



SOCIETY OF ACTUARIES

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Navigating New Horizons...

an Interview with Nancy Walczak

by Sarah Lawrence

Perhaps nobody takes the old adage that “history repeats itself” as seriously as an actuary. While it’s true that past events are often the best indicators of what will happen in the future, projections can be improved by considering how innovation can change everything. Nowhere in the actuarial field is this more obvious than in health insurance, where companies can abruptly find their product over- or under-priced following the release of a new prescription medication or medical device. As a result, a new field has opened to actuaries such as Nancy Walczak, who has built her career on following advancements in medical care and treatments in order to predict and advise about the impact these changes will have on insurance pricing.



Nancy Walczak, Ph.D., FSA, is a senior consultant at Ingenix Consulting in Eden Prairie, Minn. She can be reached at nancy.walczak@ingenixconsulting.com.

An Unlikely Path

Walczak, a Minnesota native, did not even have actuarial work on the radar when she began attending Northwestern University in Evanston, Ill. After years of hard work, she graduated with a doctoral degree in neuroscience and, like many college graduates, decided at that time to go in a completely different direction.

“As I completed my Ph.D. and was thinking about my career path and doing the kinds of things that a post-doctoral student does, it became pretty clear to me that the world probably had all of the Ph.D.s in neurophysiology that it needed,” Walczak said. “After really thinking about skills transfer and reading the Department of Labor’s report on the actuarial profession at the time, and also at some urging of a friend of mine to consider the actuarial profession, I took a look at it.”

Walczak completed her first actuarial exam and found she did have a lot of skills that would lend themselves to a career in the field. From that time on “there’s been no looking back,” she said. Shortly after, she accepted her first actuarial position with Group Operations of Prudential Financial Services in Roseland N.J. It was here that she got her first taste of what would later become the focus of her career.

“Group Operations served large, self-funded employer groups and many of them were forward think-

ing and interested in understanding how new medical technologies might affect their benefit costs,” she said. “And so some of the first analyses I did at the time were ad hoc projects for these large clients. I didn’t do very many, but it was the first time that I began to think about this.”

In her next position with ING Financial Services of Minneapolis, Minn., Walczak continued to work with this type of analysis on a part-time basis.

“I saw my fair share of actuarial modeling, whether it was through cash flow testing or through valuation modeling or for economic value added modeling,” she said. “So I became very aware of the concept of modeling streams of future cash flows and had excellent opportunity to do that in a variety of assignments.”

Walczak’s focus had turned to being a valuation actuary when, in 2003, she was offered a position with Reden & Anders of Minneapolis as senior consultant assisting in the development of a new product.

“They had a very clear idea that there is a growing need at health insurance organizations to have a better understanding of the impact of new medical technologies and other kinds of developments that completely alter the utilization of services and benefit costs in health care,” she said. “I was hired to develop the product and I’ve been working on it ever since.”

Making Predictions

Walczak said the most important part of her job is predicting disruptive events—unexpected changes in health care that severely increase or decrease demand for a product or service. The benefits of being able to make and use models that predict these events are clear.

“Underestimating the potential impact and cost of a new technology is something that is perilous for most payers,” she said. “Many payers have had to endure in the last five years or so drug eluting stents and ICDs [implantable cardioverter-defibrillators] and Lucentis and Avastin and Enbrel. If things like this are not included in their trend, it could result in a premium shortfall and that’s going to be paid for somehow—usually out of the bottom line.”

In addition to new medications or medical equipment hitting the market, new mandates from organizations such as the American Cancer Society can have a huge effect.

“The American Cancer Society is not a regulatory body, but when they came out with new guidelines for breast cancer screening involving an MRI, they set treatment guidelines that have the force of regulation,” she said. “So suddenly overnight health insurance companies found themselves having to adopt a benefit that perhaps in the past they weren’t extending to their members.”

Walczak said over-pricing is also easy to do, for example when a company fails to predict a trend toward increased use of generic drugs and prices are not lowered accordingly. What makes the whole situation worse is that one instance of over- or under-pricing can put a company in a cycle of bad pricing that is hard to break, since inputs to actuarial models tend to assume that a temporary discrete event represents the steady state.

But creating models that forecast these disruptive events is not easy.

“We do a lot of horizon scanning, first of all to identify a full range of technologies,” Walczak said. “We identify technologies and begin to follow them well before they are approved by the FDA or well before they would meet the broad standards for evidence-based medicine and be adopted by most payers.”

The next step is determining what the demand for that product might be.

“For example, we really don’t care about a new oral contraceptive because there are so many oral contraceptives out there,” she said. “If a woman desires an oral contraceptive there are many to choose from, and many generic, so the new one is unlikely to significantly change the future with respect to the past. On the other hand, when the HPV vaccine came out, there was nothing like it. There was a huge possible population that might use it out there and state mandates also became a question.”

Walczak said creating the models is very complicated and she is the first to admit the results are not always perfect.

“Overall this job does teach you to be humble because no matter how good your model is, there’s always a high probability that you will be wrong,” she said. “This means that we need to revise our models monthly and we do keep a constant eye on all of the models that we provide to our clients and revise them if there is some sort of change.”

Actuarial Method Application

Walczak said creating these forecast models is not so different from traditional actuarial methods, which is why help from actuaries is essential.

“One of the things that actuaries do very well is forecast expected costs and expected utilization and there is a very well developed practice doing what we call trend forecasting,” she said. “Trend in this instance means medical inflation and medical inflation can come about because people are using more of the same services, or because the price of that service has increased.”

Those models are quite accurate, except when the unexpected happens. Walczak said her forecasts take things a step further and help actuaries “understand and make provisions for the things that they couldn’t possibly anticipate—things that make a good model go bad.”

Walczak said it is easy for actuaries to make this jump themselves by recognizing that most medical treatments can be modeled as if they are an annuity.

“They are simply a stream of future cash flows and when you’re looking at the economic cost of new technologies, it really looks like an annuity in that you will make adjustments for survival adjusted cash flow streams and you may make adjustments for interest or inflation,” she said. “A lot of those things make it look like an annuity and in particular it makes it look like an annuity that needs to be modeled under CARVM, because you may have to model a variety of different outcomes.”

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Examples of different outcomes would include modeling the potential for a person to use a drug for some period of time and then switch, or to model the expected cost for a person who has never used any drug before versus a person who might be using an existing therapy and is changing.

"I'm pretty sure that a pricing actuary who works with a fairly complicated annuity model would recognize a lot of what we do," Walczak said. "We start out by creating streams of future cash flows and then combining them to create probability-weighted streams of cash flows based on the likeliest outcomes and then we apply those to populations. The result is something that looks a lot like a paid by incurred triangle."

Walczak said an example of this application would be a new cancer therapy that is administered weekly until the disease progresses. The median time to progression is 40 weeks and 50 percent of the people have stopped using the drug at 40 weeks.

"Therefore we can create or back into a survival function where survival here isn't life or death of the patient, but is the continuation of using the therapy week after week," she said. "It's a little more complicated than the way I've described it, but the basic concept is there."

"So using that information we can create a stream of cash flows that will allow us to much better estimate the expected cost for a single patient," she said. "And now if we know that 10 patients will begin using this drug on January 1, another 10 will begin to use it on February 1, another 10 will begin to use it on March 1, and so on through the year, we can line up those streams of cash flows for each of these groups of 10 and will have a pretty good idea of what the cost of that drug will be in August of the year."

Personally Speaking

Walczak said one of her favorite parts about her job is how much everything changes from day to day. Keeping up with the latest in health technology is a constant battle, and estimating the impact of that technology is even more consuming.

"Lately we've been doing a lot of work on what's called the 'present on admission' requirements from Medicare and what it might mean for a variety of payers to adopt similar provisions," she said. "Effective October 1 of last year, this program is being instituted such that hospitals have to identify a short list of hospital acquired conditions that Medicare felt was associated with poor quality care."

In short, Walczak said Medicare will not pay for care and support provided as a result of medical errors, such as medication mix-ups or a patient being burned by a piece of equipment.

"Theoretically the patient does not pick up that cost and theoretically that cost is bore by the hospital," she said. "But the issue is complicated because there is no such thing as uncompensated care. The intention of the 'present on admission' program is to create a very real incentive to improve the kind of quality care that hospitals give so that these errors are avoided in the first place."

Walczak said a number of organizations are interested in understanding the potential short-term cost savings of such a program for themselves, the potential long-term impact, what it might mean if they decided to act alone and what it might mean if they waited for a more consensus policy and more organizations to adopt similar programs. What kind of contracting would have to be undertaken? What would such a program mean for benefit costs?

Ultimately, Walczak said it is up to the individual company to decide how to act.

"I would love to see all actuaries, particularly all health care actuaries, understand that they can play a role in helping their organizations estimate the impact of medical technology or really begin to provide a prudent provision for medical technology in their forecasting," she said. "It's not going to go away. Culturally, Americans demand the latest technology, the latest medical therapy and the latest cure for their diseases. Culturally, it is something we have come to expect." ■