Article from

Long Term Care News

December 2017
Issue 46

Utilization: Long-Term Care's "Middle Child"

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For the past couple of decades, the long-term care (LTC) insurance industry has been refining assumptions—especially with voluntary lapse rates, mortality and length of stay, as there were significant misses in these assumptions at the time of original pricing. Substantial progress has been made in understanding the intricacies and realities of these assumptions, and incorporating them into pricing and reserves.

With so much focus on these "big ticket" issues, utilization has been, perhaps, not studied as closely. However, utilization has its own nuances and can also have significant impact on profitability and pricing.

Today, utilization is being more closely examined. A major reason is the increasing attention on first-principles modeling, which incorporates a wider variety of individual assumptions from the outset rather than using simpler claim cost aggregates. Companies have also experienced significant changes to reserves due to utilization assumptions that were too low. As companies continue to look for ways to better manage their products, continuing to pay more attention to utilization is a natural next step. In this article, we'll discuss key factors in accurately calculating utilization, and what they mean for LTC insurance products and premiums.

WHAT IS UTILIZATION?

At its most basic, utilization is the amount of benefits that are used when an insured goes on claim compared to the benefits available. It is typically broken into day and dollar components.

Days utilization is a measure of the number of days that services are used compared to the number of days available. For nursing home and assisted facility settings, days utilization is often extremely high as insureds in these settings need to receive care every day. However, home care services are a different story as home health care services are not always, or even typically, provided seven days a week. Often, insureds are only receiving services four to five days a week, with the remainder provided by a spouse or family member or not needed because the individual is able to provide self-care some of the time.

Dollars utilization is a measure of the actual expenses reimbursed under the policy compared to the policyholder's daily benefit amount. Utilization can also be measured on a weekly or monthly basis depending on the terms of the policy. This article will generally assume a daily basis unless noted otherwise.

The other side of the utilization coin is known as "salvage." While the term salvage is sometimes used interchangeably with utilization, they are actually complements of each other. Salvage is the amount of benefit that is not used, which can be represented by:

$$\text{Salvage} = 1 - \%\ \text{utilization}$$

Salvage represents savings for the insurer, because it is the difference between the maximum the insurer could pay and what they actually pay. If an insured only requires five days of home health care services per week, the insurer would benefit from the salvage of two days of non-use.

With the basics of utilization covered it is important to know why utilization should be studied.

WHY DOES UTILIZATION MATTER?

Utilization is a component of the morbidity assumption, which is ultimately used in any projection of future claims. This projection could be for, but not limited to, pricing, cash flow testing, or a gross premium valuation. Actuaries rely on these projections in order to properly price and manage LTC blocks of business.

Utilization is also a key input to claim reserve calculations. Claim reserves are very sensitive to utilization and an inappropriate utilization assumption can have a material impact. For example, if a utilization assumption is understated by 10 percent, the disabled life reserve balance would likewise be understated, but the actual amount of understatement in the disabled life reserve balance would often be less than 10 percent due to extension of benefits (described more below) and the potential wear-off of salvage over time. As a result, refinements in a utilization assumption can lead to meaningful changes to reserve levels. Refinements can be either beneficial (allowing the company to release reserves) or adverse (requiring the company to hold additional reserves).

Although utilization plays a significant role in setting reserves, utilization can be difficult to estimate and set. Estimating utilization is difficult because LTC claims have low frequency. A small sample size of claims makes it difficult to develop a robust utilization assumption.

Another reason to understand utilization is for non-duplication of coverage and the possible impact on new LTC policies

being sold. There have been recent discussions regarding whether a non-duplication of coverage provision should be allowed or not. While this article does not opine on that subject, it is important for the pricing actuary to follow these discussions to ensure that the utilization assumption used in new product pricing is appropriate.

Now that we have seen why utilization is important to consider, we will look at key things to consider when developing a utilization assumption.

KEY CONSIDERATIONS IN CALCULATING UTILIZATION

Utilization seems like a simple concept, but it has a number of nuances that must be correctly taken into account to avoid miscalculations. Being aware of these nuances will allow for appropriate calculations of utilization to accurately project costs and set claim reserves.

Trend

While it would be amazing to see #utilization trending on Twitter that is not what we are referring to with trend. Trend is a combination of inflation protection and cost of services, and becomes relevant when determining dollars utilization. Since trend is generally not applicable to days utilization, it is important to study the day and dollar utilization components separately so that trend can be correctly applied to only the dollar component.

When a plan features inflation protection, it must be accounted for when calculating utilization. In evaluating claim data to calculate dollars utilization, the daily benefit must be properly inflated from the time of policy inception to the time of claim payments. This includes inflating the daily benefit during the course of the claim when the contract specifies that inflation continues during a claim. Properly accounting for inflation is not only necessary for policies with automatic inflation, but also policies that have guarantee purchase options that allow policyholders to periodically add additional amounts of daily benefit to their policy.

Inflation protection also needs to be considered when thinking about how the dollars utilization is expected to change in the future. If the cost of services are expected to increase at a rate equal to that of the inflation protection option, dollars utilization will remain constant. However, if the cost of services are expected to rise faster than inflation protection increases the benefit amount, dollars utilization will increase over time and salvage will decrease. On the flip side, if the cost of services are expected to rise slower relative to the inflation protection

option, dollars utilization will decrease over time and salvage will increase.

Inflation protection can also change over time, such as when an insured drops or reduces their inflation protection. This can be especially prevalent in a "landing spot" scenario in which an insurer offers to offset a premium increase by decreasing inflation protection. When inflation protection is reduced by insureds, companies need to be careful to account for increases in utilization that result from the lower inflation rate in the daily benefit.

Since inflation protection is the same across all sites of care, but the cost of services may change at different rates by site, trending of dollars utilization may likewise need to vary by site of care.

Service Periods

Claim data must be used appropriately when calculating utilization. When service periods overlap, it is important to not double-count days. Table 1 shows how miscalculating in this fashion can affect the calculated utilization. If the overlapping service periods are calculated individually, utilization will be underestimated because a portion of the daily benefit available is being double counted.

For ongoing claims, gaps in service must also be accounted for to avoid introducing errors into the utilization calculation, as shown in Table 2. In this case, utilization will be overestimated because the days of zero utilization are not taken into account. The 70 percent combined total utilization represents the combined impact of the day and dollar components.

Benefit Payment Type

Utilization and salvage vary based on the benefit payment type of an LTC policy.

Indemnity and disability (sometimes referred to as cash) policies ought to see 100 percent dollars utilization and 0 percent salvage because these policies pay the full daily benefit maximum regardless of the actual costs incurred. An indemnity policy can still have days utilization under 100 percent, while a disability policy generally has 100 percent days utilization because the full benefit is paid while the insured meets the benefit eligibility criteria.

A reimbursement policy will see varying degrees of utilization and salvage on both a days and dollars basis because services are only reimbursed for the actual cost incurred up to the daily benefit maximum and for the days in which services are provided.

Table 1
Overlapping Service Period with $150 Daily Benefit

	Service Start Date	Service End Date	(A) Days of Service	(B) = (A) x $150 Pool Available	(C) Claim Payment	(D) = (C) / (B) Utilization
Service 1	6/1	6/5	5	$750	$600	80%
Service 2	6/3	6/10	8	$1,200	$800	67%
Total	6/1	6/10	13	$1,950	$1,400	72%
Combined	6/1	6/10	10	$1,500	$1,400	93%

Table 2
Gap in Service Period with $150 Daily Benefit

	Service Start Date	Service End Date	(A) Days of Service	(B) = (A) x $150 Pool Available	(C) Claim Payment	(D) = (C) / (B) Utilization
Service 1	6/1	6/4	4	$600	$550	92%
Service 2	6/7	6/10	4	$600	$500	83%
Total			8	$1,200	$1,050	88%
Combined	6/1	6/10	10	$1,500	$1,050	70%

Table 3
Availability of Salvage by Benefit Payment Type

Benefit Payment Type	Days Salvage	Dollars Salvage	Overall Salvage
Reimbursement	Yes	Yes	Yes
Indemnity	Yes	No*	Yes
Disability/Cash	No	No	No

*In some cases dollars utilization slightly less than 100 percent may be observed on indemnity policies.

Table 3 summarizes the availability of salvage for each type of LTC policy.

Extension of Benefits

Most LTC policies have a defined pool of money available to a policyholder. This pool of money is determined based on the daily benefit, inflation protection option, and benefit period of the policy. The pool of money is available to policyholders even after the benefit period has "elapsed." This means that if a policy has experienced less than 100 percent utilization and is still in force at the end of the benefit period, the remaining benefits will be available to the insured.

For example, a policy with a $100 daily benefit and a two-year benefit period would have a total pool of $73,000 (= $100 x 2 x 365) available. If this insured only utilized 75 percent of benefits available over the two-year benefit period then $18,250 [= $73,000 x (1 – 75%)] would remain in the pool and would be available for use by the policyholder after the two-year benefit period.

This "extension of benefits" for policies with a pool of money policy structure needs to be considered when developing a morbidity assumption.

One-Time Payments

One-time payments, such as those for durable medical equipment or home modification benefits, need to be accounted for when calculating utilization. These payments are generally reimbursed up to a contracted amount, often a multiple of the daily benefit level, but can be recorded in the claim data as occurring on one day.

Situs

Where LTC services take place can have a significant impact on utilization. Over the course of a claim the situs of care can also change, which further complicates utilization. One example is when an individual's health deteriorates resulting in a transfer from a home health care setting to a facility setting. Transfers need to be accounted for in some fashion or there will be reserving misstatements, as shown in Table 4.

Table 4
Effect of Not Accounting for Transfers: $100 Daily Benefit

Daily Cost of Care by Site of Care			
Claim Year	**Home Health Care**	**Nursing Home**	**Home Health Care transfer to Nursing Home**
1	$75	$100	$75
2	$75	$100	$75
3	$75	$100	$75
4	$75	$100	$100
5	$75	$100	$100
Total	$375	$500	$425
Utilization	75% = $375 / $500	100% = $500 / $500	85% = $425 / $500

Table 5
Benefits Paid and Utilization by Adjudication Method Policy with $100 Daily Benefit

		Adjudication method	
Day	**Cost of Care**	**Daily**	**Weekly**
Sunday	$150	$100	$500 = min ($500 total cost of care, $700 weekly benefit amount)
Monday	$0	$0	
Tuesday	$100	$100	
Wednesday	$150	$100	
Thursday	$0	$0	
Friday	$100	$100	
Saturday	$0	$0	
Total	$500	$400	
Utilization		57% = $400 / $700	71% = $500 / $700

As this simple example illustrates, failing to account for a future transfer, in this case from a home health care setting to a nursing home at the beginning of claim year four, would result in significantly underestimating utilization over the entire claim at 75 percent instead of 85 percent.

While we do not know ahead of time which claims will transfer and when, it is important that transfers are accounted for when setting a utilization assumption. Companies can use either starting situs or current situs to calculate utilization.

Utilization based on current situs will display greater volatility in disabled life reserves for individual claims as they transfer. When using current situs, the mix of claims by site and how that mix may change in the future when projecting morbidity for the block needs to be considered since the mix of claims by situs today is likely not the same as what it will be 1, 5, 10 or 20 years from now.

When using starting situs the utilization will need to be either higher or lower than the current situs utilization because of the embedded impact of future transfers. For example, Table 4 demonstrates that the utilization assumption needs to be higher for a claim originating in a home health care setting to account for the possibility of transfers to higher utilization situses.

In any case, while there are valid reasons to calculate utilization rates based on either starting situs or current situs, the important thing is to be consistent. The methodology chosen will have an impact on experience studies, reserve calculations, and projections. There should also be consistency between utilization and claim termination assumptions in terms of developing the assumptions based on the starting situs or current situs of a claim.

Adjudication of Benefits

Utilization can also be affected by the adjudication of benefits, whether they are paid on a daily, weekly, or monthly basis. If benefits are adjudicated less frequently than daily, utilization can be higher. This is because benefits that are not fully utilized during the adjudication period, either a result of days or dollars salvage, can, in effect, be used by the insured on another day during the adjudication period. Table 5 illustrates differences in utilization for a claim under daily and weekly adjudication of benefits.

CONCLUSION

While utilization may have been the forgotten child of LTC assumptions, it is nonetheless important for companies to consider because of its potential impact on pricing, profitability, and reserves. While not ignored in the past, utilization is now getting its "time in the sun" with some of the other assumptions. With a number of nuances that are easily overlooked and often a lack of good experience data to work from, it can be challenging to develop and set an appropriate utilization assumption. With the growing use of first-principles models, understanding the complexities and intricacies of utilization is becoming a valuable asset in an LTC actuary's arsenal. ■

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