

# Long-Term Care News

## SOA LTC Experience Committee Completes 5th Report

by Gary L. Corliss



The fifth Intercompany Report prepared by the SOA LTC Experience Committee has been completed. Previous reports were published in 1995, 2000, 2002 and 2004. The five reports of this committee sponsored by the SOA and prepared by the SOA Long-Term Care Experience Committee, along with reports of 2004 and 2006 also sponsored by the SOA and prepared by LIMRA staff, are the only publicly published reports of experience on lives insured under private LTC insurance plans in the United States. Data for this report has been gathered from, combined with and analyzed from 24 organizations.

This report reaches a major milestone in reporting on a full two decades of exposure—20 years of experience—Jan. 1, 1984 through Dec. 31, 2004. Insurers provided information on 100 percent of their issued policies. Data was managed such that, wherever possible, each company's exposure was roughly in line with their percentage of the industry so as not to distort overall results.

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## Long-Term Care News

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This newsletter is free to section members. To join the section, SOA members and non-members can locate a membership form on the LTCI Web page at [www.soa/ltci.org](http://www.soa/ltci.org). Back issues of section newsletters have been placed in the SOA library and on the SOA Web site ([www.soa.org](http://www.soa.org)).

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# Riding the Waves

by Bruce Stahl

When rowing a boat directly to his destination, the oarsman focuses upon an object on the shore behind the passengers. The most recent SOA experience study is the LTCI oarsman's object of focus, and a summary of it is in this issue. A second article offers us a way to address a few small waves that appear large to some policyholders who are in the boat. Presenting a way to evaluate whether the current and winds are affecting the course we chose is highlighted in a third piece. A fourth feature offers ways to avoid some of the larger waves looming ahead. Finally, three articles offer information that may help reduce the size of some waves.

Waves can work for or against the oarsman. These articles help him avoid those that work against the boat, and ride those that move it ahead.

### LTCI Oarsman's Focus

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We hope you find these articles informative and helpful and we thank the authors for their contributions. If you have any questions or comments, just steer them our way. \*



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# Chairperson's Corner

## Making the Most of Every Opportunity

by Malcolm Cheung

*"It was the best of times, it was the worst of times  
... we had everything before us, we had nothing  
before us ..."*

*A Tale of Two Cities*  
—Charles Dickens



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The long-term care insurance industry today faces unprecedented opportunities for growth. As the oldest baby boomers approach age 65, Medicaid eligibility standards continue to become more restrictive; state public-private partnership programs proliferate throughout the country; and combination products become more appealing to consumers in light of the tax code changes in the Pension Protection Act of 2006. LTCI premiums are beginning to stabilize as insurers reflect emerging product experience in the pricing of their current products and as medical underwriting standards and tools improve and become more effective. Public awareness of the need to plan for potentially catastrophic LTC expenses later in life is on the rise.

At the same time, our industry is being challenged on a number of fronts. Sales growth is still in the doldrums and market penetration remains very modest. Producers are abandoning the product, which is perceived as too complex and too difficult to sell. The need for rate increases on older policy forms persists. Industry claims administration and rating practices are under attack by the media in locations as disparate as New York City and Iowa. State and federal regulators and legislators have reacted quickly to the media criticism and have targeted LTC insurers with data requests, investigations, inquiries and subpoenas.

How we capitalize on these opportunities and respond to these challenges will largely determine the role that long-term care insurance will play in the retirement security of America's

seniors. The members of the LTCI Section of the Society of Actuaries include not only actuaries, but also individuals involved in sales, marketing, underwriting, claims administration, compliance and operations. It will take the collective and collaborative efforts of all these disciplines if we are to successfully navigate the turbulent waters in which the industry currently finds itself.

The LTCI Section Council is committed to facilitating this collaboration and to enhancing your ability to make a meaningful contribution to this effort, whether it's by identifying speakers and session producers for industry conferences and forums, funding LTC related research, increasing your awareness of LTC issues and best practices via our newsletter and our Web site or promoting a sense of community and interconnectedness through the section's various networking tracks.

I look forward to working with the Section Council over the next year to enhance the value of section membership and to strengthen your ability to help shape the future of our industry. \*

Claims incurred on policies during this timeframe were followed from claim inception through the earlier of claim termination or June 30, 2005. Allowing a six-month period to report incurred claims allows for the capture of most of the incurred, but not reported claims occurring on or before Dec. 31, 2004.

Data gathering for this report used a two-record reporting format (rather than the previous three-record approach). In total, this format requested fewer fields. This change was made in hopes of making it easier for non-participating companies to become contributors. The compiler mapped prior records provided for this study under the three-record formats to the new format. The new format and additional participating companies required the SOA LTC Experience Committee and the compiler to spend extensive time scrutinizing and scrubbing the data to ensure that it was as clean as possible. While the process has been daunting and tedious, the committee believes this report provides the best aggregation of industry results to date.

Results in this report have benefited from the increased number of contributors. There is an increased volume of policies, claims, deaths and lapses. Also, committee members consider the quality of the data to be improved. As readers compare this report to the previous reports, they will notice the largest changes from previous reports are in the Voluntary Lapse, Total Termination and Mortality Sections.

The LTC Experience Committee attempts to bring new information or observations into each successive report. This report provides information never before included in these reports on the marital condition. As a group, participating companies have not been able to provide information on the marital status of their insureds at time of issue. However, several

companies were able to provide us with a marker on their policy records when a marital discount was made to the premium. Each section in the report has some information on marital status based on a marital discount. No companies reported marital discounts on their group submissions. Thus, the information on marital discounts is only on individual policy records where the insurer issued policies both with and without marital discounts.

Two other new items should be pointed out. One is in the Morbidity Section and the other is in the Cause of Claim Section. In Appendix D, there is a pivot table labeled D2a. That pivot table will allow users to select different scenarios that they are interested in considering. Information is available by underwriting type, policy duration, attained age, issue age and elimination period.

The Cause of Claim Section has almost tripled in size. The section covers those circumstances where payments have been made for nursing home benefits, home and community benefits and for all or total benefits. This additional delineation has been made for two reasons. The finer separation is made possible because of the increase in the number of companies that have the ability to provide information on home and community benefits. However, there are some companies, primarily early contributors that did not separate their claims into nursing home or home and community benefits. Those claims not separated between nursing home and home care (about 25 percent) are included with all other claims under the total category.

Exposure records have increased steadily with each report. This report has information on 6.5 million policies. Years of exposure have doubled to 25 million years. Exposure distribution continues to lengthen to longer durations than in

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**While the process has been daunting and tedious, the committee believes this report provides the best aggregation of industry results to date.**

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previous reports. The numbers in parentheses below are the comparable results from the previous report.

- 35 percent of the exposure was in the first two policy years (43 percent)
- 28 percent of the exposure was in the third to fifth exposure years (24 percent)
- 69 percent of the exposure remains on individual insureds (69 percent)
- Average issue age of all insureds in the database is 59 (61)
- Average issue age of individual insureds is 64 (67)
- Average issue age of group insureds is 46 (47)
- Average attained age of the insureds in the database is still 64 (64)
- Female insureds represent 57 percent of the exposure (59 percent)

Claimants virtually doubled from 95,000 in the 2002 report to just over 172,000 in this report. The percentage of claims having some home and community care significantly increased (just under half) from that in the prior report.

- 55 percent of the claims only paid for nursing home care (80 percent)
- 26 percent of the claims only paid for home care (15 percent)
- 19 percent of the claimants paid for both nursing home and home care (5 percent)
- 96 percent of the claims are closed
- Average attained age on incurral date of claim was 78.9 years (79.9)
- Average length of all claims is 2.04 years (1.87)

The compiled data continues to verify previously reported findings:

- Incidence rates rise steadily by attained age and policy duration
- Mortality rates increase steadily by attained age and policy duration

- Morbidity and mortality selection is apparent in early policy durations
- Alzheimer/dementia claims remain the dominant and growing cause

New findings in this report:

- Group lapse rates for longest durations continue to decrease
- Voluntary lapse and total termination rates dropped significantly
- Marital status demonstrates unique results

Other general results of interest:

#### *Incidence Rates*

- Overall incidence rate is .64 percent (down from .69 percent)
- Female to male ratio of incidence rates continue to increase
- Incidence rates are generally inverse to elimination period and attained age—except above age 75.

#### *Claim Continuance*

- Generally increases with increasing age at claim until about age 90
- Average length of claim extended modestly to 1040 days (914)
- 66 percent of nursing home claims end in death (68 percent)
- About half of home care claims end in death and half in recovery

#### *Cause of Claim*

- Alzheimer's claims are the most frequent, longest, most expensive, for ages after 65, for both genders and all incurral year cohorts since 1988
- Nervous disorders is leading cause for nursing home claims under age 65
- Cancer is leading cause for home care claims under age 65

### Mortality

- Overall mortality rate slipped slightly from 1.1 percent to 1.0 percent
- Mortality rate decreased from last study at all ages under 85
- Male mortality remains about 40 percent greater than female
- Mortality is considerably lower than 83 GAM, A2000, and 2001 VBT
- Mortality select period looks to be at least 10 years
- Disabled lives mortality has increased to 23 times that of active lives
- Disabled lives mortality for LTCI is roughly 200 percent greater than disability

### Voluntary Lapse Rates

- Average annual lapse rates dropped noticeably to 5.5 percent (7.4 percent)
- New participating company experience lower over most durations
- Lapse rates now decrease for 13 durations (nine policy years previously)
- Lapse rates now flatten much more at later durations than previously
- Group insurance lapses start out higher, then drop below individual rates after 10 years

### Total Termination Rates

- Average annual total termination rates dropped to 6.8 percent (8.9 percent)
- For issue ages over 70, total termination rates increase steadily
- Mortality rates exceed lapse rates at attained ages 85 and older

### Home Care

- Average number of visits were 3.2 per week (4.3)
- Cancer has largest number of visits per week at 4.0
- Nervous system disorders cause longest claims

### Limited vs. Unlimited Benefit plans

- Incidence rates are not consistently different by benefit period
- Voluntary lapse rates are not consistently different by benefit period

The complete report is available online at <http://www.soa.org/research/research-long-term-care.aspx>\*



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## LTC Newsletter Publication Schedule

Publication Month:	Articles Due:
April	January 8
September	June 19
December	September 24

# “Instant Replay” for Claims

by Bob Yee

**T**he *New York Times* article on claim practices of Long-Term Care Insurance (LTCI) insurers exposes the gap between the public perception and the industry’s perspective on the product offering. Those working in the industry see LTCI claim denials as so negligible as to be a non-issue, especially when compared to other lines of health business. Unfortunately, in this case, perception trumps reality because the customer is always right. So far, the industry has been countering with defensive rebuttals of the allegations as well as emotional testimonials regarding the insurance benefits. In spite of these efforts, the adverse publicity is like a hangover that is not going away. The article prompted further investigations both on the federal and state levels. A pragmatic response from the industry is needed to hold off the growing discontent.

One idea is to establish a review process for claim disputes. Review process is not a new concept. We have it in professional football, tennis and even in the actuarial profession. One application in particular, the Financial Ombudsman Service (FOS) in the United Kingdom, merits consideration. It provides an independent avenue to settle disputes between financial institutions (including insurers) and their customers. FOS was established by an act of Parliament and has been in operation since 2001. The service is free to the customers and is completely confidential.

A similar approach may work for LTCI here. A board of ombudsmen can be formed to offer impartial arbitration between insurers and claimants. Participation by the insurers is voluntary. Participating insurers would fund the board. The amount of contribution from each such insurer can be based on the number of new claims during the past year.

When a claim is denied, the participating insurer will inform the claimant about the availability of this service. If the claimant is not satisfied with the insurer’s final decision, he or she may seek the service of the ombudsman. After an initial evaluation, the ombudsman may

side with the insurer and decline to intervene. The claimant is then free to seek other legal recourse. If the ombudsman agrees to review the case further, his or her decision will be binding on both the insurer and the claimant. There will be no award above that provided by the provisions of the policy in question. Similar to the FOS, the aim of the ombudsman is to settle disputes fairly, quickly and informally.

Why would this approach be perceived as beneficial to consumers? The time between issue and claim for LTCI can be as long as 50 years. Policy provisions and definitions may not fully anticipate future changes in service environments. Examples include facility definition, facility licensing requirement, covered home care service, etc. Consumers have a legitimate concern that the insurer today has the sole discretion to interpret contractual obligations, short of any legal actions by the claimant. The typical claimant has far fewer legal resources than the insurer, especially when the claimant is likely to be elderly. The ombudsman concept puts the claimant on a more equal footing with the insurer.

Why would an insurer want to participate? A strong reason would be competition. The insurer could be at a competitive disadvantage if it chooses not to participate. Even if the insurer has ceased selling LTCI, sales in other lines of business may still suffer because non-participation raises questions of the insurer’s claim practices on all its business. From a cost standpoint, there are the potential savings from litigation, including savings from punitive judgments. Based on the industry’s assertion that claim disputes are uncommon, funding for the board may be quite reasonable. Yet, the potential goodwill for the industry can be tremendous.

Now is the right time for the industry to voluntarily offer a real solution to alleviate the public’s concern—before any onerous legislation is imposed on the industry. Starting the ball rolling is easy. The trade associations are the natural venue to make the first move. ✱



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# Moving Beyond Retrospective Testing for LTCI Reserves

by Daniel A. Nitz and Allen J. Schmitz

It has long been accepted among actuaries that retrospective—or “retro” testing—is a blunt tool when it comes to establishing the ongoing adequacy of claim reserves for blocks of long-term care insurance. A retro test examines the adequacy of claim reserves by comparing them to the sum of paid claims following the valuation date and the estimated remaining reserve. But, because remaining reserves are estimated, the test is not conclusive.

Claim reserves shape early financial perceptions of a block of Long-Term Care Insurance (LTCI) business, for both good and bad. Profits and pricing decisions are heavily dependent upon accurate reserves. When it comes to financial reporting, claim reserves offer the most direct method of reflecting emerging experience. Other reserves are typically locked-in, but claim reserve assumptions can be updated as often as quarterly—based on emerging experience—and play an important role in profitability. Therefore, closely tracking and monitoring the appropriateness of the claim reserves plays an important role in managing any LTCI business. In fact, follow-up studies and tests of reasonableness of prior period incurred claim and reserve estimates are required as part of Actuarial Standard of Practice #5.

As Jim Berger pointed out in the August 2007 issue of *Long-Term Care News*, pure statistical fluctuation or randomness is one source of claim reserve variation from expectation. Keeping in mind statistical randomness, a retro test is one approach an actuary can use to examine the appropriateness of the claim reserves.

## Inherent Weaknesses of Retro Tests

Retro tests have a number of weaknesses. To begin with, retro tests are somewhat circular,



since part of the test involves the tail reserve level—a number often derived from very little (if any) hard, experiential data. If that tail level is destined to ultimately prove inadequate, then the retro test results will be flawed. The situation is further complicated by the inclusion of multiple claim durations in a single calendar period. A basic retro test looks at aggregate experience over multiple claim durations. It does not thoroughly test the adequacy of reserves. It only shows that the reserve estimate made at the beginning of the period looks sufficient or, conversely, deficient. In either case, the determination is being made with limited data aggregated over different claim durations. Relying on this basic level of retro testing as the primary determinant of claim reserve adequacy is the actuarial equivalent of predicting the Super Bowl winner based on team pass completion percentage through October. It may help, but there are many other items to be considered.

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**To address the deficiencies built into basic retro testing, it is necessary to dig deeper and acquire more information to evaluate and report on the adequacy of LTCI claims reserves.**

Despite its limitations, this basic level of retro testing is required as part of year-end financial reporting and in Schedule O. In addition to other limitations of retro testing (described in this article), Schedule O includes two primary deficiencies with respect to LTCI claims.

1. Schedule O does not account for interest. Claim reserves for LTCI are calculated using an interest rate discount; therefore, including interest as part of the retro testing calculation is important.
2. Schedule O is performed on a calendar year basis and aggregates claim data across claim durations. This can lead to inappropriate conclusions about the appropriateness of claim reserve levels as demonstrated in the following example.

Part of the problem with performing retro tests on a calendar year basis across claim durations occurs because the duration of a claim can vary from a fraction of a year to more than a decade. In addition, different diagnoses are associated with widely different claim intensity levels, from a small number of hours per week of home care, to more intense care provided in a nursing facility. Many other factors, briefly described later in this

article, can influence LTCI claim termination rates and retro tests as well. For example, if the mix of claims currently in force is heavily weighted to claims in their early durations, and the claim termination rate assumption underlying the claim reserves are too high in the early durations and too low in the later claim durations, the basic retro test may yield inappropriate results.

To address the deficiencies built into basic retro testing, it is necessary to dig deeper and acquire more information to evaluate and report on the adequacy of LTCI claims reserves. Performing retro tests on a durational basis is critical toward that end. The illustrative example describes how that can be accomplished.

**Illustrative Example**

The following example demonstrates how misleading basic retro tests can be when it comes to measuring reserve adequacy. Consider a set of hypothetical valuation assumptions as shown in Table 1 for a cohort of 1,000 claimants. The table shows expected annual termination rates, corresponding expected paid claims and claim reserves.

Table 1 Valuation Assumptions							
Claim Duration in Years	Claimants (BOY)	Termination Rate	Claimants (EOY)	Claim Reserve (BOY) (M)	Expected Paid Claims (M)	Claim Reserve (EOY) (M)	Claim Reserve Factor* (EOY)
1	1,000	40%	600	\$66.9	\$29.2	\$37.7	\$62,833
2	600	30%	420	37.7	18.6	19.1	45,476
3	420	25%	315	19.1	13.4	5.7	18,095
4	315	100%	0	5.7	5.7	0.0	0

BOY = Beginning of Year, EOY = End of Year, Claim Reserves assume no interest discounting (for simplicity). \$ in Millions.  
\*Claim Reserve Factor is the Claim Reserve per active claimant at the end of the year.

To illustrate the problems with basic retro tests, assume an in-force block of LTCI claimants with 1,000 claimants in duration 1, 300 in duration 2 and 200 in duration 3. The starting reserve, based on the valuation assumptions, is approximately \$95 million and actual experience emerges as shown in Table 2. The retro test is calculated by taking the claim reserve at the beginning of the year and subtracting the sum of paid claims and ending reserve.

Breaking apart the retro test by duration provides more insight than merely looking at the total, and essentially provides a high level continuance table or actual-to-expected analysis of termination rates. As discussed below, there are many other complicating factors to a detailed continuance table analysis; however, the durational retro test will help to begin unmasking some of those issues.

Table 2 In-force Claims and Actual Experience for Calendar Year Period						
Claim Duration in Years	Claimants (BOY)	Claimants (EOY)	Claim Reserve (BOY)	Paid Claims	Claim Reserve (EOY)	Retro Test
1	1,000	650	\$66.9	\$30.1	\$40.8	\$(4.0)
2	300	180	18.9	8.8	8.2	1.9
3	200	100	9.1	5.5	1.8	1.8
Total	1,500	930	94.9	44.4	50.8	(0.3)

BOY = Beginning of Year, EOY = End of Year, Claim Reserves assume no interest discounting (for simplicity). \$ in Millions.

A calendar year retro test is typically done by focusing on the total line in Table 2. This retro test would suggest a deficiency of \$0.3 million. By examining each claim duration individually, important information can be gleaned on the appropriateness of the initial valuation assumptions by duration. For instance, claim duration 1 shows a deficiency of \$4.0 million. While there could be many reasons for this deficiency, such as the frequency of HHC services or payments per day, this illustration assumes any variation from expected is due to claim termination rates. This implies that the actual claim termination rate was lower than assumed in the valuation. In claim durations 2 and 3, the opposite is true. The result of the retro test in both of these is favorable, implying the actual claim termination rates were higher than assumed.

Retro tests can be taken one step further. Instead of using the ending claim reserve based on initial valuation assumptions, one can reestimate those reserves based on past experience. For example, in Table 3 on page 12, we can use actual experience by claim duration from Table 2 and recalculate the ending claim reserves and durational retro test. For simplicity, we assumed that the actual experience was 100 percent credible. The total retro test result changes dramatically to a \$8.7 million surplus versus a \$0.3 million deficiency.

As shown in Tables 2 and 3, recognizing emerging claim termination rates can dramatically alter the view of the adequacy of the reserves. The retro tests in Table 2 would ultimately, assuming all experience runs out consistently, be equivalent to Table 3. This result

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occurs because as claims move through the last two durations, where actual termination rates were higher than expected, reserve excesses would develop.

### New NAIC Experience Reporting Forms

Some of the deficiencies of Schedule O will soon be addressed by new NAIC reporting forms,

Table 3 In-force Claims and Actual Experience for Calendar Year Period Updated Ending Claim Reserves						
Claim Duration in years	Claimants (BOY)	Claimants (EOY)	Claim Reserve (BOY)	Paid Claims	Claim Reserve (EOY)	Retro Test
1	1,000	650	\$66.9	\$30.1	\$33.4	\$3.4
2	300	180	18.9	8.8	6.6	3.5
3	200	100	9.1	5.5	1.8	1.8
Total	1,500	930	94.9	44.4	41.8	8.7

BOY = Beginning of Year, EOY = End of Year, Claim Reserves assume no interest discounting (for simplicity). \$ in Millions.

The approach illustrated in Table 3 (i.e., updating claim reserve assumptions based on emerging experience), allows the valuation actuary to draw conclusions about the claim reserve years earlier than the Table 2 approach. The validity of the approach in Table 3 is dependent on the appropriateness of the future claim runoff assumptions. Therefore, it is important to not only carefully review past experience and apply credibility weighting, but to also account for other influences and complicating factors discussed below.

To keep things simple, this illustrative example assumes a 0 percent discount rate in all calculations. While including interest in this example would change the magnitude of the results, the conclusions would remain consistent. However, if claim reserves are calculated using discount rates and the retro test calculation itself ignores discount rates (as is the case for Schedule O), the results can be very misleading for LTC insurance.

currently estimated to be effective for reporting year 2008. The NAIC plans to introduce three new LTCI Experience Reporting Forms (Forms 1, 2 and 3) to begin replacing the current forms (Forms A, B and C), all requiring more in-depth analysis. These new forms could prove to be an important tool in helping actuaries and outside interested parties by providing more standardized data. The new Form 3, in particular, will serve as an expanded Schedule O type retro test, accounting for interest, and allowing for additional information that will aid valuation actuaries by allowing them to include more data and perform durational retro test calculations.

Valuation actuaries should begin familiarizing themselves with the new forms. Proposed prototypes can be found by visiting the following Web sites:

- [http://actuary.org/pdf/health/proposed\\_ltc\\_0905.pdf](http://actuary.org/pdf/health/proposed_ltc_0905.pdf);
- [http://actuary.org/health/ltc\\_forms\\_0905.xls](http://actuary.org/health/ltc_forms_0905.xls); and
- [http://actuary.org/health/ltc\\_examples\\_0905.xls](http://actuary.org/health/ltc_examples_0905.xls).

Valuation actuaries should begin looking at the kind of information that will be required to complete the forms, and start planning for the challenges the new forms will present. The new forms will provide additional information to outside parties, so the valuation actuary should be prepared to answer questions that may arise as a result of this new information.

## Other Claim Reserve Considerations

In performing additional analysis beyond basic retro testing, one still looks at the emerging claim duration experience, but other factors should be added into the mix to predict how the reserve is going to ultimately play out. In other words, just because the tail takes a long time to emerge, this doesn't mean that the early experience is of no importance—only that it needs to be augmented with information available from other sources.

When drawing conclusions from the combination of data from retro testing and other sources, there are several factors one needs to consider to ensure that the data is appropriate and not just situational, including:

- *Diagnoses Mix.* The mix of different diagnoses in a block can change over time. For example, the company may have a historical block in which there were a great many cognitive claims for conditions such as Alzheimer's. Cognitive claims tend to go on for a long time. Relying on data from a block that has a large proportion of cognitive claims could distort your evaluation, especially if new blocks of business have tighter underwriting which could screen out these types of claims.
- *Changes in Benefit Design.* It is important to take into account trends in benefit design over the years and its impact on claim

utilization, such as changes in benefit triggers.

- *Type of Care.* Long-term care can be received in various settings including nursing homes, assisted living facilities or home care. The mix of claims by type of care and transition between types of care can cause prior assumptions to be modified.
- *Health Improvements.* New technologies and medical advances are leading to improvements in health care. Consideration needs to be given to how these changes will impact claim mortality and recovery rates.
- *Care Management.* Many companies are starting or expanding various care management and wellness programs, along with provider contracting. These also need to be considered when setting future claim expectations.
- *Cost of Care Relative to Benefits Purchased.* Often people purchase more LTCI with higher benefits than they need for their geographic location. Typically this will extend the benefit period for a "pool of money" policy design. Cost of care inflation will influence the magnitude of this issue. The relationship will change over the life of the policy, especially on policies that do not have an inflation protection option.
- *Claim Operational Changes.* Claim department processing can have a significant impact on the claim reserves. Changes in operational rules and staffing levels can lead to changes in lag times and the reporting of closing of claims.
- *Policy Riders.* Several riders that have become popular in the industry over the last several



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years require special consideration, such as shared care among spouses, return of premium riders and supplemental cash riders.

### Conclusion

Claim reserve retro tests should be reviewed by claim duration, include the impact of interest consistently in all calculations, and include updated assumptions for multiple issues that can

have an impact on claim termination rates or other factors. The new NAIC LTC Experience Reporting Forms (estimated to arrive for reporting year 2008) will help modernize LTCI retro tests, providing additional accuracy and standardization to the industry when it comes to evaluating the adequacy of claim reserves. Actuaries should not wait for these forms, but rather ensure that any claim reserve analysis moves beyond a basic calendar year retro test. \*

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# Long-Term Care: Hedging Your Bet

by Dawn Helwig, Rajesh Bhandula and Nicola Barrett

**T**he demographics are there. The need is there. The products are there. So why haven't the sales of long-term care (LTC) products exploded?

The answer to this question is multi-faceted and complex. It includes at least the following:

- The need isn't always recognized ("Medicare or Medicaid will pay." "It won't happen to me," etc.).
- The products are complex and there may be so many options that consumers suffer from "analysis paralysis."
- The companies selling the product have suffered from some instability, in that the players have changed—many have exited—and rate increases have been fairly frequent and often large.

The long-term care product and its administration are complex. Being in the LTC business requires expert knowledge, commitment and understanding of the risks, and a willingness to "gut it out."

Are there tools that can be used to help companies deal with the riskiness of the long-term care product line? This article explores the possibility of using innovations from the financial markets to reduce some portion of the LTC risk and thus encourage the growth of the product.

## Background

As stated earlier, the demographics, need and product design all indicate that the stars should be aligned for the success of the LTC product line.

*Demographics:* While long-term care is not exclusively a product for the elderly—and, in fact, recent sales have trended more to pre-retirees—the risk of needing LTC services increases greatly as a person ages. The well-publicized "graying of America" will stretch public dollars that are available for LTC and will result in greater self-reliance for meeting these needs.

*Need:* While the probability of becoming disabled enough to need LTC services in any



given year varies dramatically by age, sex, marital status and other key factors, various attempts have been made to estimate the lifetime probability of someone needing care. A June 2005 report published by the AARP Public Policy Institute (Cohen, Weingrove, Miller, Ingoldsby) estimated the lifetime probability of developing a disability at 44 percent for males and 72 percent for females. However, not everyone who develops a disability will actually receive long-term care services. Both Milliman and the Agency for Healthcare Policy and Research have estimated that 40 to 45 percent of Americans who reach the age of 65 will require some form of LTC services during their remaining lifetimes. Given the high cost of receiving services (estimated to be in excess of \$70,000 per year, nationwide, for nursing home care), the cost of funding even a couple of years of care would deplete the assets of the majority of retirees.

*Product:* The LTC product has evolved significantly over time, from one that paid for nursing home care only, to today's comprehensive products that pay for care in the insured's home or in an assisted living facility, in

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**Because the LTC product is issue-age rated, and because the LTC claim cost slope is very steep, the morbidity cost of the product is heavily back-ended.**

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addition to a nursing home. Multiple options are available on elimination periods, benefit periods, services covered and ancillary benefits. Return of premium and nonforfeiture options alleviate a person's concern that he will die before needing LTC services. LTC riders are also available to be attached to life insurance and annuity products. In fact, the products available to cover a person's LTC needs are so many and so varied that many argue that some simplification may be needed.

In spite of all this, it is estimated that only about 7 to 8 percent of eligible people over age 55 own a long-term care policy, and—while total policies and premiums in force have been increasing—the number of new long-term care policies sold have been declining in recent years, but have shown a slight increase in the first half of 2007. What has caused the recent lackluster sales?

One reason is that—while the need for the coverage has been well documented—that need is something that people do not want to think about. There is a general misunderstanding of what the products cover and a denial of the possibility that “it could happen to me.” People still tend to think of the policies as “nursing home coverage” and do not want to think of themselves as needing to be in a nursing home. In addition, they often believe that Medicare or Medicaid will cover them, if such a need arises. While it is true that these public programs cover much of the nation's costs of LTC for the elderly today, eligibility for the Medicaid program, especially, comes at great cost to an individual, in that assets must be divested in order to qualify, and coverage is often substandard to what private insurance would purchase.

One other reason for the reduction in sales in recent years is that the number of companies selling the product has been declining. In the early 1990s, about 120 companies were selling LTC. In the most recent Broker's World Long-Term Care Survey (July 2007), only 23 companies submitted products to be included. While the total number selling is higher than this 23, it is nowhere near the 120 from 15 years ago.

There are a number of reasons why companies have entered and left the LTC market. Some companies determined that the product line took

more administrative expertise than they could muster. Some suffered losses from morbidity being in excess of what was expected. Almost all companies have determined that their lapse and mortality rates are significantly lower than they anticipated, resulting in more policyholders persisting into the later policy durations, when claims are higher. (Note: premiums for this policy are issue age based, and thus are lapse supported.) The drop in investment earnings rates in recent years has hurt companies on earlier policy generations, since significant liabilities have been established for the issue-age rated structure, and those liabilities are now earning less than expected. All companies have also felt the surplus strain effects of stringent Risk-Based Capital and statutory reserving requirements on the product.

The reinsurance market for LTC has been used in the past to provide some risk relief to companies, but this market has also tightened in recent years.

## **Key Long-Term Care Risks**

There are many factors that affect the profitability of LTC, including age distribution, sex distribution, percent married, benefit options available, proportion of insureds with inflation coverage, discounts offered for preferred risks, expenses, reserve assumptions, margins built in for adverse deviation, etc. However, most LTC actuaries would agree that the three key risks are: 1) morbidity, 2) lapse and mortality and 3) investment earnings.

Because the LTC product is issue-age rated, and because the LTC claim cost slope is very steep, the morbidity cost of the product is heavily back-ended. A new product sold today might have expected loss ratios (ratio of claims incurred to premiums earned) that are less than 10 percent for several years after issue. However, by about the 20th policy year, it is likely that claims paid out will be in excess of the premiums collected. The average payout of claims over the policy's lifetime (on a present value basis, including the effect of terminations) is generally expected to be in the 50–60 percent range.

LTC claims levels have varied fairly significantly from company to company,

depending on underwriting, claims practices, etc. The underlying probability distribution and potential statistical variation of LTC claims is largely unknown. However, while the likelihood of a 10 percent variation in morbidity is difficult to determine, it's obvious that such a swing would cause a 6 percent swing in pre-tax profit margins (assuming a 60 percent loss ratio), which would put a significant dent in most companies' profit margins.

The second key risk on LTC is the termination risk, which can be affected by both voluntary lapsation and the mortality of the policyholders. Both have been significantly lower than originally expected. Voluntary lapse rates have approached levels of 1 percent or less, and mortality has been declining. If ultimate lapse rates were originally expected to be 2 percent and actually end up to be 1 percent, the premium could need to be increased 10–20 percent or more, depending on the proportion of the business that has inflation coverage and the average issue age.

Lastly, the interest rate that is earned on the sizable assets that build up on LTC policies will significantly affect profitability and thus present a significant risk for an insurer during times of declining rates. Again, depending on average issue age and the proportion with inflation coverage, a one percentage point decline in interest rates could result in premiums needing to be increased 10–20 percent.

Looking for hedging solutions for these risks outside of traditional channels may hold the key for addressing some of the issues surrounding the LTC market.

## Morbidity and Mortality Risks

The morbidity and mortality risks, which have traditionally been confined to the insurance company portfolios, are now finding their way into portfolios of sophisticated investors like hedge funds. These risks can now be stripped and repackaged into securities that can be sold to investors who have an appetite for this kind of risk. These developments are creating avenues for banks to offer derivative contracts which can offset some of the morbidity and mortality risks in an LTC insurance portfolio.

The most common insurance derivatives in the marketplace are:

1. *Mortality Swaps*. These are financial contracts where one party can swap actual mortality rates, typically linked to policies in an insurance portfolio, for expected mortality rates, thus taking out any mortality-related uncertainty in the cash-flow stream. Any deviation from the expected mortality rates is transferred to the party that is willing to absorb the risk for a price. This gives flexibility to the LTC insurance provider to pass off any excess risks in its portfolio to another party, thus creating a more sustainable and competitive business model.
2. *Cash Flow Swap*. This is another form of insurance derivatives where the expected payout on an insurance policy at an expected time or over an expected time period in the future can be exchanged for a fixed lump sum amount at a fixed time in the future or now.

These swaps can be tailored to more closely meet the risk management needs of an LTC insurance portfolio.

## Investment Earnings/Interest Rate Risk

An LTC portfolio is typically characterized by mismatches between future cash inflows and outflows. Premiums are received on existing and new policies on an ongoing basis well into the future, which have to be invested in assets that mature around the expected payout dates on these policies. The expected payout dates and the amounts can only be estimated at best in the beginning, but the assets which will be available to invest in the future are not known. In addition, the insurers are committed to increasing the benefit amounts by a known fixed rate or by the actual inflation rate derived from the CPI (Consumer Price Index) to adjust for the increase in cost of living. In financial terms, the LTC insurance provider is committed to paying a fixed rate on a forward contract. Interest and inflation rates move up and down with the economic cycles and thus can significantly affect the profitability of the LTC insurance provider.

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Financial market innovations, can provide solutions to mitigate most of these risks.

1. *Interest Rate Swaps*. These are financial contracts between two parties where one party agrees to exchange pre-determined fixed rate interest payments with floating rate (e.g., LIBOR) interest payments on an agreed principal amount for a fixed period of time. These contracts are very commonly traded and are one of the most liquid instruments in the marketplace. They are also available on a forward starting basis where the exchange of payments starts at an agreed time in the future.

An LTC insurance provider can use Forward Interest Rate Swaps to lock in future interest rates. It can then replace these contracts with assets funded by future premiums. The LTC insurance provider also has the flexibility to structure these contracts such that they match the asset/liability profile of their portfolio.

2. *Swaptions*. These are options on interest rate swaps, which provide the LTC insurance provider the right to lock in a fixed rate but not the obligation to do so. The type of swaption typically used is called a “receiver swaption,” which is the option to get into an interest rate swap where the buyer receives a fixed rate for a fixed period of time. If the rates rise in the future, the contract will expire at no loss to the insurer and the insurer can buy assets which will yield a

higher rate. However if the rates decrease in the future, the insurer can exercise the option to get into an interest rate swap where it receives a higher rate.

3. *Inflations Swaps*. These are financial contracts between two parties where one party pays a fixed inflation rate in exchange for the realized inflation rate for a period of time, thus eliminating any uncertainty related to future inflation. Most LTC products have fixed benefit increases of 3–5 percent, supposedly to hedge future inflation increases. CPI has been growing by 3 percent on average for the past 20 years, indicating that products may be over-priced for inflation. Conversely, there is no reason to assume this pattern will continue for the next decades—if inflation floats above 5 percent, current LTC products won’t provide enough protection. It’s a double-edged sword. More and more LTC insurers are developing products with benefits linked to CPI and the financial market offers the opportunity to completely hedge this risk by using inflation derivatives.

To have a more palatable risk profile, LTC insurance providers can use the products mentioned above as building blocks to develop robust hedging strategies which offset the risks in their portfolios. Employing sophisticated approaches through these products, insurers can offer more competitive and flexible solutions to address the LTC needs of their customers. \*

# Developing a Population Health Management Program for a Long-Term Care Insurance Product

by Dr. Donald Fetterolf, John F. Underhill and Geoffrey Walton

## Abstract

*Medical management programs traditionally have addressed more acute and short-term issues with chronic disease. Case management, disease management and historical utilization management have been focused largely on the needs of health plans, employers and near term payors of costs. With an increasing number of individuals entering the late preretirement years, the popularity of long-term care insurance (LTCI) has emerged as an important product within the insurance industry. Recognizing that many of the claims for long-term care originate with diseases that have clearly preventable etiologies, disease management would appear to be a reasonable consideration for inclusion in LTCI programs to reduce the number of claims, reduce the disease burden and hence claim costs, and prolong the healthy, premium paying portion of a claimant's life. We explore the issues and relationships between disease management and long-term care insurance.*

Medical management programs, specifically disease management programs, developed out of the need for health insurers to impact short-term and intermediate term health care costs. Medical management programs focused initially on acute hospitalizations and injuries developing out of the case management environment within hospitals and early medical management models. Disease management programs are recognized as a further evolution of medical care management, in that they focus into the intermediate and future term through the activation of both primary as well as secondary prevention strategies.

## Long-Term Care Insurance Basics

Long-Term Care Insurance (LTCI) carriers insure against the risk of loss of independence. Typically, when an individual loses independence due to the inability to perform two of six Activities of Daily Living or ADLs (bathing, walking, feeding one's self, toileting, transferring from a chair or bed and dressing independently) or from severe cognitive impairment, the LTCI company pays for the cost

of non-medical home care, assisted living care or nursing home care. The risks that lead to LTC usage are similar to those that cause acute care usage; however, they occur at a more advanced stage of disease, providing a longer window of opportunity to impact the process. The ultimate causes of institutionalization and loss of independence (Alzheimer's, fracture from falls, frailty) can often be traced back to the same chronic conditions or risky behavior that causes acute care costs.

An LTCI company's population of policyholders is fixed for long periods of time (policyholders tend to retain their policies for 10-, 20- or 30-plus years), the cost of claim is high (averaging around \$75,000 and increasing) and the number of claims are growing rapidly. LTCI carriers cannot drop coverage or increase prices easily to offset the growing risk.

## General Approach

Although LTCI claims can develop fairly quickly, most develop over a longer time horizon of decades after the policy is issued. Due to the long time frame involved in the emergence of claims, developing a population health management program for LTCI products requires a different time horizon and some slight modification in approach. Principal activities of the disease management program will need to focus on primary and secondary prevention of future diseases that specifically are problematic for LTCI claims. Key to this effort is the intermittent collection of health and social related risk factors post underwriting and prior to an individual being eligible for claim under their LTCI coverage. Collection of emerging risk factors at various stages in the disease will ultimately lead to predictive modeling characteristics that will enhance actuarial premium calculation and reserves for LTCI, as it is beginning to in other health insurance products. This will undoubtedly shift the focus from acute illness to chronic preventable illness and to the reduction of future claim costs as measured by several discrete metrics:

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**Once a claim has occurred, disease management principles can also be applied to reduce the short- and long-term claim exposure for the insurer and improve the quality of life for affected individuals.**

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- *Incidence Rate.* Disease management programs will need to address the underlying mechanisms of disease that can cause demand for long-term care among policyholders. Identification of risk factors and altering those that can be modified through interventions will be key drivers of this statistic. The prevalence of conditions and the frequency with which they evolve within an insured population have the potential to be modified for those conditions or portions of conditions that are sensitive to primary and secondary preventive measures and cost-effective medical management interventions.
- *Length of Claim (a.k.a., "length of stay").* The average length of claim duration for policyholders of a long-term care product is sensitive to age, sex and type of condition and policy type. These factors are collected and analyzed by actuaries in what are known as continuance tables. Efforts of disease management programs to effect stabilization or problem elimination for these populations have the potential to alter claim continuance dynamics and, thus, potential financial exposure.
- *Average Claims Cost and Salvage.* Medical management and disease management programs have the potential to reduce the intensity and cost of care, as well as the length of time that long-term care services are needed. Early, comprehensive intervention can facilitate an earlier return to independence, or enable a return that otherwise might not have occurred.

Once a claim has occurred, disease management principles can also be applied to reduce the short- and long-term claim exposure for the insurer and improve the quality of life for affected individuals. This process has already been developed in preliminary form for some diseases as part of standard disease management principles, particularly in geriatric populations, and addressing many common conditions that affect long-term care insureds.<sup>1,2,3,4,5,6,7</sup>

## Goals

Accordingly, a population health management program developed for an LTCI product should have the following goals:

- The program should reduce the incidence rate of the most common drivers of long-term care claims costs.
- The disease management programs should reduce the potential for recidivism or severity expansion through risk reduction, early identification and care coordination
- Disease management programs should improve "usual care" medical management of claimants by increasing cost effectiveness and lowering cost through shortened claim continuance and improved claim salvage.
- Population health management programs should actively address all of the above mechanisms in a way which is cost effective or profitable compared to no actions at all. In other words, the net present value of the future LTCI policy premiums minus the net present value of future policy benefits and expense costs minus the net present value of population health management program implementation expenses should increase overall profitability when compared to policies where no such population health management programs exist.

## Approach

In keeping with those goals, we would propose the following approach in the development of a medical management program for the LTCI industry.

1. First, identify critical drivers of the most common LTCI claim exposures based on current policy coverage areas and a Pareto analysis of claim drivers. This information currently exists in a number of publications created within the industry, such as claims studies performed by the Society of Actuaries. An initial accounting of these conditions would include dementia (all causes), cardiovascular conditions including stroke, injuries, "frailty" and unplanned hospitalizations as the five leading causes of LTCI claims.

Recent studies from the Society of Actuaries have provided a general overview of these issues:<sup>8</sup>

The top conditions of interest are thus found to be:

- Alzheimer's
- Nervous System and Sense Organs

- Cardiovascular and Stroke
- Arthritis
- Respiratory
- Injury (such as falls)
- Digestive System
- Cancer

2. The program should acquire appropriate medical consultation regarding the principal drivers and evidence-based guidelines to both prevent and manage these types of events. Geriatricians, neurologists, psychiatrists and family practice medical literature have thoroughly documented the risk factors, cost drivers and general management strategies for these common claim areas. Basic information can also be found on [www.guidelines.gov](http://www.guidelines.gov). Medical management programs should be developed for both primary and secondary prevention as well as for ongoing care management around evidence-based guidelines that are extant in the medical literature. This will not prove difficult given the large amount of information in these common condition areas.

Basically the approach will be to take evidence-based medicine—which projects risk and management strategies into the future—and run it in reverse, calculating what is important at each point in time before a common experience condition emerges. Programs will develop approaches to collect data about risk at these points in time, proactively manage elements that can have long-term impact and use the risk data and potential impactability information to project claims reserve and cash flow requirements for current and future insured populations.

3. A program will need to develop an identification algorithm that accurately and correctly defines individuals who have these conditions. This is an important step which is useful for both the definition of the condition as well as for tracking through various measurement indicators. Claims-based, health risk appraisal-based or questionnaire-based conditions will need to be tightly defined to minimize false positive and false negative identification to assure subsequent accurate modeling of future risk. The identification algorithms need to very carefully consider the

sensitivity and specificity of the algorithm with respect to identifying patients with the disease and with respect to future risk. A simple sort of individuals with a single claim for diabetes, for example, can produce false positive identification rates as high as the 30 percent range.

Of critical importance is developing a process by which the post underwriting and pre claim individual risk factors can be identified. This could be achieved through a combination of mailed and face-to-face health risk assessments structured to gather information on those risk factors most relevant to the loss of functioning or cognitive ability.

4. Activity-based efforts that alter the incidence rate, claim duration and average claim cost of these conditions should be identified and further researched. This is similar to, but not identical to, common disease management approaches. Again, evidence-based medical literature is replete with numerous inputs already in this process.

5. A baseline set of metrics should be developed around:

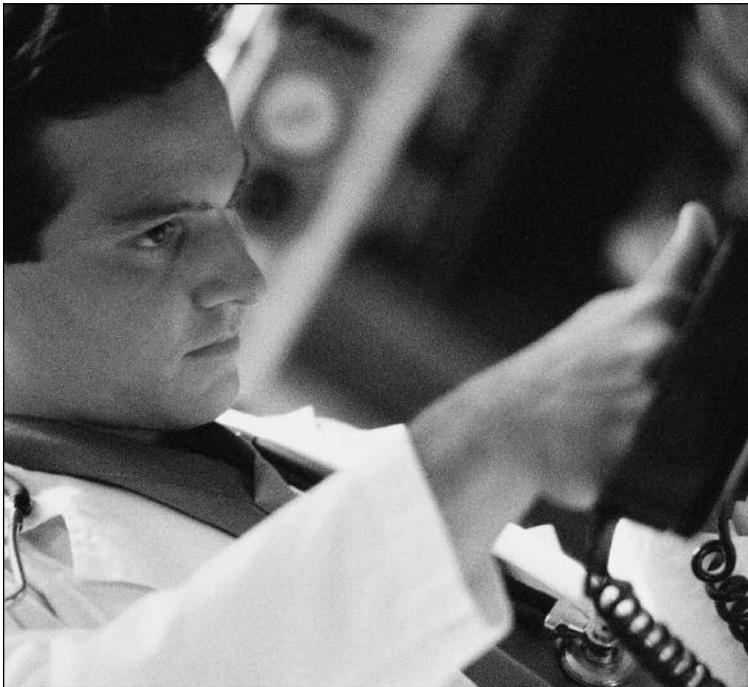
- Precondition risk (Health Risk Assessments: general or specific questions for example).
- Condition management with understood economic impact.
- Ongoing assessment of operational activity, clinical quality and utilization risk impact, and financial cost effectiveness.

The metrics will serve to both define a state of the population as well as to create a time series analysis for those engaged in the program developing risk and ultimately acquiring the long-term care diagnoses that trigger policy payments.

6. Metrics should also be ideally applied to a concurrent control group if possible. Long-term application of pre-post quasi scientific approaches may be all that is possible for an existing population, but potential control group follow-up through some additional mechanisms should be developed if possible.

7. A standard study design should be created to assure equivalence between the comparison

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and identified individuals being evaluated and should also address confounders, such as severity of illness or other factors which overtly affect outcome status.

8. After the appropriate identification of individuals, formation of metrics and initiation of an evidence-based medical management program begins, the program should then be regularly monitored to track the progress of the above approach. In an existing population where a guaranteed renewable policy may be ineffective, data collected might not necessarily affect short-term savings but, while potentially affecting long-term cost and chronicity of the conditions, regular measurement at appropriate intervals might also serve as the basis for predictive modeling and similar types of actuarial analyses that would more precisely identify risk and reduce uncertainty/variance in forward future calculations.
9. Assessment of impact for the programs developed should include a multidimensional model for potential purchasers of these services to correctly define the impact. Ongoing

operational oversight as a regular feature of the policy through disease management programs should decrease incidence rate, claim continuance and improve average claims cost and salvage. These should be demonstrable from both an operational as well as clinical basis. These should then transfer into dollars saved (both hard dollars, modeled dollars and imputed dollars), each calculated through different methodologies. Hard dollar savings can be inferred from comparison of managed population to populations without such management. Modeled savings can be generated from currently existing evidence-based guidelines and actuarial tables. Finally, imputed models of financial impact are also possible through similar means.

### Example

As an example, one would approach this process for stroke in the following way:

One would define stroke as a specific set of symptoms and disabilities related to cerebrovascular accident, including intracerebral bleed, atherogenic ischemic stroke and multiinfarct dementia that have been diagnosed by a neurologist and associated with hospital admission claims with a given series of ICD-9 codes and/or provider-based diagnoses and procedures using CPT-4 codes. A standard method of identification is important to allow accurate description of risk, financial impact and longitudinal tracking.

Identification algorithms would specify exclusions such as short-term transient ischemic attacks, hemiplegic migraine and other conditions which might mimic the disease.

Identification algorithms might also include information obtained from self-reported questionnaires in use to identify risk of frailty, etc.

Evidence-based medicine suggests that a number of risk factors are strongly associated with stroke, including family history, smoking, hyperlipidemia, hypertension, diabetes and related conditions. Evidence for these precipitating agents should be collected on policy initiation and at regular intervals during the

insured's lifetime since many have the potential to be altered with disease management and medical management interventions.<sup>10,11,12,13</sup>

Patient education should become an integral part of the evidence-based approach to insureds since it is well known that rapid access to appropriate therapy represents the strongest efforts to reducing severity and impact of stroke. Early recognition, transport to a stroke facility and rapid initiation of treatment carries the greatest impact in reducing long-term disability achieving the control of a well-educated patient population.

Disease management efforts with higher risk individuals can be initiated on a frequency developed by risk intervention and predictive modeling, particularly targeting modifiable risk factors in individuals at risk for the primary condition. General population education regarding primary risk reduction can be coupled with secondary risk reduction interventions (e.g., quit smoking, correct treatment of diabetes, early identification with hospital selection for stroke patients, etc).

Ongoing disease management interventions should include periodic check of blood pressure, glucose, smoking history and hyperlipidemia screening and treatments, among others. Collection and monitoring of both self-reported and claims-based information in an electronic medical record created in formats capable of sorting and later mining data will permit future evaluation of population risk dynamics.

Over time, serial questionnaires and risk information have the potential to develop a Markov cost model that might further refine and predict future disability costs. This, in turn, can be used in the development of premium estimates for new entrants at various ages and with various risk factors.

Disease management of individuals who have suffered an acute stroke can include developed case management, rehabilitation cost management and oversight of the usual recovery process.

## Metrics

A number of metrics might be accumulated acutely and over time. Time series estimates of

metric progression will improve statistical estimates for future populations. Such statistics will include the following types of examples:

### *Operational Elements*

- Individuals under management
- Risk factor breakdown and demographics for the population

### *Clinical Elements*

- Basic clinical risk factor frequency distribution and changes over time
- Penetration of risk screening efforts
- Frailty index scores
- Baseline and periodic claims-based and self-reported compliance/adherence measures
- PRA Plus scores

### *Utilization Elements*

- Claims/1000
- Cost of claim
- Disease emergence rates/1000

### *Independence Elements*

- Days on claim
- Metrics related to salvage potential of the treatments

### *Intangible Elements*

- Patient satisfaction with the program
- Purchaser feedback/satisfaction with the program

## Conclusion

In conclusion, the approach of developing a population health management program for LTCI products needs to begin with clear definition of goals reached with the development of such a program. Identification of the critical drivers of LTCI claims costs followed by the application of evidence-based guidelines linked with solid metrics will direct the administration and evaluation of an optimal program designed to reduce continuance and improve salvage within these programs. Finally, the development from the beginning of a statistical model to approach a multidimensional model for economic impact can begin to show results on a very early basis and, if properly designed, continue to show refined justification for more sophisticated management rather than long-term statistical guesswork.



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# Alzheimer's Disease Yesterday, Today and Tomorrow: Progress and Challenges

by Maria C. Carrillo



## Alzheimer's Disease Yesterday

The year 2006 marked the 100th anniversary of a small medical meeting in Germany, where physician Alois Alzheimer presented the haunting case of Auguste D.

Alzheimer first saw Auguste in 1901 following her admission at age 51 to the psychiatric hospital where he worked. She was plagued by symptoms that did not fit any known diagnosis: rapidly failing memory, confusion, disorientation, trouble expressing her thoughts and unfounded suspicions about her family and the hospital staff.

After four years of steady decline that left her bedridden and mute, Auguste died and Alzheimer performed an autopsy. In her brain, he found dramatic shrinkage, widespread dead and dying cells and two kinds of microscopic deposits he'd never seen before.

"All in all," Alzheimer wrote in his presentation abstract, "we are obviously faced obviously with a peculiar disease process."

This mysterious, devastating disorder soon entered the medical literature as "Alzheimer's disease." The unusual brain deposits gained

recognition as its pathological hallmarks and became known as "plaques" and "tangles."

In 1915, Alois Alzheimer himself died at age 51, never suspecting that his encounter with Auguste D. would one day touch the lives of millions and drive a massive international research effort. Today, we know that more than 5 million Americans have Alzheimer's disease, according to the Alzheimer's Association's 2007 Alzheimer's Disease Facts and Figures. This number is expected to soar as high as 7.7 million by 2030.

## Alzheimer's Disease Today

The course of the disease today remains much the same as Dr. Alzheimer described in 1906. Alzheimer's is a progressive brain disorder that gradually destroys a person's memory and ability to learn, reason, make judgments, communicate and carry out daily activities. As Alzheimer's progresses, individuals may also experience such changes in personality and behavior as anxiety, suspiciousness and agitation, as well as delusions or hallucinations. Most individuals with Alzheimer's eventually require a higher level of care than friends and family can provide at home.

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The brains of people with Alzheimer's have an abundance of plaques and tangles, the two hallmark abnormal structures Dr. Alzheimer first saw in his patient. Plaques consist chiefly of a protein called beta-amyloid that builds up into dense deposits outside and around neurons, or nerve cells. Neurons are the main cells involved in the brain's vast network that processes, stores and retrieves information. Eventually, plaques disrupt cell-to-cell communication and trigger neuron degeneration and death.

Tangles are abnormally twisted fibers of another protein found inside neurons. They destroy a vital internal cellular "scaffold" involved in moving food molecules and essential components around the cell. Collapse of this "scaffolding" is another factor in cell disruption and death.

Although we easily recognize the symptoms described by Alois Alzheimer 100 years ago in the disease we see today, we also see important differences. Dr. Alzheimer had no treatment or special care to offer Auguste D. Now, there are

five drugs specifically approved by the U.S. Food and Drug Administration (FDA) to treat symptoms of the disease. There are also many types of services and support and an array of special long-term care options designed to meet the unique needs of individuals like Auguste with cognitive impairment.

We also have learned that age is the greatest risk factor for Alzheimer's disease. The prevalence of the disease doubles about every five years after age 65, and reaches nearly 50 percent over age 85. In addition, there are at least 200,000 Americans who, like Auguste D., develop Alzheimer's when they are younger than 65.

Scientists have identified several risk factors in addition to age. There is a strong link between serious head injury involving loss of consciousness and future risk of Alzheimer's. There is also a very strong heart-head connection: what's good for your heart is good for your brain. This connection exists because the brain is nourished by one of the body's richest networks of blood vessels. Each heartbeat pumps about 20 to 25 percent of your blood to your head, where brain cells use at least 20 percent of the nutrients and oxygen that blood carries. The risk of developing Alzheimer's or vascular dementia, a related disorder, appears to be increased by high blood pressure, heart disease, stroke, diabetes and high cholesterol.

Other lines of evidence suggest that strategies for overall healthy aging may help keep the brain healthy and may even offer some protection against Alzheimer's. It's important to keep weight within recommended guidelines, avoid tobacco and excess alcohol, stay socially connected and exercise both the body and the mind.

Genes (heredity) play a role in Alzheimer's. Researchers have linked two categories of genes to the disease: 1) deterministic genes, which directly cause the disease and guarantee that an individual who inherits one will develop Alzheimer's; and 2) risk genes, which increase the likelihood a person will develop Alzheimer's but do not guarantee it will happen.

Deterministic Alzheimer genes are rare, accounting for less than 5 percent of cases. This

type of Alzheimer's is called familial Alzheimer's disease and has been found in only a few hundred extended families worldwide. In familial Alzheimer's, family history shows that many relatives over multiple generations are affected. It tends to strike at an unusually young age, possibly as early as age 30 or 40.

Risk genes increase the likelihood of developing Alzheimer's disease but do not guarantee it will occur. The risk gene most strongly linked to Alzheimer's is called APOE-e4. It is one of three common forms of a gene providing the blueprint for apolipoprotein E, a protein that helps transport cholesterol in the bloodstream. Those who inherit one copy of APOE-e4 have an increased risk of Alzheimer's, and those who inherit two copies have an even higher risk. But risk does not equal certainty. Many individuals with one or two copies of APOE-e4 never develop Alzheimer's, and Alzheimer's often occurs in those with no APOE-e4. Scientists believe there may be at least a dozen other risk genes in addition to APOE4. More research is needed to determine the exact role APOE-e4 plays in Alzheimer's and to identify other risk genes.

Another important development is our ability to diagnose Alzheimer's disease accurately early in the course of the disease. Early diagnosis is very important for medical, practical and scientific reasons. Medically, early diagnosis enables a person to take advantage of current treatments and supportive services while they may be most effective. Practically, early diagnosis gives the person and family a framework for understanding symptoms and can spur planning for the future, making appropriate living arrangements and designating health care proxy and power of attorney.

Scientifically, early diagnosis plays a critical role in paving the way to next-generation treatments and will hopefully mean a brighter future for those diagnosed with Alzheimer's disease.

## Alzheimer's Disease Tomorrow

The biggest change on the Alzheimer horizon is the accelerating effort to develop next-

generation drugs with the potential to stop or prevent the underlying death and destruction of nerve cells. Early diagnosis sets the stage for a person to consider participating in a clinical study of one of these promising new treatments.

Nearly a dozen different experimental compounds have reached Phase III clinical trials, the most advanced stage of testing investigational drugs. The FDA typically considers data from at least two Phase III trials, in addition to results of earlier-phase studies, when considering a new drug for approval in general medical practice. Virtually all of these clinical studies seek to recruit individuals in early Alzheimer stages, when experimental disease-modifying drugs may show their greatest benefit.

Participation in research can give individuals and families a sense of purpose and meaning by contributing to scientific knowledge that may help answer important questions about Alzheimer's and bring us closer to effective treatments. In addition, research shows that study participants tend to do better, on average, than individuals in a similar stage of the disease who are not enrolled in a study. Scientists believe this advantage may result from the state-of-the-art care participants receive, regardless of whether they are assigned to receive the experimental treatment or the placebo (inactive, look-alike treatment).

In addition to investigating next-generation treatments, clinical studies are exploring ways to push the diagnostic threshold back even earlier in the disease process. Tests are being developed to detect the earliest signs of Alzheimer's in urine, blood, cerebrospinal fluid or the eye. Other promising emerging diagnostic technologies include brain imaging with magnetic resonance imaging (MRI) and position emission tomography (PET).

## No Time to Lose

Although the future—with regard to preventing Alzheimer's disease—has never looked brighter, we are in an urgent race against time. In 2006, baby boomers (those born between 1946 and 1964) began turning 60 at the rate of 330

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**Another important development is our ability to diagnose Alzheimer's disease accurately early in the course of the disease.**

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per hour, according to the U.S. Census Bureau. In 2011, boomers begin turning 65, reaching the age of greatest risk for Alzheimer's.

Data from 2007 Alzheimer's Disease Facts and Figures show that today, someone in the United States develops Alzheimer's disease every 72 seconds; by mid-century, an American could develop Alzheimer's every 33 seconds.

Facts and Figures further shows that U.S. deaths attributed to Alzheimer's are rising dramatically while deaths caused by prostate and breast cancers, heart disease and stroke are falling.

Medicare currently spends nearly three times as much for people with Alzheimer's and other dementias as for the average beneficiary with no cognitive impairment. Overall, Medicare costs are projected to double from \$91 billion in 2005 to more than \$189 billion by 2015, more than the current gross national product of 86 percent of the world's countries. In 2005, state and federal Medicaid spending for nursing home and home care for people with Alzheimer's and other dementias was estimated at \$21 billion; that number is projected to increase to \$27 billion by 2015.

The economic costs to families are also great. According to an AARP analysis, Medicare beneficiaries age 65 and older spent an average of \$3,455 (22 percent) of their income on health care in 2003. About 45 percent of those expenses were for Medicare Part B premiums, private Medicare plans and private supplemental insurance. Medicare beneficiaries age 65-plus paid 37 percent of the cost of nursing home care out-of-pocket in 2002, the most recent year for which expenditure figures are available by type of medical service. Out-of-pocket expenditures for health and long-term care are higher, on average, for older people with Alzheimer's and other dementias than for other seniors.

It is clear that we need to accelerate progress in current promising directions and continue to identify new paths to success. As the world's largest private, nonprofit funder of Alzheimer research, the Alzheimer's Association has committed \$220 million to promising lines of inquiry. The Association advocates diligently for greater public funding of research through the National Institutes of Health (NIH) and other government agencies. The association believes that an NIH investment of \$1 billion dollars per year would empower the scientific community to capitalize on current findings and achieve the necessary acceleration of progress in the field. \*

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# Recent Trends in Psychiatric Medication Use

by Dr. Dean Knudson

A considerable number of medications are being used by the medical community to treat various psychiatric-related conditions. There have been changes in the use patterns of some medications; there is controversy over which drugs are better; and there are a growing number of new products now available on the market. Hopefully, the information presented here will provide some answers to questions that have surfaced with regard to recent trends in the use of psychiatric medications.

## 1. There seems to be a change in the pattern of use of antidepressants, for example, Prozac is appearing in the medical record less frequently and Lexapro is appearing more frequently. Is one drug better than another?

There are changes in the pattern of use of antidepressants. Some of this has been driven by very effective marketing on the part of pharmaceutical companies. Some of the change has been driven by new research. Those companies who have a fairly long patent protection remaining on their products are motivated to do research into alternative indications for the products, such as treatment of anxiety and panic disorders. Lexapro has been, in particular, marketed very effectively.

## 2. Why are antidepressants prescribed so frequently now?

Several factors have driven this. Training programs in internal medicine, family practice and obstetrics and gynecology now routinely include depression screening and primary psychiatric care in their training curriculums. Graduates from those programs are better equipped than they have ever been to incorporate psychiatric disease screening into their private practices upon graduation. Recent research has also demonstrated that depression is quite common, and affects up to 15 percent of the general population over the course of a lifetime.

## 3. What is Cymbalta?

Cymbalta, like Effexor, is a serotonin and norepinephrine reuptake inhibiting antidepressant. It has benefited from having a dual FDA approved indication for both depression and chronic pain. It



has been heavily and effectively marketed to psychiatrists, internists and physicians dealing with chronic pain patients. It is being used in the treatment of fibromyalgia and related symptoms, and diabetic neuropathy and chronic pain syndromes.

## 4. What is Abilify?

Abilify is a new generation antipsychotic medication. It is less likely to cause weight gain and sedation, as compared to other newer generation antipsychotic medications.

## 5. What is Geodon?

Geodon is also a new generation antipsychotic medication that is less likely to be associated with weight gain, sedation, elevated triglycerides or elevated cholesterol as compared to other recently developed atypical antipsychotic medications. Both Geodon and Abilify also may be less likely to be associated with elevated blood glucose and diabetes, as compared to previously available antipsychotic medications.

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## 6. Why are antipsychotics being prescribed so much more frequently now than they have in the past?

The older generation antipsychotic medications were somewhat difficult medications to use. They tended to cause sedation, muscle stiffness, blurred vision, constipation and dry mouth. Most of the originally available antipsychotic medications were also associated with tardive dyskinesia. This is a neurological syndrome which is manifested by abnormal involuntary motor movements. It can become permanent, and was seen in a high proportion of individuals using older generation antipsychotic medications.

The newer generation antipsychotic medications are only 1/10 to 1/20 as likely to cause tardive dyskinesia and, in general, are much better tolerated than the older generation medications. Because of the safety and tolerability profile of the newer generation antipsychotic medications, they are easier to use. Research also has gradually demonstrated that antipsychotic medications can be of use in treating psychiatric syndromes other than schizophrenia. For reasons that are not completely understood, about 25–50 percent of individuals with treatment resistant depression will have a more complete response when an antipsychotic medication is added to an antidepressant medication. Individuals who have difficulty with emotional instability due to a serious personality disorder also can be helped by antipsychotic medications.

All of the new atypical antipsychotic medications also have an indication for bipolar affective disorder and bipolar spectrum disorder. Classic bipolar affective disorder, which includes bouts of significant depression followed by bouts of classic mania, occurs in about 0.5 percent of the general population. Bipolar spectrum disorder, which consists of bouts of depression followed by episodes of mild or hypomanic symptoms, occurs in approximately 4–5 percent of the population. These individuals do not respond well to antidepressant medications alone and therefore have been treated with a combination of mood stabilizers, antidepressant medications and newer generation antipsychotic medications.

Individuals who have severe and persistent insomnia are often helped by use of Seroquel, a newer generation antipsychotic medication. This fact has widely increased Seroquel use among primary care physicians.

Individuals who have significant anxiety related to withdrawal from alcohol, and certain street drugs, have also been helped by empiric use of newer generation antipsychotic medications. Individuals with uncontrolled and treatment resistant anxiety have also been aided by newer generation antipsychotic medications. Finally, individuals who have chronic pain syndromes have sometimes been aided by use of newer generation antipsychotic medications.

Many of these indications are not FDA approved uses of antipsychotic medications, but have been demonstrated to be effective. It is likely that use of atypical antipsychotic medications will continue to increase among primary practitioners and psychiatrists.

## 7. Why is Depakote use increasing?

Depakote, originally an anticonvulsive medication, has been demonstrated to be useful in the treatment of bipolar affective disorder and bipolar spectrum disorder. It also has been used on an empiric basis to treat individuals with behavioral dyscontrol related to a personality disorder. It has also been useful in the elderly, to treat agitated behavior related to dementia.

## 8. What is Namenda?

Namenda is a new generation anti-dementia medication. It has a mechanism that is different than that of Aricept, Exelon or Razadyne. Studies have suggested that it can produce a synergistic effect when it is added to Aricept. The combination of Aricept and Namenda together is a very expensive, but a potentially reasonably effective method of slowing the rate of decline in individuals who have Alzheimer's type dementia and possibly other types of dementia. The combination of Aricept and Namenda may become more popular than either medication used alone. Occasionally, individuals who have been prescribed this combination will actually show some improvement in their cognitive testing. This

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**All of the new atypical antipsychotic medications also have an indication for bipolar affective disorder and bipolar spectrum disorder.**

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is, unfortunately, relatively rare, but it is quite rewarding to physicians and families when it does occur. Research suggests that entry into a nursing home may be delayed by a year or more in individuals who are treated with Aricept and Namenda early in the course of cognitive decline.

**9. I have reviewed cases in which the applicant claims that his or her use of Aricept is “preventative,” and is not related to the dementia process. Is this possible?**

Yes, it’s possible, but it’s not common. Of the 100 or so patients that I am personally treating with Aricept, only about three patients would fall into the category of individuals who do not have an identifiable dementia syndrome, and are merely taking the medication on a “preventative” basis. This is not a FDA approved indication for this medication. Some individuals will have a subjective sense that they are starting to lose some capacity, and may also have a family history of dementia in a close relative. It’s difficult to say no to those individuals when they ask for a trial of prophylaxis with Aricept. There’s also some research that suggests that the earlier Aricept is given in the course in a very mild cognitive decline, the more effective it is in preserving cognitive function and in delaying the eventual onset in diagnosis of dementia. Again, this represents a very small percentage of the patients under my personal care.

**10. Are there any new developments in psychiatric medications?**

In the spring of 2006 a new antidepressant skin patch was approved. The patch is Ensam, and it is a monoamine oxidase inhibitor, or MAOI. MAOIs, in the past, have been very effective, but have required strict dietary restrictions when they were given by mouth. It is possible that the Ensam patch will not require dietary restrictions. This medication may have obvious benefits in the elderly, as an antidepressant patch can be applied to the skin of an elderly individual who might otherwise not be willing or able to take oral medications reliably. It is also possible that this medication will be used in the combination therapy treatment of individuals who have severe and treatment resistant depression.

**11. Why is so much psychiatric care given by primary care practitioners?**

In most of the country there is a shortage of psychiatrists. Within the last three decades, psychiatry has not been a popular choice for students graduating from United States’ medical schools. Also, within the last 15 years, the identification and treatment of depression has tripled. Both of these factors have combined to create an acute shortage of psychiatrists in many regions of the country. The long waiting time to obtain an appointment in a psychiatrist’s office, combined with more comprehensive training in primary care offices, has led to primary care practitioners managing many mental health syndromes within their own offices. Some primary care physicians estimate that up to 15–20 percent of their practices consist of identifying and managing psychiatric syndromes. It is unlikely that pattern will change in the near future. \*



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