% reinsured up to 65, declining to 0% at the very end. For example:

STEP DOWN BENEFITS & REINSURANCE						
Attained Ages	% Base Benefits	Benefits	Ceded Portion	Ceded Amount per 1000	Retained Portion	Retained Amount per 1000
20-65	100.0%	1,000.00	75.0%	750.00	25.0%	250.00
66	97.0%	970.00	74.2%	720.00	25.8%	250.00
67	94.0%	940.00	73.4%	690.00	26.6%	250.00
68	91.0%	910.00	72.5%	660.00	27.5%	250.00
69	88.0%	880.00	71.6%	630.00	28.4%	250.00
70	85.0%	850.00	70.6%	600.00	29.4%	250.00
71	82.0%	820.00	69.5%	570.00	30.5%	250.00
72	79.0%	790.00	68.4%	540.00	31.6%	250.00
73	76.0%	760.00	67.1%	510.00	32.9%	250.00
74	73.0%	730.00	65.8%	480.00	34.2%	250.00
75	70.0%	700.00	64.3%	450.00	35.7%	250.00
76	68.0%	680.00	63.2%	430.00	36.8%	250.00
77	66.0%	660.00	62.1%	410.00	37.9%	250.00
78	64.0%	640.00	60.9%	390.00	39.1%	250.00
79	62.0%	620.00	59.7%	370.00	40.3%	250.00
80	60.0%	600.00	58.3%	350.00	41.7%	250.00
81	58.5%	585.00	57.3%	335.00	42.7%	250.00
82	57.0%	570.00	56.1%	320.00	43.9%	250.00
83	55.5%	555.00	55.0%	305.00	45.0%	250.00
84	54.0%	540.00	53.7%	290.00	46.3%	250.00
85	52.5%	525.00	52.4%	275.00	47.6%	250.00
86	51.0%	510.00	51.0%	260.00	49.0%	250.00
87	49.5%	495.00	49.5%	245.00	50.5%	250.00
88	48.0%	480.00	47.9%	230.00	52.1%	250.00
89	46.5%	465.00	46.2%	215.00	53.8%	250.00
90	45.0%	450.00	44.4%	200.00	55.6%	250.00
91	43.0%	430.00	41.9%	180.00	58.1%	250.00
92	41.0%	410.00	39.0%	160.00	61.0%	250.00
93	39.0%	390.00	35.9%	140.00	64.1%	250.00
94	37.0%	370.00	32.4%	120.00	67.6%	250.00
95	35.0%	350.00	28.6%	100.00	71.4%	250.00
96	33.0%	330.00	24.2%	80.00	75.8%	250.00
97	31.0%	310.00	19.4%	60.00	80.6%	250.00
98	29.0%	290.00	13.8%	40.00	86.2%	250.00
99	27.0%	270.00	7.4%	20.00	92.6%	250.00
100	25.0%	250.00	0.0%	0.00	100.0%	250.00

INCIDENCE RATES

Obtaining empirical data has been particularly difficult because of limited access and experience of both direct writers and reinsurers. In spite of that, research & development is underway in Canada, USA, UK, and Australia. Tables developed will require appropriate adjustments for the market it is applied to.

The Eckler Tables have been developed on a Canadian basis with provision for graduating the curve to specific countries. Cancers, heart attacks and strokes are usually well documented and these incidences can be graduated by country. On comparing these curves based on sex and age, one can determine the variance between the two country-specific incidence curves. Using this variance we can develop an estimated incidence curve for a full range of serious illnesses for a specific country.



CONCLUSION

Critical Illness insurance is certainly a higher risk product. Medical advances in treatment and testing are changing rapidly and unpredictably affecting every aspect of the product from design, pricing, sales, underwriting and claims. An educated staff and related advisors are essential to keep up-to-date and maintain the quality of the pool insured.

The design can be kept simple by focusing on the "big 4" conditions that account for 75%-80% of the total incidence. Incidence rates are available from reinsurers (with exclusivity & confidentiality) or few consultants. Most of the current products, however, have no cash surrender value, ROP, interesting reinsurance features, or anything else that may help mitigate the cost. It would appear that the simple approach is easy to design and price, but a more sophisticated product requires more work.

Using a more complex and therefore more flexible approach allows for creativity in design that works for the markets. Actuaries can use the characteristics of the rate curve to its full effect by taking advantage of the sometimes large differences by sex, age and smoking status. Benefits themselves can reflect different levels with a combination of guarantees and/or non-guarantees. Further, the product can take into account different policy structures, for example, permanent forms, limited age variation and renewable & convertible.

There are also pitfalls to navigate. Adjustments must be employed cautiously for determining differences in incidence across countries to compensate for the lack of reliable or available country-specific data. "CI rates differences" are not the same as "mortality rates differences". Also, higher profitability targets are required to recognize more uncertainty in future experience. The lapse-supported nature of Critical Illness means that the lapse rate assumption will be crucial in the pricing of the product. Further, reinsurance restrictions need to be worked around through negotiations and provisions of special riders.

Regardless of the many risks and challenges connected with Critical Illness insurance, there can be little doubt of the opportunities available globally where the penetration is still relatively low. Innovative packaging and marketing make Critical Illness a still interesting product in an insurer's portfolio.

REFERENCES:

1. Critical Illness Design and Pricing, 2004, Sylvain Goulet, fcia, fsa, maaa
2. A Critical Review, Report of the Critical Illness Healthcare Study Group, 2000, The Staple Inn Society, UK
3. Critical Illness Insurance, 2001, Dr. Ulrike Hartwagner, Werner Hohenberger, Dieter Kroll, Karl-Heinz Schaller
4. Critical Illness Cover – A Time For Review, 1998, Martin Werth and Peter Mannion
5. Critical Illness Insurance: Past, Present and What a Future, 2004, Michael Cavanaugh and Rohit Shenoy
6. Specified Critical Illness Insurance in Today's Worksite Market, 2005, Fred Rodenbach
7. Multiple Sclerosis & Critical Illness Insurance, 2004, Hank George
8. Study of Critical Illness, 1997, Actuarial Society of South Africa
9. Dread Disease Experience Study 1996, The Life Insurance Association of the Republic of China

About the Authors:

Sylvain Goulet
FCIA, FSA, MAAA; AFFILIATE MEMBER OF THE (BRITISH) INSTITUTE OF ACTUARIES

Sylvain graduated from Laval University in Québec City in 1979 with a bachelor in actuarial sciences, and subsequently qualified as a Fellow of the Society of Actuaries, a Fellow of the Canadian Institute of Actuaries, and a Member of the American Academy of Actuaries. He is also an Affiliate Member of the (British) Institute of Actuaries and of the Caribbean Actuarial Association. He has been a Partner of Eckler Partners Ltd. since 1993.

Sylvain began consulting in the field of life and health insurance and financial services in 1984, principally in Canada and the Caribbean. He currently acts as appointed actuary to many life and health insurers, particularly in Canada, Bermuda, Barbados, The Bahamas, the United States, and Panama. He is also active with clients in Jamaica and Trinidad & Tobago.

He specializes in start-ups, strategic planning and risk management, financial reporting, dynamic capital adequacy testing, product design and pricing in the area of traditional and non-traditional life, health and disability products, actuarial appraisals, embedded values, reinsurance negotiations, demutualization, and life settlements, throughout the Americas. A key expertise Sylvain provides is strategic and tactical planning in the context of mergers & acquisitions.

Email: syg@eckler.ca; syg@rogers.blackberry.net

Dharmendra K. Pandit
BSC, LLB, FASI, AIA (LONDON)

Mr. Dharmendra K. Pandit is an Actuary and a Graduate of Law. He is Partner in M/s. K.A. Pandit Consultants & Actuaries.

He joined the Firm in 1973 and was involved in all types of actuarial work related to employee benefits and insurance business. He was instrumental in designing and implementing the Pension Scheme for the Banking Sector.

Currently, he is on the Committee for implementation of IAS - 19 in India for Terminal Benefits. He has an immense knowledge and experience in the field of valuation of Retirement Benefits in India.

He is Appointed Actuary to General Insurance Company of India.

Email: dk.pandit@ka-pandit.com