After Alzheimer's: What Happens to Long-Term Care Insurance after a Cure?

By Matt Winegar and Jeff Anderson

R*ainbows End* is an award-winning science fiction novel written by Vernor Vinge, set in 2025 California. Vinge's vision of the future centers around ubiquitous computing—computers are everywhere and integrated into everything. People in this world interact with digital technology to alter the way they see the world and to seamlessly interact with other individuals across the globe. Perhaps most interestingly, in Vinge's future, Alzheimer's disease can be cured and aging reversed. The main character in this novel is an old man who "wakes up" to this strange new world after years of suffering from Alzheimer's disease.

Of course, this is all just fun science fiction, but it still makes for a thought-provoking read. Alzheimer's disease is the most common form of dementia,[1] and represents one of the largest long-term care (LTC) insurance risks. If Alzheimer's disease were curable—both preventable and reversible—what would happen to the LTC industry? How would in-force blocks be impacted, and what would it do to new sales? These are just some of the questions we'll explore in this article.

IMPACT ON ASSUMPTIONS
Claim Incidence

There is very little data available to distinguish LTC claim incidence caused by Alzheimer's versus any other diagnoses. However, the Alzheimer's Association[2] has published statistics related to Alzheimer's incidence in the general population. Table 1 shows the statistics from the Alzheimer's Association report.

We'll combine statistics from that report with some high-level assumptions for the impact of underwriting to convert these Alzheimer's incidence rates to an insured population. Table 2 shows the details of this conversion. The percentages for the "assumed underwriting effectiveness" are intended to represent the effectiveness of cognitive testing to identify current or soon-to-be diagnosed Alzheimer's patients. Please note that these values are being presented for illustrative purposes only. They should not be relied on for anything more than an aid in suggesting the relative incidence rates for Alzheimer's in an insured population.

Table 1
Alzheimer's Incidence[2] in the General Population

Attained Age Group	Alzheimer's Incidence Rate
65–74	2 new cases per 1,000 people, or 0.0020
75–84	13 new cases per 1,000 people, or 0.0130
85+	37 new cases per 1,000 people, or 0.0370

Table 2
Assumed Alzheimer's Incidence in an Insured Population

Issue Age	Assumed Sales Mix	Assumed Underwriting Effectiveness by Age of Alzheimer's Incidence		
		65-74	75-84	85+
<55	35%	10%	10%	5%
55-59	24%	25%	10%	10%
60-64	24%	75%	50%	25%
65-69	13%	95%	75%	25%
70-74	3%	95%	85%	50%
75-79	1%	n/a	95%	75%
Total Assumed Underwriting Effectiveness		43%	31%	16%
Assumed Alzheimer's Incidence for Insured Population [3]		0.0011	0.0090	0.0311
SOA Total Claim Rate From the Aggregate Experience Tables [4]		0.0047	0.0236	0.0715
Alzheimer's Incidence as a % of Total Claim Incidence		23%	38%	43%
Assumed Alzheimer's Incidence as a % of Total Claim Incidence		20%	35%	40%
Non-Alzheimer's Incidence Adjustment Factor		80%	65%	60%

Table 2 suggests that Alzheimer's disease might represent 23 percent to 43 percent of all new claims for ages 65 and above. Because some proportion of Alzheimer's claimants would still incur claims for other reasons, we rounded the Alzheimer's incidence down to the nearest 5 percent for the purposes of this article.

Claim Termination

According to the Alzheimer's Association,[5] the average life expectancy after an Alzheimer's diagnosis is four to eight years, although some individuals may live up to 20 years. Depending on the progression of the disease, this can lead to very long LTC claims. If Alzheimer's were cured, there would likely be a reduction in the average claim length and an increase in claim termination rates.[6]

Using the Society of Actuaries (SOA) aggregate claim termination database, we developed high level adjustments to claim termination rates. Because we did not normalize the data to adjust for mix and other factors, the adjustment factors in Table 3 are for illustrative purposes only. They were developed based on a comparison of claim terminations for non-Alzheimer's diagnoses and claim terminations for all known diagnoses.

Table 3
Assumed Unisex Adjustments to Convert from Total to Non-Alzheimer's Claim Termination Rates

Claim Duration (mo)	Claim Incurral Age							
	<60	60–64	65–69	70–74	75–79	80–84	85–89	90+
1–6	115%	120%	135%	140%	135%	130%	120%	115%
7–12	115%	120%	135%	135%	125%	120%	115%	110%
13–18	110%	115%	125%	115%	120%	110%	105%	105%
19–24	105%	110%	110%	110%	105%	105%	100%	100%
25–48	100%	105%	105%	100%	100%	100%	100%	100%
49–72	100%	100%	100%	100%	100%	100%	100%	95%
73 +	90%	90%	90%	90%	90%	90%	90%	90%

Figure 1
Claim Costs Comparison
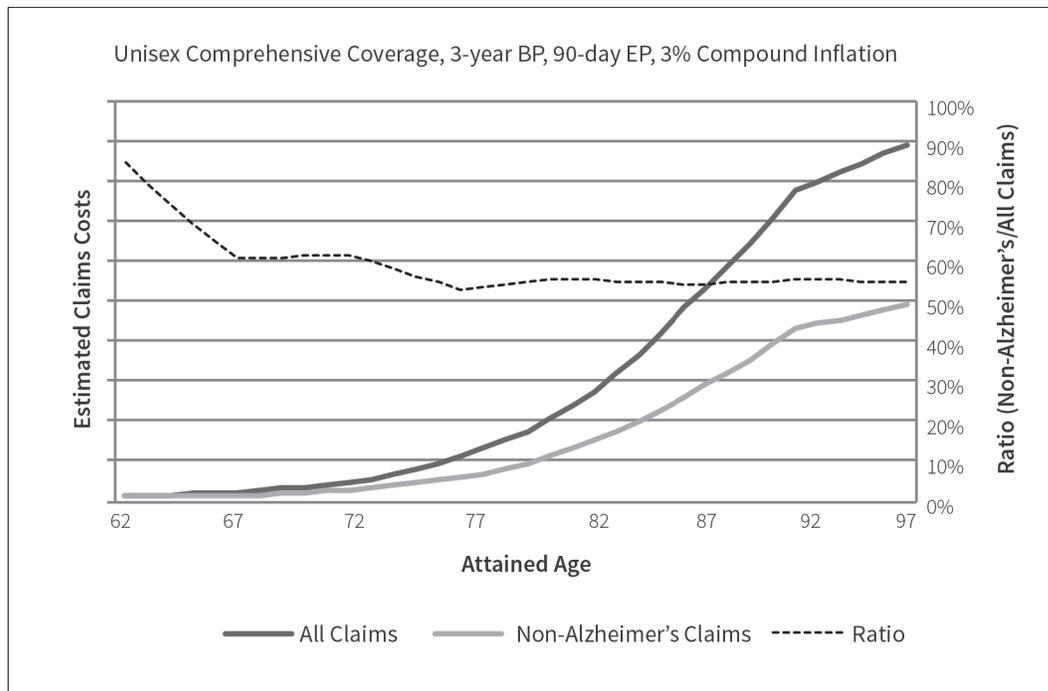
Claim Costs

Applying the claim incidence adjustments (Table 2) and the claim termination adjustments (Table 3) to our baseline claim costs produces claim cost curves which approximate the costs for LTC coverage excluding Alzheimer's claims. The graph in Figure 1 compares the projected claim cost curves for all claims and non-Alzheimer's claims. As shown in the graph, the claim cost reductions range from 15 percent to 45 percent by age 75. Reductions of this magnitude, especially at older ages, can lead to dramatic decreases in overall LTC costs.

Mortality

If Alzheimer's disease were cured, actuaries would want to consider potential changes to the mortality assumptions underlying any LTC insurance projections. The Alzheimer's Association[7] found that of people age 70, those suffering from Alzheimer's are twice as likely to die before age 80 as those without. Some adjustment to mortality rates for the age 65+ or 70+ population may be warranted.

The adjustment itself would depend on the type of actuarial model each company uses. If the models are based on a total life mortality assumption, then mortality rates should go down as fewer insureds suffer from Alzheimer's and therefore

live longer, healthier lives. However, if the company uses a first-principles model—modeling active lives separately from disabled lives—the adjustment might be opposite. Active life mortality would likely stay the same, but disabled life mortality might actually increase. We can infer from the ratios in Table 3 that Alzheimer's claims generally last longer than other claims. This implies that disabled life mortality is lower for Alzheimer's claims than for other claims. Still, the net modeled result should theoretically be the same as a total life model—without Alzheimer's disease, there should be more active lives and therefore lower mortality rates in total.

Voluntary Lapse

A cure would also impact lapse rates as it could induce a shock lapse when insureds reevaluate their perceived need for coverage compared to the cost of the premium. Insureds who purchased coverage believing they had a future risk of Alzheimer's may decide that the coverage is no longer worth the cost. This may be particularly acute on policies with large benefit periods because non-Alzheimer's claims are shorter, on average, than Alzheimer's claims.

A secondary consideration resulting from shock lapse is adverse selection. Insureds who continue coverage after a

shock event are generally considered to be less healthy than those who lapse. This phenomenon has existed as part of LTC rate increases for years, but should be viewed from a different perspective in this context. In many projections, adverse selection is modeled as a load to claims for those who persist. In this situation, the persisting insureds might actually be more similar to the historical average claim levels (when Alzheimer's was present), while those who lapse could be much healthier than the historical average. The adjustment to claims for adverse selection might, therefore, be an increase from the new morbidity level, but would likely still be a decrease from the historical average.

IMPACT ON VALUATION AND RATING
Valuation
The assumption changes described above would likely have different impacts on the various types of reserves. It may be difficult to revise active life reserve (ALR) calculations, but disabled life reserve (DLR) and premium deficiency reserve (PDR) calculations could be revised relatively quickly.

As there is currently no precedent for LTC insurers for a societal change as large as a cure for Alzheimer's, the impact

on ALR assumptions under any basis is unknown. Based on Financial Accounting Standards (FAS) No. 60, GAAP ALR assumptions are locked-in unless a premium deficiency exists, while regulatory approval is generally needed in order to revise statutory ALR assumptions. However, if the industry has moved to principle-based reserve (PBR) calculations by the time of the cure, companies may be able to revise ALR assumptions to reflect updated expectations.

Claim reserves could be more easily revised as the assumptions are not locked-in. If Alzheimer's were cured there would likely be a large release in claim reserves for two reasons. First, some Alzheimer's claimants may cease to be eligible for benefits. Second, if the claim diagnosis is not already reflected, the claim termination assumptions for remaining claims would need to be revised to reflect non-Alzheimer's experience, generally resulting in shorter projected future claims.

Gross premium valuation (GPV) projections used to calculate statutory PDR are based on best estimate assumptions, with provisions for adverse deviation. Therefore, the updated expectations of future morbidity and persistency, along with the updated in-force population after any shock lapse, could

immediately be reflected. This would likely result in PDR releases.

Rating

Rate increases have become a fact of life for the LTC industry over the last decade. However, if Alzheimer's were cured, we may suddenly be living in a world of rate decreases. Today's LTC Model Regulation requires an annual actuarial certification that rates are sufficient to cover anticipated costs. This is a marked difference from certifying that rates are not excessive (though some states do require such a certification). In effect, most states would have to rely on each carrier to voluntarily file for a rate decrease; the state may have no regulatory mechanism to compel a rate decrease. However, some Actuarial Standards of Practice may suggest that the actuary consider a rate decrease eventually. Perhaps an Alzheimer's cure could spur a revision to the LTC Model Regulation.

In lieu of a rate decrease, mutual companies may be able to return excess profits to policyholders via dividends. But what about stock companies? Many insurance regulators assert that carriers cannot recoup past losses when filing for a rate increase. However, would regulators allow carriers to recoup past losses after an Alzheimer's cure before pushing for rate decreases?

IMPACT ON NEW BUSINESS

With a cure for Alzheimer's disease, we would expect a material reduction in LTC premium rates for new business. On the surface this sounds like excellent news for the industry. Increasing premium rates have long been seen as a leading cause for declining stand-alone LTC sales. If new business premiums were to become suddenly cheaper, would it create new sales "like it's 1999?"[8] Perhaps.

Or perhaps this would be the final nail in the coffin of the stand-alone LTC industry. Alzheimer's disease is one of the most significant risks covered by LTC insurance. If that risk were to go away, would consumers still find value in LTC insurance? Of course, LTC insurance would still cover a wide range of other risks that provide meaningful value to current and prospective insureds, but how would the value proposition change in a post-Alzheimer's world?

A cure for Alzheimer's might also be a boon for other products. Short-term care may see a sudden rise in popularity because the new post-Alzheimer's average claim length could become shorter. Combination products may become even more popular, too. The cost would be lower for the LTC portion of the combination product, and the (sometimes) shorter benefit periods associated with combination products could be perceived as providing more value than today.

IS A CURE COMING?

A cure for Alzheimer's has been a holy grail of the pharmaceutical industry for many years, yet there are no drugs or treatments available today proven to reverse, stop, or even slow the neurological damage from Alzheimer's disease.[9] Science has not yet brought us into the future imagined by Vernor Vinge, but one thing is clear: a cure for Alzheimer's would not only change the world as we know it, it would also have a significant impact on the LTC industry. ∎

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ENDNOTES

1 "2016 Alzheimer's Disease Facts and Figures" by the Alzheimer's Association, page 5 Retrieved Dec. 8, 2016 from *http://www.alz.org/documents_custom/2016-facts-and-figures.pdf*

2 "2016 Alzheimer's Disease Facts and Figures" ibid, page 21.

3 The assumed Alzheimer's incidence for an insured population is equal to the raw Alzheimer's incidence rates from Table 1 times (one minus the total assumed underwriting effectiveness).

4 Data from the Claim Incidence Rates data from the January 2015 "Society of Actuaries Long-Term Care Intercompany Experience Study—Aggregate Database" Retrieved Dec. 8, 2016 from *https://www.soa.org/Research/Experience-Study/Ltc/research-ltc-study-2000-11-aggregated.aspx.* Filtered for all genders, all coverage types, all durations, grouped together for the incurral age buckets shown. The incidence rates shown are determined based on a total exposure basis.

5 "Stages of Alzheimer's" *http://www.alz.org/alzheimers_disease_stages_of_alzheimers.asp.*

6 Data from the Claim Termination Rates data from the January 2015 "Society of Actuaries Long-Term Care Intercompany Experience Study—Aggregate Database" Retrieved December 8, 2016 from *https://www.soa.org/Research/Experience-Study/Ltc/research-ltc-study-2000-11-aggregated.aspx.*

Compared claim termination rates by gender, incurral age, and claim duration for all diagnoses except Alzheimer's and Unknown to the same rates for all diagnoses except Unknown. Grouped into claim duration buckets and credibility weighted with the rates for all incurral ages assuming a credibility threshold of 271 claim terminations. Blended assuming 60%/40% female/male distribution to produce unisex adjustment and then rounded to the nearest 5 percent due to data normalization concerns. Judgment used to smooth adjustments across claim durations.

7 "2016 Alzheimer's Disease Facts and Figures" ibid, page 25.

8 Prince. 1999. Warner Bros., 1982. CD.

9 "2016 Alzheimer's Disease Facts and Figures" ibid, page 13.