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A Neurologist's Deep Dive Into Insurtech

By Dr. Anitha Rao

Listening to Jane's story was painstaking. Her husband had visual hallucinations for the last three years. Every night he would scream out and sometimes hit Jane unintentionally during a fit of agitation. As a family caregiver, Jane was tired, overwhelmed, but most of all saddened by the fact that she was slowly losing her husband of 45 years. She was considering placing him at a nearby memory care unit and was coming to my clinic as a last resort.

My job as a dementia neurologist is to gather the neurological history, formulate a diagnosis, and carefully prepare a care recommendation plan. It usually takes me two hours to sift through the all the intricate details of each patient's case. First I meet with the family to review the timeline of behavioral changes, then I study the patient's brain MRI, and then finally meet with the patient and family to discuss the diagnosis and next steps. It is commonly assumed that once you have a diagnosis of dementia there is nothing that can be done. In fact, it's quite the opposite. Clinical research has shown that appropriate care management strategies can slow down the process of dementia, thereby allowing seniors to age at home. In at least 10 percent of dementia and cognitive impairment cases, symptoms are reversible.

I recently learned that there are only 600 dementia neurologists like myself across the United States that provide an expert diagnosis and care plan, and approximately 1000 dementia neurologists globally. Research estimates there are roughly 10 million cases in the United States with dementia, thereby suggesting that neurologists like myself would have to see 17,000 patients individually to make a difference.

Dementia is costlier than heart disease and cancer, and limited access to dementia specialists prevents access to proper care, thereby prompting patients to file an accelerated claim and impacting bottom line for insurance carriers. In fact, a prospective 18-year study showed that providing family caregivers with expert care recommendations delayed LTC facility placement on average of 557 days.

The *New York Times* recently published an article to highlight the need for more geriatric neurology education in medical schools to meet the needs of tomorrow's societies. The Global Burden of Diseases, Injuries, and Risk Factors Study[1] reported the number one cause of disability and mortality worldwide in 2015 was neurological. The study, which was supported by the Bill and Melinda Gates Foundation, concluded that due to expanding aging populations, conditions such as dementia and stroke will be the most impactful on societies worldwide, further supporting the need for geriatric neurology education.

Despite this alarming trend in neurological disability, the supply of neurologists continues to dwindle. Last year, Neurocern Inc., created an index score to represent the supply-demand mismatch between the number of cases of dementia projected in 2025 by U.S. state compared to the number of projected neurologists by location. The research titled, "Dementia Neurology Deserts,"[2] was coined after the familiar concept of "food desert" and highlighted specific states. Wyoming had the largest index score, representing an area where patients and families are most in need for specialist care. Current wait time across the country to see a dementia neurologist is more than six months. Poor physician reimbursement in geriatric neurology remains one of the main barriers to attract medical students into a very high demand field. Until Medicare reimbursement provides sufficient reimbursement for fields such as neurology and geriatrics, physician supply will continue to be low.

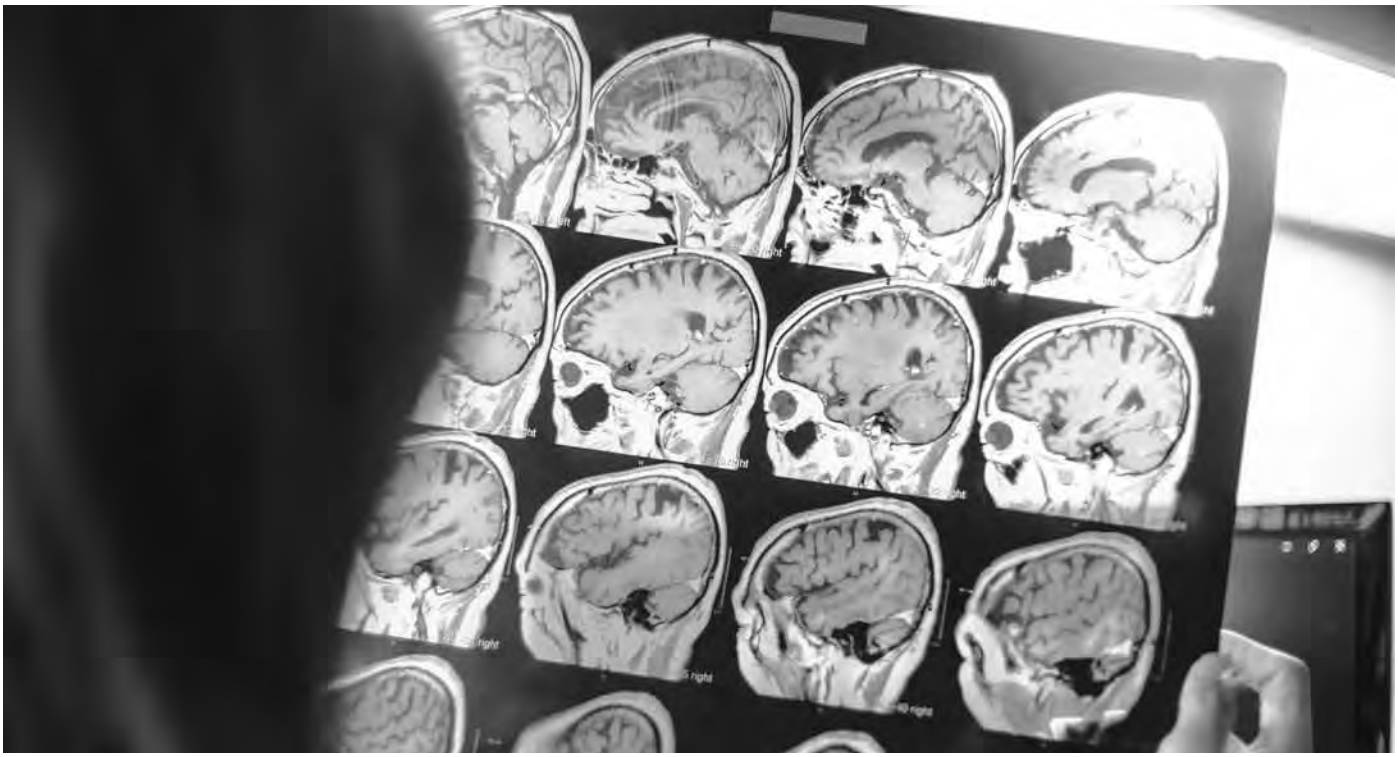
THE IMPACT OF DEMENTIA ON THE INSURANCE BUSINESS

Studying insurance has been fascinating as a neurologist because the mind of a neurologist and actuary are very similar. We both make predictions based on a current set of assumptions. The following are a set of assumptions and macroeconomic trends to consider for any actuary in the space, as these findings will have implications in pricing, reserving, and cash flow testing.

Diagnosis

In neurology, dementia is used as a higher-level term to mean someone has difficulty maintaining their activities of daily living (ADL). Under the term dementia, there are many subtypes of the disease. The most common subtype of dementia being Alzheimer's disease. Other subtypes include Dementia with Lewy body, Vascular, and at least fifteen other variations. Most brain autopsies have shown that 75 percent of cases are mixed pathologies. Correct identification of the dementia subtype is important, as care recommendations, mortality, and estimated cost of care differ among the various subtypes of dementia.

Current methods to evaluate cognitive dysfunction in a benefits eligibility assessment skim the surface in terms of diagnostic capability. Most long-term care insurance (LTCI) carriers use a mental status exam called the MMSE, MOCA, clock-drawing,



or verbal recall. These tests are helpful in understanding if the person has normal aging or dementia, however they do not delineate the subtype of dementia or provide any sense of risk, or how to care for someone.

Clinical research and data from the Alzheimer's Association estimates that 50 percent of all dementia cases are undiagnosed. I witness this first hand when a hospital consult for delirium in a patient with a hip fracture turns into undiagnosed dementia. Usually the story goes something like, Grandma lost her balance and fell because she wandered into another room during the family holiday party. Further probing during my clinical interview reveals that Grandma has been unable to keep up with her ADLs for years and her primary care physician (PCP) attributed her changes to normal aging.

For families, ambiguous terms to Grandma's aging translates into not knowing how to care for Grandma. Assisting dementia patients in ADLs is cited as the number one priority for eager family caregivers who are looking for ways to help their loved one. Without assistance from the health care system due to neurologist shortages, many family caregivers turn to the internet to do hours of searching with "Dr. Google," or turn to close friends for anecdotal solutions. For LTCI carriers, assisting family caregivers represents an opportunity to engage, educate, and bend the cost curve.

The 50 percent of undiagnosed dementia patients may also represent misclassified risk in a block of business. As with the earlier case, Grandma could file a claim for arthritis from her hip fracture, however may have undiagnosed dementia thereby representing higher claims paid as the duration of claim payment will be longer for dementia claims. As a neurologist taking a deep dive into insurance, I've realized that many carriers use a univariate model of accounting dementia risk in their block of business. There's a real value and opportunity for insurers to improve their assessment of dementia costs using a multivariate model that can adjust for the complexities around diagnosis and risk.

Non-disclosure

Non-disclosure rate of diagnosis to the patient and family is high. On average 45 percent of all doctors across the United States do not disclose the diagnosis of dementia to their patients. Qualitative research around nondisclosure performed last year by Neurocern Inc., matched what many other researchers have shown. Non-disclosure is attributed to physician attitudes around dementia, time constraints, and operational challenges of medical practice. When was the last time your doctor spent two hours to discuss a diagnosis and care plan with you or someone you know? Until last year, Medicare did not reimburse physicians to make a dementia diagnosis and care plan, thus physicians were not only emotionally disincentivized, but also financially disincentivized. Non-disclosure from physicians also translates into higher claims processing costs as many physician notes may be incomplete, and not reflective of true need.

Research has shown that 49 percent of dementia patients have five or more other chronic medical conditions. When patients have other chronic conditions, such as diabetes or chronic kidney disease, dementia exacerbates the costs of those conditions. For example, patients with diabetes and dementia have an 81 percent increase in total diabetes spend per year compared to non-dementia patients with diabetes. As a physician, I've often wondered why this is, and have hypothesized that many of these chronic conditions require self-management. As you may imagine, self-management instructions may not necessarily be followed by someone who has cognitive impairment.

Challenges Around the Cure

The latest headlines in 2018 have shown that many big pharmaceutical companies are pulling out of neuroscience, and specifically from finding a cure for Alzheimer's disease and dementia. Pfizer recently announced a departure from the market, and in January 2018, a prominently funded biopharmaceutical company reported failed clinical trial outcomes to shareholders. Many of the same challenges around diagnosis, social stigma, and limited access to specialists impact Big Pharma's direct operations, bottom line, and race to find the cure. The grim future around finding a cure for dementia further highlights the need for a proactive care management tool to mitigate future LTC costs.

THE FINANCIAL OPPORTUNITY FOR INSURERS

In medical school, I was fascinated by high impact diseases—diabetes, heart disease, and dementia. After my medical school training, I went on to pursue a degree in Medical Anthropology to study morbidity and mortality trends of the world's biggest predicted diseases in 2025. Dementia topped every predictive model as the number one cost to economies worldwide.

The 1984–2011 ILTCI Study by the SOA[3] estimated that dementia accounted for 40 percent of all historical claims paid by long-term care insurance companies. As dementia and other neurological conditions continue to climb the charts for disability and mortality worldwide, global insurers and reinsurers may want to adopt new strategies and technologies to engage, predict, and manage the growing costs around neurological claims.

Recent news regarding LTC reserve charges from General Electric highlight the need to better characterize current claims and predict future cost. The NAIC LTC working group has been charged to develop new guidelines around principle based modeling for the industry. One main point actuaries may want to consider is to further characterize current dementia/cognitive claims by subtype as each has varying degrees to cost of care, mortality and duration. In some cases the costs of care are five times more.

A NEUROLOGIST IN INSURTECH

Inspired to help patients and families like Jane at a larger scale, I began focusing my career at the intersection of neurology, macroeconomics and innovation. You see, if Jane had access to a custom set of instructions on how to minimize her husband's hallucinations during the early phases of his disease, she may have been able to keep her husband at home longer, thereby delaying the claim.

Four years ago, I began a journey into the technology and innovation sector. I was inspired to take the knowledge base of 600 neurologists and use predictive analytics to impact millions of patients and families. Neurocern Inc. was born around the mission to engage and assist families with expert digital care recommendations. The name "Neurocern" was developed from taking family caregiver "concerns," to then help "discern" what to do.

I'm often asked which is harder—neurology or business. I've found that it all comes down to one thing: risk. In clinical medicine, often the practice of medicine involves mitigating all risk. Once a diagnosis is made, doctors follow pre-determined guidelines and protocols to "do no harm" and avoid all risk. In business, it's all about taking calculated risk, trusting your intuition, and aligning with the market to find win-win strategies.

Dr. Anitha Rao, MD, MA, is CEO and founder of Neurocern Inc., a web-based disease management platform that helps insurance companies reduce and manage the growing costs of their neurological claims by engaging claimants and families with real-time digital assessments and automated care plans. ■

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ENDNOTES

1 Feigin, Valery L et al. Global, Regional, and National Burden of Neurological Disorders During 1990–2015: a Systematic Analysis for the Global Burden of Disease Study 2015 The Lancet Neurology, Volume 16, Issue 11, 877 - 897

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3 Scism, L. 2018, January. Millions Bought Insurance to Cover Retirement and Health Costs. Now They Face an Awful Choice. The Wall Street Journal. *https://www.wsj.com/articles/millions-bought-insurance-to-cover-retirement-health-costs-now-they-face-an-awful-choice-1516206708*

4 Society of Actuaries. Long Term Experience Committee Intercompany Study Report 6 1984-2007.