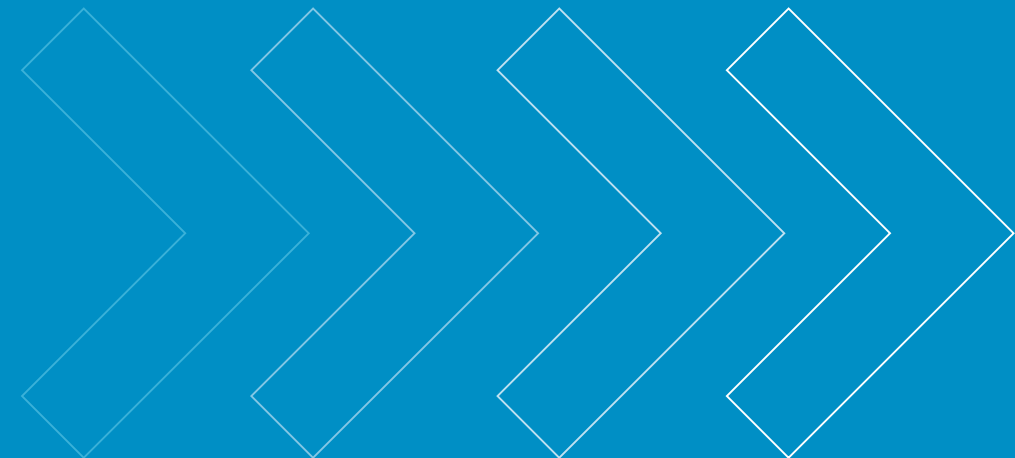




# Health Watch

ISSUE 87 • OCTOBER 2018



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# Health Watch

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475 N. Martingale Road, Suite 600  
Schaumburg, Ill 60173-2226  
Phone: 847.706.3500  
Fax: 847.706.3599  
[www.soa.org](http://www.soa.org)

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To join the section, SOA members and non-members can locate a membership form on the Health webpage at <https://www.soa.org/sections/health/health-landing/>.

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JoAnn Bogolin, ASA, FCA, MAAA  
[jbogolin@boltonhealth.com](mailto:jbogolin@boltonhealth.com)

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### SOA Staff

Joe Wurzburger, FSA, MAAA, Staff Partner  
[jwurzburger@soa.org](mailto:jwurzburger@soa.org)

Dee Berger, Section Specialist  
[lberger@soa.org](mailto:lberger@soa.org)

Julia Anderson Bauer, Publications Manager  
[jandersonbauer@soa.org](mailto:jandersonbauer@soa.org)

Julissa Sweeney, Senior Graphic Designer  
[jsweeney@soa.org](mailto:jsweeney@soa.org)

# Letter From the Editor

By JoAnn Bogolin

In this issue of *Health Watch*, we kick off with our leadership interview with John Bauerlein. We chose this as the first article because of John's interesting background and thoughtful approach to his career. I believe this interview sets the tone for the rest of the issue.

Up next is an article that moves the discussion of the opioid epidemic forward, with Andrew Gaffner, Barbara Collier and Joseph Boschert sharing how they are attempting to assess this risk through predictive analytics. The opioid epidemic impacts patients and their families, all the players in the health care market because of increased costs, across all populations: commercial, Medicare and Medicaid. Helping the actuarial community know how to anticipate and quantify this risk is imperative.

Corey Berger addresses Medicare Advantage (MA) risk scores, specifically how Medicare Advantage organizations (MAOs) can compare their experience reporting to a benchmark population's reporting of the hierarchical condition categories (HCCs). Given that HCCs are one of the few areas where MAOs can impact their risk scores (i.e., the revenue received from CMS), understanding how you are reporting your experience versus how everyone else is reporting experience, is key to remaining competitive in this landscape. Corey provides insights gained and directs MAOs on what they should be examining to ensure they are reporting all of the diagnosis data for their Medicare Advantage beneficiaries.

While we are in the MA revenue frame of mind, Puneet Budhiraja and Rajesh Munjuluri discuss how to improve Medicare Advantage star ratings. As Corey mentions, the HCCs are one area that the revenue from CMS can be impacted by the MAO. Puneet and Rajesh discuss the measures around another metric used in the determination of revenue from CMS for Medicare Advantage products: star ratings. This article covers the timing of the measurement periods and the steps to move to the next-higher star rating level. As the authors emphasize upfront, understanding the timing of the measurements and the timing



Helping the actuarial community know how to anticipate and quantify this risk is imperative.

of the payments is key to developing an appropriate financial plan for this product.

Eleven million individuals have gained health care coverage due to Medicaid expansion under the Affordable Care Act (ACA). In the early days after the ACA went into effect, companies had little to no information on how this population was going to impact them. Tony Marko, Joshua Kuai, Sabrina Gibson and Mitchell Cole examine this population and its impact on the health care market, discussing the enrollment/disenrollment by age group, and the claims and utilization of the population. No spoilers from me, but I ask that before plunging into this fascinating article, think about what you expect the answers to be.

Dave Dillon then steps us through association health plans (AHPs), specifically the new regulatory framework for AHPs, as discussed in a white paper by Sabrina Corlette, Josh Hammerquist and Pete Nakahata released earlier this year. This white paper is one of a series from the Commercial Health Care: What's Next? strategic initiative by the Society of Actuaries (SOA) and not only explains the new framework, but also addresses the impact of these new regulations.

Bethany McAleer presents "Seasonal Flu Impacts: Flu Science Meets Actuarial Science," where she explains the types of flu that impact humans, what types of flu the vaccines are designed to protect us against, and the actuarial implications of the flu. This article is certainly timely given the considerations that are

discussed for year-end reserve calculations and budgeting and forecasting. Bethany provides tips for our community on how to incorporate this experience into all of the actuarial functions for the coming year (pricing, reserve setting, etc.).

Also just in time for our year-end work, Annette James and Nancy Hubler provide an article on how to prepare an actuarial memorandum for the Orange Book that will make your regulator smile. Annette (Nevada) and Nancy (Ohio) give us the "how to" when it comes to actuarial memoranda, covering the purpose of the memoranda, common misperceptions, and step-by-step guidance *with examples!* At the very least, those of us filing memoranda in Nevada and Ohio should take note! For the rest of you, be careful that your state regulators don't see that *Health Watch* provided this gold-star guide, if your memorandum does not make them smile.

And finally, Brian Pauley, Joan Barrett and Joe Wurzbarger asked one simple question to 30 thought leaders throughout the health care community at an all-day face-to-face meeting in March: What can we do about the cost of health care? The first phase was designed to identify the issues and potential solutions. The second phase is to determine what to do about it. This article makes us aware of the Initiative 18/11, what direction our community is taking and what we, as individuals, can do to help forward this conversation.

I was once again super lucky with the authors who volunteered to contribute to *Health Watch*. After reading this issue, I think you will agree! Thank you to all of the authors, your time and efforts are greatly appreciated!! ■



JoAnn Bogolin, ASA, FCA, MAAA, is a member of the Health Section Council and managing director at Bolton Health Actuarial in Atlanta. She can be reached at [jbogolin@boltonhealth.com](mailto:jbogolin@boltonhealth.com).

# Chairperson's Corner

By Sarah Osborne

For my final Chairperson's Corner, I would like to talk about investments. Most actuaries know a thing or two about investments, interest and the time value of money. I'm sure that many of you reading this have been very thoughtful and deliberate about how you invest your own money. It might be saving for a short-term goal, like taking a great vacation, or buying that new vehicle you've had your eye on. Or, perhaps your focus is on retirement and your long-term goals.

However, some of the greatest returns are on those investments that aren't directly related to your bottom line. After the past three years on the Health Section Council, I have a much greater appreciation for all the investments the many volunteers have made in the Health Section. The countless hours contributed by these actuaries are what make the section and its various initiatives so successful.

Whether it's reading a *Health Watch* article or web exclusive, participating in a webcast, attending the Health Meeting, listening to a podcast or joining a special interest section, you have likely been the beneficiary of many volunteer investments. I have had the honor and pleasure of working alongside many of these great people and watching the impact that they make on our profession. There is an enormous amount of work that goes on behind the scenes and often goes unrecognized, but I hope that each of these individuals knows how much they are valued.

I also know many actuaries that invest in other ways. Some are involved in tutoring programs, mentoring or volunteering their services for charitable organizations. You are ambassadors of our profession, and your investments in people have an immeasurable return. Even if you dropped some socks in the donation bin



for Front Steps at the Health Meeting in Austin, this small act will make a big difference in someone's life.

If you haven't started planning yet for your next investment, I encourage you to check out the Society of Actuaries volunteer webpage at [www.soa.org/volunteer-program](http://www.soa.org/volunteer-program). You can also reach out to a Health Section Council member or your local actuarial club for opportunities. Research some local nonprofits that could use some help, or take an actuarial student under your wing and be deliberate in helping them be successful. Whatever you do, you can guarantee a positive and long-lasting return. My term on the Health Section Council has been more rewarding than I could have imagined, and I want to thank you for the opportunity to serve in this role. ■



Sarah Osborne, FSA, FCA, MAAA, is senior vice president, chief actuary and analytics officer at Government Employees Health Association. She can be reached at [Sarah.Osborne@GEHA.com](mailto:Sarah.Osborne@GEHA.com).

# Up Front With the SOA Staff Fellow

By Joe Wurzburger

**W**e all know how to identify an extroverted actuary by now, right? The most commonly told actuarial joke according to my very unscientific study always bugs me at least a little bit. Sure, I understand it's all in good fun (an extroverted actuary is one who looks at the *other* person's shoes). But I know so many dynamic and personable actuaries that it often feels inaccurate. Just look at the author names on the cover of this issue or members of the Health Section Council on page 2, and you'll see plenty of examples of actuaries who are nowhere close to matching the so-called stereotype.

That said, the Society of Actuaries (SOA) frequently hears feedback that actuaries need to improve their "soft skills," including communication. The fact that this feedback often comes from actuaries and not outsiders prompts me to get thick skin about the jokes and instead consider what can be done to help.

Actuaries generally spend at least the early part of their careers doing highly technical work. Promotions and additional responsibility often result from demonstrations of technical proficiency. At some point, one of those promotions may give managerial responsibility to someone who earned that opportunity by

proving their quantitative, not managerial, skills. In other cases, an actuary may be held back from such an opportunity because of a perceived lack of relevant soft skills.

Some people seem to be born with good communication and leadership skills. But for everyone else, can it be developed over time? Can it be taught? And if so, how? A 90-minute session at an SOA meeting seems well-intentioned but ultimately insufficient.

A bolder effort was first made at the 2017 SOA Annual Meeting & Exhibit and is being repeated at the 2018 annual meeting. Andrew Sykes, actuary-turned-professional-speaker, leads the engaging "Influence Training for Actuaries" seminar. Utilizing the full Sunday before the kickoff of the annual meeting, Andrew mixes art and influence science in a way that targets actuaries specifically. This highly interactive and hands-on workshop cultivates relevant soft skills in ways that I believe are unprecedented in actuarial education, and the Health Section is proud to partner with the Leadership & Development Section to bring it to you.

But don't just take my word for it. Here are testimonials from attendees of the 2017 event.

*"I put into practice what I learned for an important presentation at an offsite managers' meeting. I burst right out with a great short and relevant story, gave three clear objectives, had folks briefly interact with each other a few times to keep everyone moving, delivered on the objectives, and practiced beforehand—it went so well. Without question, the reason it went well was solely due to what I learned at Andrew's Influencing for Actuaries seminar."*

—Bill Leslie, FSA

*"The presenter delivered new information in concise chunks, progressively building out new skillsets throughout the day. This session gave some great examples of ways to drive change and influence people through focusing on what motivates them, what holds them back, and why it does, by using a data-driven approach."*

—Jason Christiansen, ASA, MAAA

*"I recommend this seminar for any actuary or technical professional who wants to understand the behavior of his or her colleagues more, work on skills like better connecting with others in a group or meeting setting, and challenge the convention norm of doing business as usual."*

—Mitch Stephenson, FSA, MAAA



You can also hear from Andrew himself by checking out his video on the SOA's YouTube channel: [www.youtube.com/societyofactuaries](http://www.youtube.com/societyofactuaries).

By the time this article is published, you may have missed your chance to attend the 2018 version of this event. I hope it will be offered again in 2019, so please keep it in mind. But even if you did miss this year's event, that doesn't mean you should pass on opportunities to improve your own soft skills, especially if you think it may be the only thing standing between you and that next great opportunity.

Put yourself out there. I happen to believe that one of the very best ways to develop your soft skills is to take on challenges that are just a little bit beyond your comfort zone. Don't get too far out over your skis; if you consider yourself a shy introvert, maybe you should not immediately go out and give a presentation in front of 2,000 people. But perhaps you could ask your manager if you could listen in the next time he or she presents

information to the CFO; maybe the time after that you can ask if you could present one of the slides yourself. You may have some butterflies in your stomach, but that only confirms that you're alive. Chalk up some small incremental victories like this, and before you know it you'll be presenting sessions at the SOA Health Meeting! Perhaps more important, you may break down the barriers that are currently keeping you from attaining your professional goals.

If you have other ideas for how actuaries can expand their soft skills, please find me at the next SOA event and share them with me. I'll be the tall guy looking at your shoes rather than my own. ■



Joe Wurzburger, FSA, MAAA, is Health staff fellow at the Society of Actuaries. He can be reached at [jwurzburger@soa.org](mailto:jwurzburger@soa.org).

## SOA E-Courses

SOA's e-courses offer actuaries a broad range of forward-thinking topics. From decision making and communications to fundamentals of the actuarial practice, actuaries who enroll will gain a better understanding of relevant topics relating to the actuarial profession.

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# Leader Interview

With John W. Bauerlein

**J**ohn W. Bauerlein, FSA, MAAA, is an equity principal and consulting actuary with Milliman Inc. John currently works in Milliman's Atlanta Health Actuarial Consulting practice (although his permanent residence is Newport Beach, California).

After graduating from UCLA with a degree in applied mathematics, John joined Pacific Mutual Life in Newport Beach as an actuarial trainee. He subsequently worked at a mix of consulting and HMO jobs until joining Milliman in 1996.

John is involved in various nonprofit organizations, and when not working he enjoys traveling with family, mountain biking and playing No Limit Texas Hold 'em.

## ON BEING AN ACTUARY

**Health Watch (HW):** How and when did you decide to become an actuary?

John W. Bauerlein (JWB): I was entering my third year at UCLA and still not set on a major after having gone down numerous paths (undeclared to engineering to history to economics). I had always taken math courses and while outside the math department, I came across a Society of Actuaries exam syllabus. I looked into the profession and was intrigued with the idea of using math skills in a business setting, although the number of exams and time frame to achieve fellowship was quite daunting.

While UCLA did not have an actuarial science major, it did have a curriculum within the applied mathematics major that combined math courses with economics and Graduate School of Management classes (called "Actuarial Plan"). I declared for that major, and then it was full speed ahead to pass exams and graduate.

**HW:** What other careers did you consider? Or if you have had other careers, can you describe them?

JWB: Being an actuary was very attractive—excellent compensation, highly in demand and well respected. Once I declared for the actuarial plan, I focused solely on that future and did not



consider any other option. I was not at all interested in graduate school as I was eager to exit school, live independently, and, most important, start collecting a paycheck.

I did leave my first actuarial exam thinking I failed miserably and spent the next six weeks anxious about what else I could or would do. But to my surprise, I did pass and never looked back.

**HW:** What was your favorite job before you became an actuary?

JWB: My first job was dishwasher at Lakewood Country Club. Certainly not my favorite job but it did have the best perquisite of any job since—the golf course was closed on Tuesdays, and employees could play for free that day.

My most interesting job was selling newspapers at Del Mar Racetrack during college summers. I sold the *Herald Examiner* next to the paddock area where jockeys would meet with trainers/owners and then mount their horses (my brother hawked at a newsstand in the central plaza). Each paper sold for \$0.25 and at the end of the day I would pay the distributor \$0.15 for each paper sold. That gave my brother and me plenty of cash to make bets during the races. I just needed to be sure I had enough to



pay back what I owed at the end of the day. That job gave me my first life lessons in risk management and the consequences of going into debt. Fortunately, the distributor was a nice old gentleman who would let me repay the next day if I came up short of what I owed.

**HW: What has been most crucial in your development as an actuary?**

JWB: The wide variety of jobs and roles I had during my 20s and early 30s has been very valuable to my success as a senior actuary. I was first hired as an actuarial trainee in the Group Insurance Department at Pacific Mutual. There I learned all the basics—rating, underwriting, reserve estimates, cost analysis and so on. My stint there culminated in an update to the rate manual, which included developing new rating factors and credits. This gave me an excellent grounding in the technical aspects of health actuarial work.

My next job was health and welfare benefits consultant. While not as technical, it did force me to work on my communication skills and delve into gray areas. To be a visible part of the team, it was important to communicate clearly and understandably to a nonactuarial audience.

My last job before joining Milliman was at a West Coast HMO. There I learned the intricacies of provider contracts, reimbursement arrangements and health care delivery systems. Rounding out my expertise was a crash course in what is now called Medicare Advantage.

The skills and knowledge I gained from these very different roles have been invaluable to me as a senior consulting actuary.

**HW: Looking at your career as an actuary, do you see any important learning milestones or turning points in your career?**

JWB: The choice of practice area and employers will dictate much of one's career path and job satisfaction. Early in my career, I tended to switch jobs often, making some good choices but also some very bad ones. I actually might have learned and developed the most while in unpleasant employment situations. Unfortunately, my resume was starting to look like someone who merely bounces from job to job.

At some point, one needs to find a permanent “home”—a place where you believe in the organization, feel motivated and are comfortable. I found that at Milliman, as it allowed me the freedom to pursue opportunities independently and rewarded entrepreneurial behavior.

I also had the pleasure to be part of a leading-edge initiative that ultimately changed the market. If that opportunity is available, I strongly encourage one to take it. Regardless of the results, it can be exciting and lead to a great deal of personal growth.

**HW: As an actuary, what keeps you awake at night?**

JWB: The unsustainability of our nation's current financing and delivery of health care does not bode well for the future. Medicare projections only differ as to what date the program runs out of funds. Health care cost trends continue to exceed consumer price index (CPI) and gross domestic product (GDP) growth. Employee direct pay increases are held back as benefit costs eat up a larger portion of employee compensation. Every year that reform is delayed makes the solution that much more painful. It is not fair to the next generation.

Be bold. Don't limit yourself to answering actuarial inquiries or delivering work products. Formulate and express your own opinions.

**ON BEING A LEADER**

**HW: How much did your actuarial training prepare you for this role? What additional training—formal, informal or otherwise—did you need to be successful?**

JWB: Our training provides us technical expertise and grounding in actuarial principles that contribute to the public's financial security. But I have to say that very little of my actuarial training prepared me for or developed the skills needed for being an effective leader. A much different skill set is required. On-the-job experiences, with much learning by trial and error, were the norm for me.

By far the most influential training I received early in my career was a three-day “Presentations That Work” seminar. This program really took me out of my actuarial comfort zone. The first day immediately started with being filmed making a brief presentation (before any “training” had occurred). Then the film was replayed to all participants with commentary by the trainer—one of the most uncomfortable moments of my adult life. The third day ended by presenting again and watching the tape. I would encourage all actuaries to enroll in this type of training and take advantage of every public speaking opportunity. Be assured that every time you speak, you will get a little more comfortable and skilled.



Know also that one can always improve, and on-the-job training never ends. Be sure to recognize and admit mistakes, and always try to learn from them.

**HW:** What are the most important lessons you've learned in your role?

JWB: Whether speaking with clients, employees or peers, it is important to start by just listening. Then ask questions, probe further, and make sure one has a clear understanding of a situation or problem. I've then found it constructive to challenge, without being confrontational, the current perspective and direction. Being somewhat provocative can generate healthy dialogue and engagement. Clients and employees usually appreciate that challenging engagement if they know, whatever the result, you will support them at all times.

Related to aggressive engagement is the importance of never leaving issues or concerns unresolved or, at a minimum, unaddressed. When you are an authority figure, people around you may be hesitant to speak up and express concerns. Being sensitive to nonverbal cues, encouraging open communication,

and creating an environment where all feedback is welcome are critical to creating a positive culture in the workplace.

**HW:** Let's say you're hiring your successor. If you're presented with two actuaries with equivalent experience and training, what characteristics will help you choose one over the other?

JWB: I'll speak to this primarily from the perspective of leading a consulting practice. I would look to the following traits to distinguish among two technically qualified candidates:

1. **Level of charisma.** I know, not typically a trait of actuaries, but charisma can take many forms. The two aspects of charisma that are important to leadership success are:
  - Success in forging strong relationships and bringing in new business. A vigorous pipeline of growth is, of course, important to financial success but also creates a positive level of enthusiasm and personal opportunity among staff.

- Ability to recruit and retain high-performing employees (i.e., having stellar employees want to be part of your organization).
2. **Ability to motivate and inspire.** Health actuaries have many employment options available, which means you must continually strive to make your firm an attractive place to work. It is important to create an environment where employees feel challenged and part of organizational growth.
  3. **Willingness and readiness to accept the demands of leadership.** The new role will involve job aspects that one may not have encountered previously:
    - Shifting the focus from oneself to the organization
    - Being comfortable making decisions that may be unpopular
    - Being open to, and encouraging, all types of feedback, both positive and negative

**HW:** Describe the biggest one or two challenges that you have faced in your role.

JWB: Managing growth, certainly a good problem to have, was a major challenge during my first 10 years as a consulting practice leader. I had some personal success in business development and our practice greatly benefited from a favorable health care consulting environment (thank you, Medicare Advantage). During that period, our practice revenue nearly quadrupled. The particular challenges we faced were:

- How to meet client commitments while maintaining a high level of quality

- How to avoid becoming a sweatshop and burning out the staff
- How to find and recruit health care actuaries willing to join a driven, fast-paced environment

We made it successfully through that period, where we were asking a lot of hours and commitment from the staff, by fostering team spirit and personal growth.

My most challenging client engagement was serving as interim chief actuary/VP underwriting for a regional HMO. Because of provider network upheaval, the plan's cost structure had suddenly increased +20 percent, which led to financial losses, large renewal rate increases, group terminations and discord within the organization. Adjusting revenue to match the higher cost level was the core goal but a large part of the role was to work with sales to achieve renewal targets, coach underwriting staff on rating changes, and handle turnover/employee terminations. That experience involved daily crisis management that, while stressful, was never dull.

**HW:** What advice would you give to another actuary going into a leadership position for the first time?

JWB: Be bold. Don't limit yourself to answering actuarial inquiries or delivering work products. Our expertise and analyses are key inputs for management in developing strategy and making decisions. I would encourage actuaries in leadership roles to insert themselves into that process. As actuaries, our training and analytical skills provide valuable insight and perspective within the senior management ranks. Formulate and express your own opinions. Be ready to defend and debate them. My own experience has been that our input is welcome, even when straying into areas outside our traditional areas of expertise. ■

# Assessing Prescription Opioid Risk With Predictive Analytics

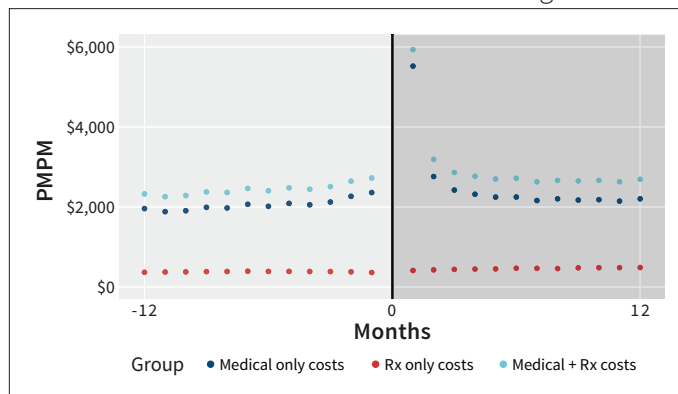
By Andrew Gaffner, Barbara Collier and Joseph Boschert

According to the Centers for Disease Control and Prevention (CDC), it is estimated that more than 115 people die each day in the United States as a result of opioid overdose and that prescription opioid misuse costs more than \$78.5 billion per year.<sup>1</sup> The uptick in opioid-overdose-related deaths and misuse has developed since the late 1990s for a variety of reasons, including:

- An increased number of prescription opioids given to patients for pain management combined with increased quantities
- Increased influence from pharmaceutical companies, including an emphasis on pain as the fifth vital sign and extending marketing from pain specialists to primary care and emergency room doctors<sup>2</sup>
- Lack of coordination and insight (on the part of both physicians and pharmacies) into patient opioid consumption<sup>3</sup>
- Lack of education regarding alternative treatment modalities for those with non-cancer chronic pain<sup>4</sup>
- A transition to illicit drugs by those who first develop an opioid use disorder (OUD) on prescription drugs<sup>5</sup>

Preventing further patient harm is critical, not only for the health of the individual and their family, but also because of the increased cost associated with an opioid dependence disease remaining untreated. We analyzed a large data set that includes information on tens of millions of individuals and over eight years of medical and pharmacy claims history. As a result of this analysis, we estimated the average overall medical cost (inclusive of pharmaceuticals) for a patient newly diagnosed with OUD is between \$470 and \$508 per member per month (PMPM) higher in the year after a member's OUD diagnosis than the year before (see Figure 1). This cost estimate may vary across Medicaid, Medicare or commercial populations.

Figure 1  
Medical Costs of Individuals With an OUD Diagnosis



The opioid epidemic is a complex public health crisis with no simple solution available for solving the problem. All stakeholders need to proactively work to improve the situation. Some of the current efforts by stakeholders include the following:

- Physicians and pharmacists utilizing state electronic prescription drug monitoring program (ePDMP) systems prior to prescribing and dispensing opioid medications
- Centers for Medicare & Medicaid Services (CMS) enacting guidelines to restrict access for high-risk beneficiaries
- State legislators restricting the days' supply for an initial prescription by enacting legislation
- Health plans improving provider education and risk assessment
- Substance Abuse and Mental Health Services Administration (SAMHSA) increasing access to naloxone and medication-assisted treatment (MAT)
- Health care providers improving efforts to integrate information sharing

While many of these efforts will likely have a positive impact on the opioid crisis in the long run, there is also an opportunity to improve and advance the area of prevention and screening. Many screening tools today are a set of questions clinicians ask patients, and which rely on self-reported data. The CDC has called into question the accuracy of these tools and their effectiveness in reducing harm because the evidence and results of these tools were inconsistent.<sup>6</sup> Additionally, not everyone has their risk assessed before opioid prescriptions are written.

Bob Twillman, Ph.D., executive director for the Academy of Integrative Pain Management, states, “Every patient should be screened; it’s the right thing to do. Undiagnosed OUD results in increased costs due to doctor shopping, increased utilization and increased social program support.”

Mark McGrail, M.D., family and addiction services physician at Cherokee Health System mentions, “Cherokee has made screening universal and is done at every intervention within our integrated care model.”

Screening and assessing large numbers of either opioid-naive or high-risk chronic opioid users is made easier with an approach that scales. Data science may provide one avenue to assist with the opioid epidemic. Data science can review patterns in historical data to identify common criteria that could lead to OUD diagnosis. These patterns may not be easily identifiable through a manual review of the data.

### PREDICTING THE LIKELIHOOD OF OUD DIAGNOSIS

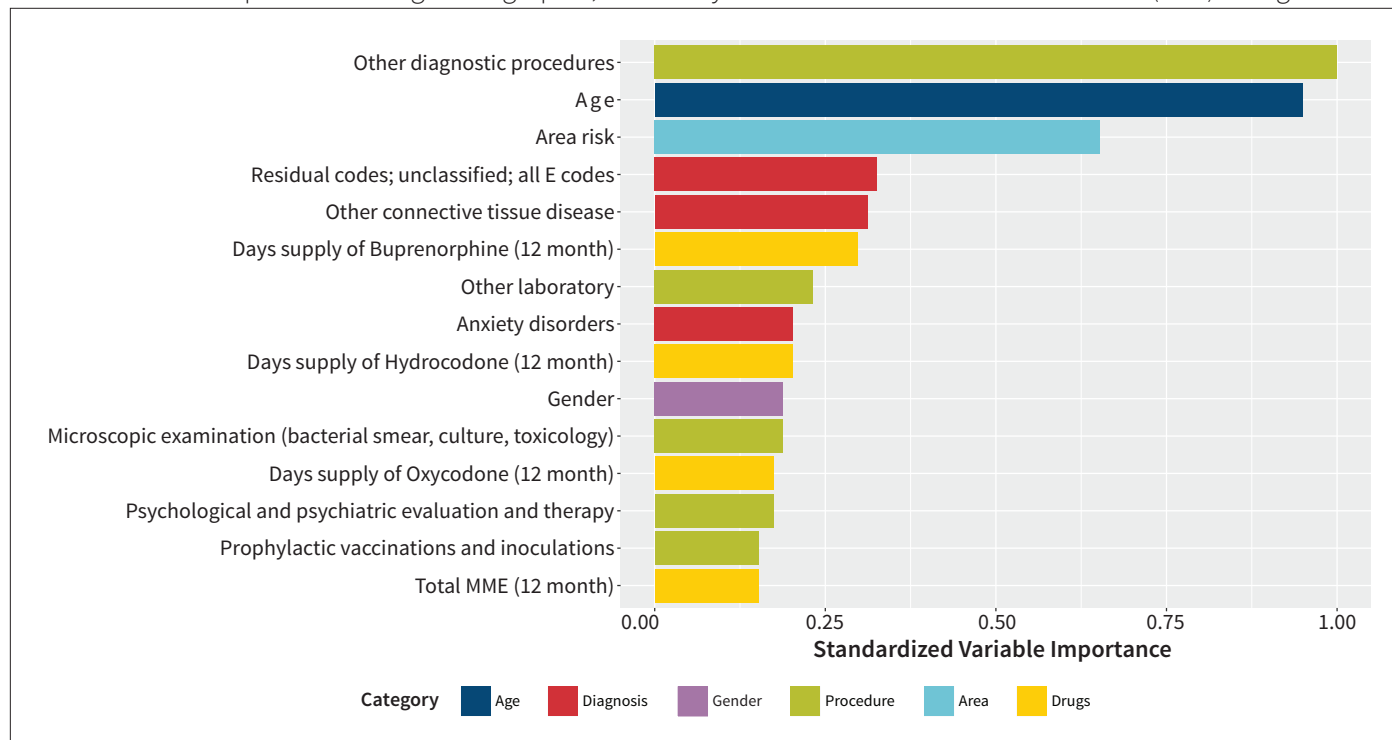
Milliman developed an algorithm using actuarial concepts and data science techniques, including artificial intelligence and predictive analytics, to predict the likelihood of receiving an OUD diagnosis in the next 90 days. This algorithm was performed on

our large data set and took into account an individual’s demographic, medical and pharmacy data. The algorithm is based on a gradient boosted machine (GBM) model, which is a decision tree ensemble model. This approach combines the prediction from hundreds of individual decision trees to come to a final consolidated estimation. The GBM model provides the ability to capture nonlinear relationships between the dependent variable and over 1,600 predictors in addition to predictor interactions. The output of the GBM model is risk scores related to the likelihood of an OUD diagnosis, along with associated contribution factors based on the data assessed, of individuals. The goal is to allow full transparency for further clinical assessment and targeted case management.

Initial results of our algorithm have been promising with an area under the curve (AUC) of 0.914. AUC is a calculation that is commonly used to demonstrate the accuracy of the model; values closer to 1 indicate that the model is more likely to rank a person who will have an OUD diagnosis in the future higher than an individual who will not. With a value of 0.914, our model is at least as predictive as similar opioid assessment tools.

Figure 2 displays some sample variables that are potential contribution factors for an individual, along with their relative

Figure 2  
Relative Variable Importance Using Demographic, Pharmacy and Clinical Classification Software (CCS) Categories



For more information on CCS, see <https://www.hcup-us.ahrq.gov/toolsoftware/ccs/ccs.jsp> (accessed June 22, 2018).

importance in predicting OUD diagnoses. The ranking of the predictors in Figure 2 indicates how key the factor can be in determining a person’s risk of an OUD diagnosis, but does not represent a linear relationship. For example, the age of an individual is a strong predictor of the risk of an OUD diagnosis in the next three months, but a person is not necessarily more likely to receive an OUD diagnosis as they get older.

**Based on our algorithm, the top three variables in Figure 2 (other diagnostic procedures as defined by CCS, age and geography) are among the most important variables in determining the likelihood of receiving an OUD diagnosis.** By combining these demographic variables with medical and pharmacy claim information, our algorithm is able to identify individuals who are most likely to be diagnosed with OUD in the near future (90 days).

Note that the current version of the predictive analytic model is calibrated around predicting a member’s likelihood of receiving an OUD diagnosis due to the importance of identifying these individuals for potential treatment to mitigate the current epidemic. Another potential use for this type of predictive analytics algorithm is a refinement to identify individuals likely to be diagnosed with other diseases. For example, this type of predictive modeling on individuals and their claims data to identify who may be diagnosed with diabetes, stroke (including long-term complications) or chronic obstructive pulmonary disease (COPD) would allow for quicker intervention, potentially before these events occur. This early intervention could significantly improve the outcomes for these individuals and potentially reduce their medical costs.

Properly understanding risk and context is important to assessing whether a patient should be prescribed opioids. There are cases where opioids may be appropriate for specific acute events and chronic pain situations. Pain management professionals, primary care physicians, surgeons and dentists are best positioned to make these clinical judgments. Additionally, there is active research assessing the outcomes of other treatment modalities, including MAT, opioid tapering strategies, physical and occupational therapy, nonsteroidal anti-inflammatory medication alternatives, lifestyle changes, psychological support and alternative medicine (like acupuncture and chiropractic services). Inputting these outcomes into the feedback loop for risk assessment purposes will help improve future predictions.

Screening and risk assessment are critical to exercising sound clinical judgment and making effective care decisions. OUD diagnoses have continued to increase over the past several years.<sup>7</sup> A multifaceted approach to attacking the problem, including

widespread opioid assessment and screening, will play a larger role in reducing societal harm in the future. ■

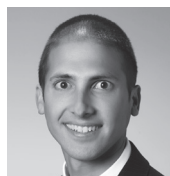
*Please note the opinions stated in this article are those of the authors and do not represent the viewpoint of Milliman. Andrew Gaffner and Barbara Collier are members of the American Academy of Actuaries and meet the qualification standards of the Academy for sharing the information in this article. The underlying data was provided by various contributors and was accepted without audit. However, the authors did review it for general reasonableness. If this information is inaccurate or incomplete, conclusions drawn from it may change.*



Andrew Gaffner, FSA, MAAA, is a principal and consulting actuary at Milliman Inc. He can be reached at [andrew.gaffner@milliman.com](mailto:andrew.gaffner@milliman.com).



Barbara Collier, FSA, MAAA, is a consulting actuary at Milliman Inc. She can be reached at [barbara.collier@milliman.com](mailto:barbara.collier@milliman.com).



Joseph Boschert, MBA, is a product manager at Milliman Inc. He can be reached at [joseph.boschert@milliman.com](mailto:joseph.boschert@milliman.com).

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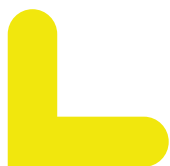
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# Medicare Advantage Risk Scores: Are You Competitive?

By Corey Berger

A number of years ago, we published articles in *Health Watch* summarizing the number of hierarchical condition categories (HCCs) per Medicare Advantage (MA) beneficiary.<sup>1</sup> The goal of those articles was to help MA organizations compare their own experience to a benchmark of the average number of HCCs per MA member. While a number of changes have occurred in the MA landscape in the past five years, including the impact on payment rates from the fee-for-service (FFS) phase-in, continuing changes in star ratings, and the phase-in of diagnoses from the Encounter Data System (EDS), the requirement that MA plans ensure their risk scores appropriately reflect the health status of their populations continues to be a primary key to their success.

This article updates those prior articles with 2016 payment year (PY) information. This article also summarizes the difference in the average number of HCCs submitted through the Risk Adjustment Processing System (RAPS) when compared to EDS.

## BACKGROUND

The Centers for Medicare & Medicaid Services (CMS) assigns a risk score to every MA beneficiary based on age, gender, disability status, Medicaid status and “health” status. For most MA plans, more than 80 percent of revenue is risk-adjusted. While the demographic component of the risk score is the same for members in the same category (e.g., male, age 68), the health status can vary significantly because it’s based on the “diseases” the member had in the prior year. CMS determines the HCCs for each member based on ICD-10 diagnosis codes from health care claims. A member is assigned an HCC if an ICD-10 diagnosis code has been submitted by an MA plan or Medicare FFS in the year prior to the payment year. For example, ICD-10 code E09 (Diabetes mellitus due to underlying condition without complications) maps to HCC 19.

The 2017 Part C risk-adjustment model has 79 unique HCCs with an additive risk adjustment factor assigned to each HCC. (CMS uses a different model for end-stage renal disease (ESRD)

members that has 87 HCCs.) As an example, if a non-Medicaid eligible member who is over age 65 has ICD-10 code E09 submitted and no other diabetes-related codes, then that member’s risk score would increase by 0.097. This would result in an additional payment to a typical MA plan of about \$60 per member per month (PMPM). Hence, identifying and submitting all appropriate ICD-10 diagnosis codes to CMS results in a higher risk score for the member and an increased payment to the MA plan.

## REVENUE OPPORTUNITY IN ACCURATE DIAGNOSTIC CODING

Ensuring that all appropriate diagnoses for an MA plan’s members are submitted to CMS is a key to an MA plan’s success because submitting diagnoses is one of only a few areas where an MA plan can directly affect its revenue retroactively. Star ratings and the filed bid also have a significant impact on revenue; however, MA plans have little opportunity to retroactively impact those items. MA plans can retroactively impact risk scores and revenue because CMS allows them to submit diagnosis codes for 13 months after the end of the calendar year. MA plans *can* review physician and hospital charts, submit additional diagnoses to CMS and receive retroactive payments for any newly identified HCCs. Reviewing charts is a cost to the plan and it requires cooperation from the physicians and hospitals to allow the medical coders access to their charts. MA plans need to ensure that the cost of the chart reviews is reasonable relative to the expected increase in revenue. Understanding where an MA plan’s diagnosis coding efforts stand relative to other plans is critical in determining what should be the level of investment in chart reviews.

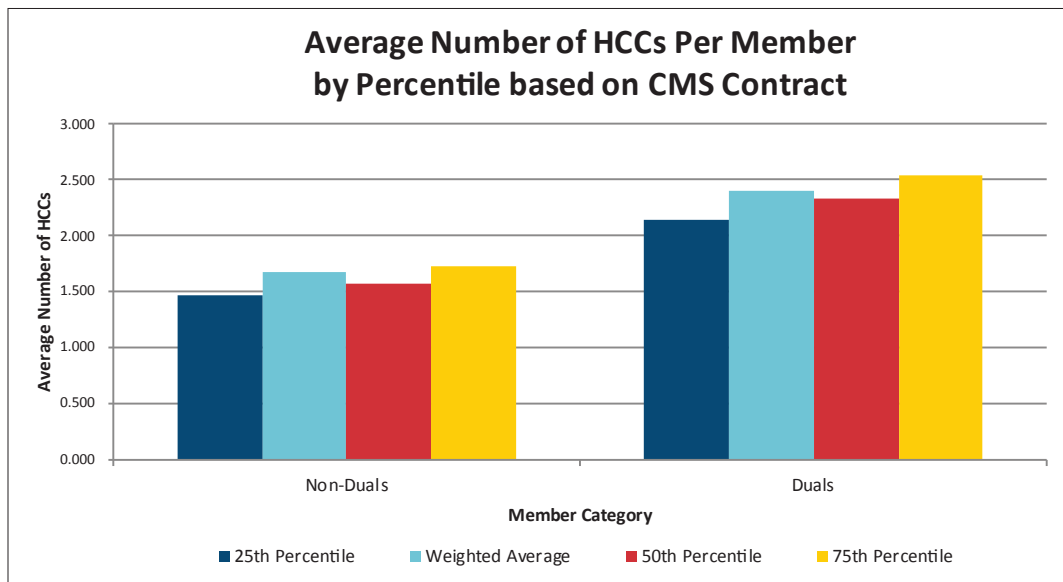
To develop a range in the average number of HCCs per member for the MA market, we reviewed data for more than 120 MA contracts that included more than 2.7 million unique members. The data includes 2016 beneficiaries and their 2015 diagnosis data. The data in this article includes only members in coordinated care plans (local health maintenance organizations (HMOs), local preferred provider organizations (PPOs) and regional PPOs). It also includes members in dual eligible special needs plans (D-SNPs). The results exclude private fee-for-service (PFFS) plans, chronic and institutional SNPs (C-SNPs and I-SNPs), and members who are institutional or ESRD. In addition, we excluded new enrollees because they do not have any published HCC information and their risk scores are purely based on demographics and MA-beneficiary status.

## STUDY RESULTS

The HCC analysis contains a number of insights that can help MA plans evaluate whether their current risk scores (or segments of their population) justify the cost of additional chart reviews. Key findings include:



Figure 1  
 2018 HCC Survey Results Based on 2016 Payment Year Data and 2015 RAPS Diagnoses (Coordinated Care Plan Members,<sup>1</sup> HCC79 Model; Includes All 79 HCCs<sup>2</sup>)



	Non-Duals	Duals
25th Percentile	1.465	2.134
Weighted Average	1.682	2.403
50th Percentile	1.572	2.329
75th Percentile	1.725	2.544

<sup>1</sup> Excludes C-SNP, I-SNP and PFFS members, and new enrollee, institutional and ESRD members.

<sup>2</sup> Percentiles and weighted averages are after normalizing for age/gender and region.

For more information on CCS, see <https://www.hcup-us.ahrq.gov/toolsoftware/ccs/ccs.jsp> (accessed June 22, 2018).

- **The average number of HCCs varies meaningfully by organization, even after normalizing for age/gender and geography.** In organizations at the 25th percentile, non-dual members have 1.465 HCCs and dual members have 2.134 HCCs. For organizations at the 75th percentile, non-dual members have 1.725 HCCs and dual members have 2.544 HCCs. For both non-dual and dual members, organizations at the 75th percentile have approximately 20 percent more HCCs per member than organizations at the 25th percentile. Figure 1 summarizes the average number of HCCs for non-dual members and dual members at the 25th, 50th and 75th percentiles, as well as the overall weighted average for all plans. (Note that in developing the percentiles, we only included contracts that had at least 1,000 non-dual members and 400 dual members.)
- **Dual-eligible members have a significantly higher number of HCCs than non-dual members.** On average, non-dual members have 1.682 HCCs while dual members have 2.403 HCCs. These absolute values increased from our prior analyses, and also reflect a slight increase in the “gap” between the number of HCCs for dual and non-dual members.
- **The number of HCCs increases steadily as members aged 65 and over increase in age (except for members over the age of 90).** From an average age of 67 to an average age of 77, the average number of HCCs for non-duals increases by between 40 percent and 50 percent. The average number of HCCs then increases another 30 percent from an average age of 77 to an average age of

87. The average number of HCCs then remains relatively flat as people reach age 90 and above. The increase is less dramatic for dual members since they have more HCCs at their initial entries into Medicare. Figure 2 provides a detailed summary of the average number of HCCs by age and gender.

- **Non-dual males age 65 and over have more HCCs than non-dual females age 65 and over.** The average number of HCCs for non-dual males is 13 percent to 21 percent greater than the average for non-dual females. This difference is evident for all members aged 65 and over. Dual males have between 1 percent and 13 percent more HCCs than dual females, with the percentage difference increasing by age.
- **There is geographic variation in the average number of HCCs.** There are differences in the average number of HCCs by the geographic location of the members. The South region, in particular, has a higher number of average HCCs than the rest of the country. Figure 3 (on page 20) provides a summary of the variation in HCCs by region.
- **The average number of HCCs is higher based on diagnoses from RAPS than based on diagnoses from EDS.** On average, non-dual members have 1.682 HCCs under the HCC79 model based on diagnoses submitted as RAPS and 1.624 HCCs under the HCC79 model based on diagnoses submitted through EDS. Dual members have 2.403 HCCs under the HCC79 model based on diagnoses submitted as RAPS and 2.301 HCCs under the HCC79 model based on diagnoses submitted through EDS. The higher number of HCCs from diagnoses submitted as RAPS when compared to diagnoses submitted through EDS is due primarily to the following HCCs:
  - HCC 18 (Diabetes with Chronic Complications)
  - HCC 22 (Morbid Obesity)
  - HCC 58 (Major Depressive, Bipolar and Paranoid Disorders)
  - HCC 85 (Congestive Heart Failure)
  - HCC 96 (Specified Heart Arrhythmias)
  - HCC 108 (Vascular Disease)
  - HCC 111 (Chronic Obstructive Pulmonary Disease)

### WHAT SHOULD MA PLANS BE REVIEWING?

Based on the data we reviewed for this study, MA plans need to first understand their current membership mixes in order to determine if they are capturing and submitting all appropriate

diagnoses or if there are opportunities to find and submit “missing” diagnoses. Key questions for an MA plan to ask are:

- **Is the MA plan seeing a significant difference in the number of HCCs between dual and non-dual members?** If not, it may want to focus on the coding for dual members because the data indicates that dual members have more HCCs than non-dual members, and dual members would be more likely to have “missing” diagnoses in this situation. On the other hand, if the gap between the average number of HCCs for dual and non-dual members for an MA plan is wider than the gap in Figure 1, then focusing on non-dual members is likely the best place to start because the non-dual members may be the ones missing diagnoses.
- **Is the MA plan seeing an increase in the average number of HCCs by age? How much of an increase?** If the increase is significant, then focusing on younger (and potentially newer) members may be better than focusing on older members, and vice versa if there is little increase by age.

### OTHER CONSIDERATIONS

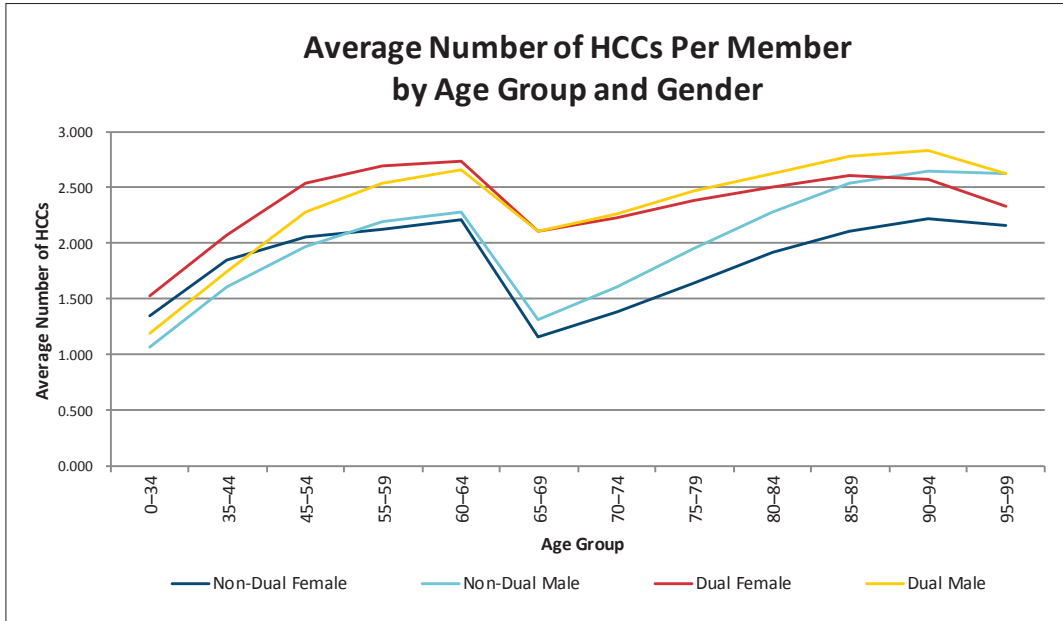
With the possible financial impacts of risk-adjustment data validation (RADV) audits going forward, plans should also ensure that they have sufficient documentation for their submitted diagnoses. While submitting all appropriate diagnoses is important for positive financial performance, plans should also review members with diagnoses without other indications that they have a specific disease (i.e., members with a diabetes HCC who do not have any diabetic supplies filled during the year) to ensure the coding is accurate. While this may not have any immediate impact on revenue, submitted diagnoses that are supported by medical records may assist in reducing risk from a RADV audit. In addition, this type of analysis can identify members with diseases who are not following an appropriate drug regimen that can help control medical costs.

### KEY METHODOLOGICAL CONSIDERATIONS

Please note the following important information in reviewing and interpreting these results:

- For all of the plans included in this analysis, we received the “final” Model Output Report (MOR) data files that included all 2015 diagnoses submitted as RAPS through Jan. 31, 2017, and as EDS through May 1, 2017.
- Because we did not observe significant differences in the overall average number of HCCs between employer group and individual members after accounting for age/gender

Figure 2  
 2018 HCC Survey Results Based on 2016 Payment Year Data and 2015 RAPS Diagnoses (Coordinated Care Plan Members,<sup>1</sup> HCC79 Model; Includes All 79 HCCs)

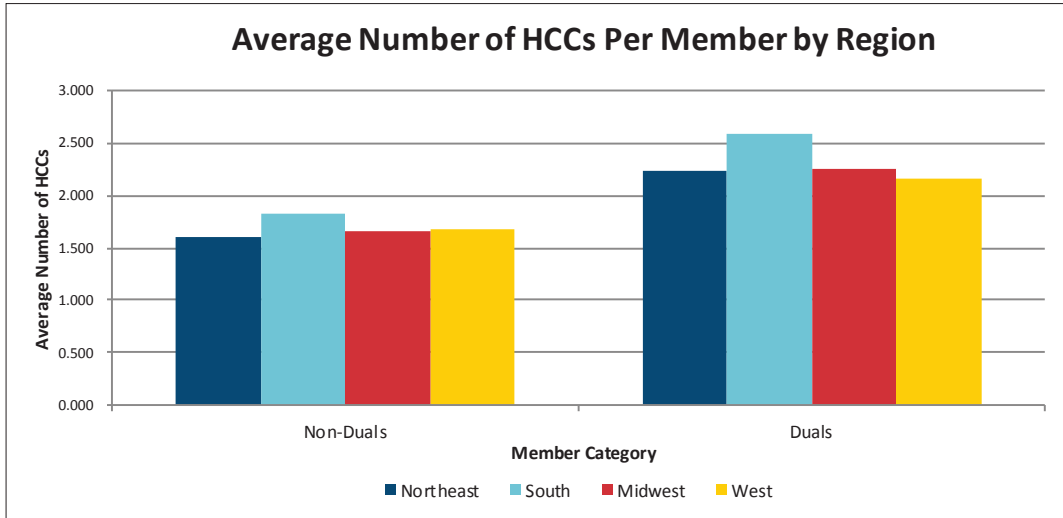


Average Number of HCCs per Member Includes All 79 HCCs

Age Range	Non-Duals		Duals	
	Female	Male	Female	Male
0-34	1.350	1.069	1.530	1.193
35-44	1.858	1.604	2.075	1.753
45-54	2.059	1.977	2.535	2.286
55-59	2.125	2.187	2.691	2.538
60-64	2.218	2.290	2.739	2.668
65-69	1.160	1.311	2.104	2.112
70-74	1.381	1.610	2.238	2.268
75-79	1.647	1.955	2.382	2.465
80-84	1.912	2.282	2.514	2.633
85-89	2.116	2.546	2.613	2.782
90-94	2.222	2.649	2.568	2.835
95-99	2.165	2.621	2.335	2.628
All ages	1.582	1.804	2.363	2.295

<sup>1</sup> Excludes C-SNP, I-SNP and PFFS members, and new enrollee, institutional and ESRD members.

Figure 3  
 2018 HCC Survey Results Based on 2016 Payment Year Data and 2015 RAPS Diagnoses (Coordinated Care Plan Members,<sup>1</sup> HCC79 Model; Includes All 79 HCCs)



**Average Number of HCCs per Member Includes All 79 HCCs**

Region <sup>2</sup>	Non-Duals	Duals
Northeast	1.610	2.239
South	1.820	2.589
Midwest	1.652	2.252
West	1.677	2.165

<sup>1</sup> Excludes C-SNP, I-SNP and PFFS members, and new enrollee, institutional and ESRD members.  
<sup>2</sup> Regions are based on the U.S. census definitions.

- and dual status, we included both individual and employer group members in the analysis used in the exhibits.
- The data included in this report was accumulated across organizations with different structures (e.g., staff model HMOs vs. independent practice associations (IPAs)), different membership volume, demographics, geographic location and other pertinent differences. Hence, the information may not be directly comparable to any specific organization. However, the data is fairly representative as a whole, such that reasonable conclusions may be drawn from it.
- In order to make the data more comparable, we “normalized” the average number of HCCs included in the percentile exhibits for age/gender and geography. For example, all plans in the West had their average number of HCCs adjusted by the West geographic factor before being assigned a percentile.
- The survey authors did not verify the accuracy or completeness of the data included in the analysis; hence, if data was incomplete or inaccurate, the results for that plan may impact the overall results and conclusions. ■



Corey Berger, FSA, MAAA, is a principal and consulting actuary at Milliman Inc. in Atlanta. He can be reached at [corey.berger@milliman.com](mailto:corey.berger@milliman.com).

**ENDNOTE**

1 *Health Watch*, “Medicare Advantage Hierarchical Condition Categories: Targeting Chart Reviews,” by Corey Berger and Eric Goetsch, January 2011, and “Medicare Advantage Hierarchical Condition Categories: Updated Study Results,” by Corey Berger and Eric Goetsch, October 2012.

# Improving Medicare Advantage Star Ratings: An Analytical Framework

By Puneet Budhiraja and Rajesh Munjuluri

The Centers for Medicare & Medicaid Services (CMS) uses a five-star rating scale to measure the quality of Medicare Advantage plans. The competitiveness of a Medicare Advantage plan revolves around its ability to attain and maintain a Medicare star-rating level greater than or equal to four. Any rating level beneath that could call into question the sustainability of the plan, primarily because low-rated plans do not receive bonus payments from CMS.<sup>1</sup>

The level of a plan's quality and performance is indicated by its star rating, which ranges from one star (poor) to five stars (excellent). To calculate the star ratings, CMS assesses contracts on five broad categories:<sup>2</sup>

- Outcomes that reflect improvement in members' health
- Intermediate outcomes that reflect action taken to improve members' health
- Patient experience measures that reflect members' experience of the care they received
- Access measures that indicate potential barriers to timely care
- Process measures that capture services helping monitor, maintain or improve members' health status.

Within each category are a number of individual measures that CMS evaluates and assigns a score.

This article outlines an analytical framework that can help a star manager implement a quantitative approach to developing a value score for each improvement measure. The proposed framework constitutes a five-step approach applied to each measure:

1. Review the current star-rating level.
2. Measure travel distance to the next star-rating level.

3. Estimate the probability of success to move to next star-rating level.
4. Develop value scores for each measure.
5. Prepare a schedule targeting measures for improvement.

## THE STAR-RATING SYSTEM

For each measure, CMS reports a numerical score that captures the level of performance in that measure. The score is then converted to a rating using predetermined thresholds or cut points.

CMS also reports two summary ratings<sup>3</sup> for Medicare Advantage plans—one for Part C and another for Part D. The rating is calculated as a weighted average of the measure scores. The weights used to calculate the summary ratings vary by measure. For the 2018 contract year, Medicare Advantage contracts were measured on a maximum of 48 measures, out of which three measures are common to both Part C and Part D.

## Data Sources

The data used to calculate the scores for each measure comes from four different sources:

- Healthcare Effectiveness Data and Information Set (HEDIS)
- Survey data collected from the Health Outcomes Survey (HOS)
- Survey data collected from Consumer Assessment of Healthcare Providers and Systems (CAHPS)
- Medicare Beneficiary Database Suite of Systems (MBDSS)

To calculate the summary and the overall ratings, the process measures are weighted at one and the outcome measures are weighted at three; whereas the experience and access measures are weighted at 1.5. The quality improvement measure has a weight of five.

## THE STAR-RATINGS REPORTING TIMELINE

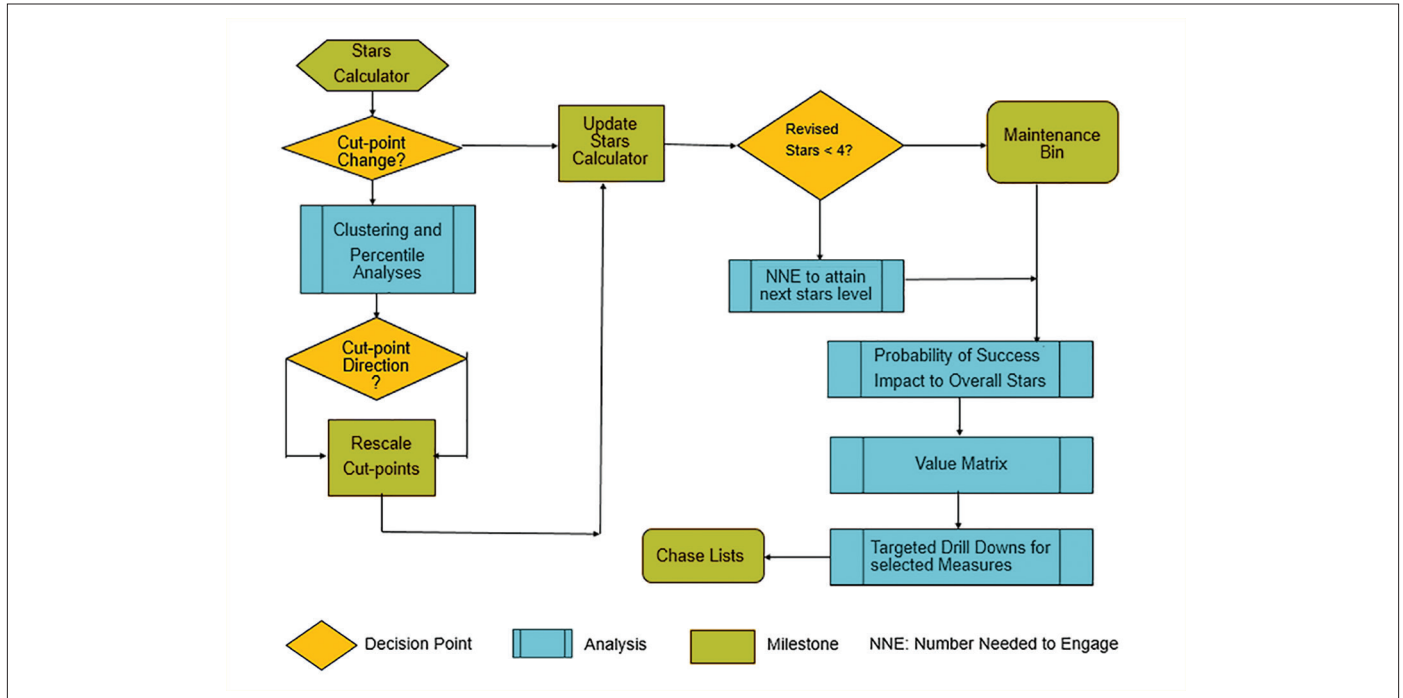
CMS reports the overall ratings, the summary ratings, and the star ratings separately for each measure by contract in October every year. The star ratings reported in October 2017 are the star ratings used for 2018, but the bonus payment on which the star rating is based occurs in 2019.

For some HOS measures, the measure scores are calculated by following a cohort of members from 2014 to 2016.<sup>4</sup> It is important to note the lag between the incentive year and the

Table 1  
CMS Star-Rating System Timeline

Data Collection Year	2013	2014	2015	2016	2017	2018
Star Year	2015	2016	2017	2018	2019	2020
Incentive Payment Year	2016	2017	2018	2019	2020	2021

Figure 1  
Flow Diagram Showing Processes and Decision Points



data collection year. Table 1 shows the various elements of the star-ratings timeline.

### ROADMAP TO IMPROVED STAR RATINGS

The steps and decision points in the suggested star-rating improvement framework are depicted in Figure 1.

#### Review the Current Star Ratings

The first step in an effective star rating management strategy is to create an interactive star calculator in Excel or other similarly capable program to allow the manager to see how scores change for each measure and how those changes impact the overall star level.

#### Measure the Travel Distance to Next Star-Rating Level

CMS establishes cut points<sup>5</sup> for each measure that dictate what star level is assigned to the measure. For example, if the cut point for a certain measure is 84 percent, then an 83 percent compliance score would earn four stars while 84 percent compliance would be a five-star rating.

A cluster methodology can be used to analyze and predict cut points for most star measures.

Run the set of scores for Medicare Advantage contracts available through the CMS star-rating database,<sup>6</sup> through a clustering algorithm using SAS software to recreate historical cut points from previous years through the most recent year (Table 2).

Table 2  
2018 Cut Points From SAS Output of Clustering Algorithm and CMS Colorectal Cancer Screening

Star	Actual	Calculated
1-Star	<54%	<54%
2-Star	54% to <63%	54% to <64%
3-Star	63% to <72%	64% to <74%
4-Star	72% to <80%	74% to <80%
5-Star	≥80%	≥80%

Table 3  
Colorectal Cancer Screening Cut-Point Projections for 2019–2020

Star	CMS Cut Points						Projected Cut Points			
	2016 Stars		2017 Stars		2018 Stars		2019 Stars		2020 Stars	
	Cut Point	Percentile	Cut Point	Percentile	Cut Point	Percentile	Cut Point	Percentile	Cut Point	Percentile
2-Star	51%	7%	55%	12%	54%	6%	58%	8%	59%	8%
3-Star	63%	28%	62%	25%	63%	21%	66%	25%	67%	25%
4-Star	71%	61%	71%	60%	72%	54%	75%	58%	76%	58%
5-Star	78%	90%	81%	92%	80%	87%	82%	90%	83%	90%

Data from: Centers for Medicare and Medicaid Services (CMS). 2015–2018 Star Ratings and Display Measures. *CMS.gov*, <https://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/PerformanceData.html>.

Table 4  
Projected Cut Points for Colorectal Cancer Screening

Measure	Eligible Population	Projected Cut Points (2020)			
		2 Star	3 Star	4 Star	5 Star
Colorectal Cancer Screening	11,200	59%	66%	74%	83%

Note that the results of running the algorithm may not produce the exact cut points reported by CMS. That is because CMS makes additional adjustments that it does not make available to the public. The star manager can compare the difference between the calculated cut points and the official CMS cut points over a period of years. Cluster methodology cannot be readily used to project to 2020 because the 2018 measurement period data is not available to the plans until October 2019.

The scores in the 10th, 25th, 50th, 75th and 90th percentiles can be examined over time to detect any significant pattern change for the most recent star ratings year 2018. Alternately, the cut points for 2019 and 2020 are projected by analyzing historical percentiles corresponding to the cut points established by CMS (Table 3).

### Estimate the Likelihood of Moving to the Next Star-Rating Level

For each measure, the revised star-rating level is calculated using the position of the current score under the projected cut point levels. If the revised star level is five, then the particular measure should be monitored and maintained.

For measures in which the revised star level is four or less, calculate the number needed to engage (NNE) and monitor the number on a monthly basis. The NNE is the number of members that would need to be engaged in order to maintain the current five-star rating or attain the next star-rating level. The NNE is calculated using the number already compliant (NAC) and number needed to be compliant (NNC).

$$NNC = \text{Eligible members} \times \text{projected five-star cut point for 2020}$$

Using Table 4, then:

$$11,200 \times .83 = 9,296$$

$$NNE = NNC - NAC$$

Assuming NAC = 8,000

$$9,296 - 8,000 = 1,296$$

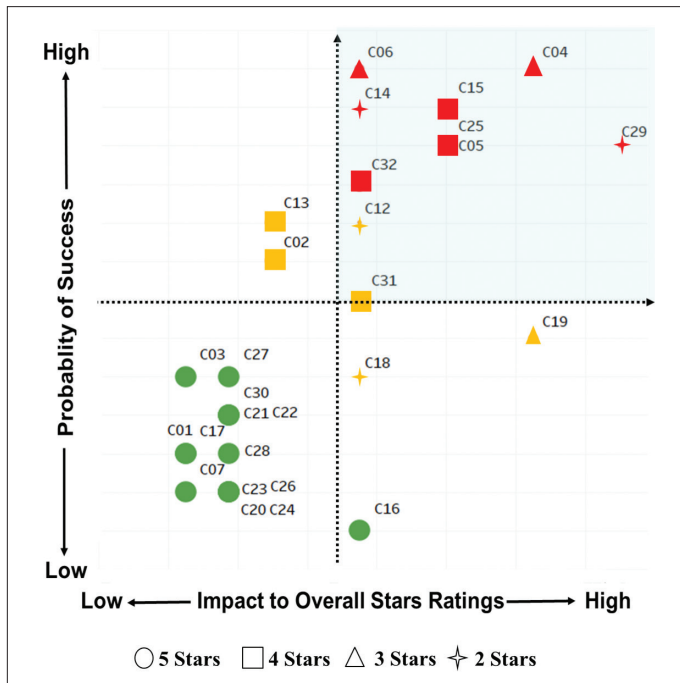
The number of eligible members could change each month as certain members are excluded from a measure, including members that are transferred to hospice or pass away. The list of eligible members needs to be updated monthly.

Additionally, the star-ratings administrator should keep a running list of eligible members that are already compliant with the screening. Since some of the colorectal cancer screenings have a three- to 10-year look-back period, every effort must be made to gather screening information from medical records to update the list of members that are compliant. Once the baseline list of compliant members is established, the remaining members are flagged for follow-up.

### Develop Value Scores for Each Measure

For each measure with a current star rating at four or below, the value of moving to the next star level is figured as a function of the measure’s weight and the current star level. Generally, the higher the weight, the greater the value of working to get to the next star-rating level. The higher the current star rating, the lower the impact of moving to a higher star-rating level. These

Figure 2  
Value Matrix of Part C Measures



two elements are factored into developing a quantitative score for each measure, as shown in Figure 2.

### Develop the Value Set of Measures for Meaningful Engagement

The final step involves developing a scatter plot using all of the information from the prior steps. The scatter plot (Figure 2) shows the probability of success of the engagement effort to move to a higher star rating (Y-axis) and the value of moving to the next star rating (X-axis). Ideally, the manager selects the measures with a high probability of success and a high engagement value.

The decision boundaries will allow the points (one for each measure) to be separated into four different classes:

- Low value, low probability of success (lower, left quadrant)
- Low value, high probability of success (upper, left quadrant)
- High value, low probability of success (lower, right quadrant)
- High value, high probability of success (upper, right quadrant)

The position of each measure on the chart is used to identify the measures for which the return on investment (ROI) is likely to be the highest. A target schedule showing the focus measures

is created with the highest priority allocated to the measures located in the upper, right quadrant.

For each prioritized measure, targeted drill downs and analyses are performed to prepare member chase lists for follow up treatment and/or clinical intervention.

### CONCLUSION

There are several practical approaches to developing a targeting schedule that identifies the measures most likely to improve. While not all approaches are alike, the goal is the same: Attain a higher star-rating level.

The approach outlined in this article attempts to ensure that the star-ratings manager takes into account all available information while applying the relevant data in a structured form and logical manner in order to improve the robustness of their existing star-rating models, and seek out newer and advanced ways to assist in attaining their common goal. ■



Puneet Budhiraja, ASA, MAAA, is chief actuary for Capital District Physicians' Health Plan in Albany, New York. He can be reached at [Puneet.Budhiraja@cdphp.com](mailto:Puneet.Budhiraja@cdphp.com).



Rajesh Munjuluri, ASA, MAAA, is Medicare actuary for Capital District Physicians' Health Plan in Chicago. He can be reached at [Rajesh.Munjuluri@cdphp.com](mailto:Rajesh.Munjuluri@cdphp.com).

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# Early Findings From the ACA's Medicaid Expansion Show Substantial Increases in Costs Over Time

By Tony Marko, Joshua Kuai, Sabrina Gibson and Mitchell Cole

*Editor's note: This article highlights findings from an analysis conducted by Avalere Health using data from three managed care organizations. The full report<sup>1</sup> was released by Avalere Health in January 2018. Funding for this study was provided by the Anthem Public Policy Institute. Excerpted passages are copyright © 2018 Avalere Health. Reprinted/adapted by permission.*

States and Medicaid managed care plans have gained valuable experience with the Medicaid expansion population since many states expanded eligibility under the Affordable Care Act (ACA) in 2014. While over 11 million individuals have gained coverage since the expansion,<sup>2</sup> relatively little has been shared publicly about the enrollment and utilization experience of expansion enrollees (i.e., low-income, childless adults).

Because the expansion population was new to Medicaid and likely to have been uninsured prior to gaining Medicaid eligibility, states and Medicaid managed care organizations (MCOs) initially had relatively little information on which to base utilization and risk assumptions. The Centers for Medicare & Medicaid Services (CMS) forecasted that newly eligible expansion adults who enrolled in the initial years of Medicaid expansion would have high levels of health care utilization due to pent-up demand, with per capita costs about equal to those of traditionally eligible adults in 2014. However, CMS also anticipated that the newly eligible expansion enrollees would use fewer services over time, expecting their costs to be about 80 percent of the per-enrollee costs of traditionally eligible adults in 2015.<sup>3</sup>

MCOs have not seen these results as forecasted by CMS; instead, claims experience for newly eligible expansion enrollees has continued to increase over time. This analysis of three MCOs' experience was conducted by Avalere Health to understand how enrollment, utilization and cost patterns for newly eligible enrollees have changed over time and whether spending patterns differed for earlier versus later expansion enrollees.

## METHODOLOGY

This analysis was based on claims data from January 2014 through December 2016 from three Medicaid MCOs offering coverage in states that expanded Medicaid on Jan. 1, 2014. In total, the data represented nine unique state-plan combinations. All Medicaid expansion enrollees, defined as individuals who gained eligibility due to the state's decision to expand coverage under the ACA, in these state-plan combinations were included and assigned to a group based on the initial date of enrollment. Membership in each plan was categorized into six-month period enrollment groups based on the initial enrollment date (e.g., an individual who enrolled between January and June 2014 was included in the "first half 2014" enrollment group).

The claims data included both medical and pharmacy claims but excluded prescription drug claims for hepatitis C treatments. Services paid for on a sub-capitated basis were also excluded from the analysis. Except where noted in the category of service analysis, claims data were normalized by both age and gender to negate the effect of age or gender influences on the change in claims over time (i.e., duration or incurred period). The age/gender normalization factors were derived from a state's most recently available state pricing or expected claims costs for the expansion population. The claims were also adjusted for any material program changes (e.g., benefit changes, fee schedule changes) through 2016.

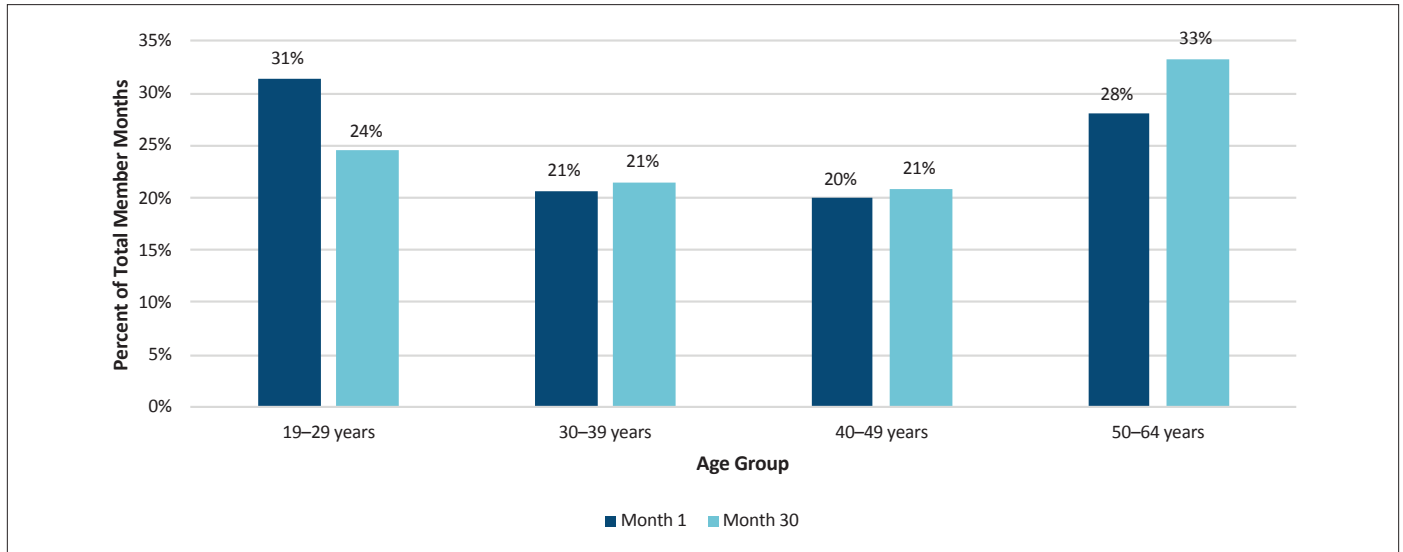
## RESULTS

Avalere analyzed enrollment/membership and claims/utilization data to identify trends across the Medicaid expansion population.

### Enrollment and Membership Analysis

Avalere's analysis provides helpful insights regarding disenrollment and retention rates among the expansion population. Across plans and states, the expansion population experienced high disenrollment rates, indicating that, as in other Medicaid eligibility groups, there is substantial churn in this population. For example, the study found that among expansion population enrollees who enrolled in coverage in 2014 and early 2015, only about half of those initially enrolled were still covered after 18 months, irrespective of enrollees' coverage start date. This finding is consistent with prior analyses of Medicaid disenrollment,

Figure 1  
Enrollment Composition by Age Group Over Time, First Half 2014 Enrollment Group



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which have noted disenrollment rates of up to 50 percent after 12 months of coverage in other eligibility groups.<sup>4</sup>

While newly eligible expansion enrollees generally were likely to drop coverage over time, disenrollment was more common among the younger enrollees in each group. These patterns were consistent across enrollment groups and were similar for males and females. As illustrated in Figure 1, among the group enrolling in the first half of 2014,

enrollees ages 19–29 accounted for 31 percent of member months in the first six months of coverage, while enrollees ages 50–64 made up approximately 28 percent of member months. After two and a half years of enrollment, however, enrollees ages 19–29 made up just 24 percent of member months, while enrollees ages 50–64 made up about 33 percent.

Older enrollees may likely stay enrolled longer than their younger counterparts for a variety of economic and demographic reasons. For example, younger enrollees may be more likely to experience fluctuations in income due to job changes. Importantly, older enrollees also tend to have higher claims costs due to a higher prevalence of chronic conditions and comorbidities than younger enrollees. Therefore, higher retention rates among older enrollees would suggest that claims costs could increase over time.

### Claims and Utilization Analysis

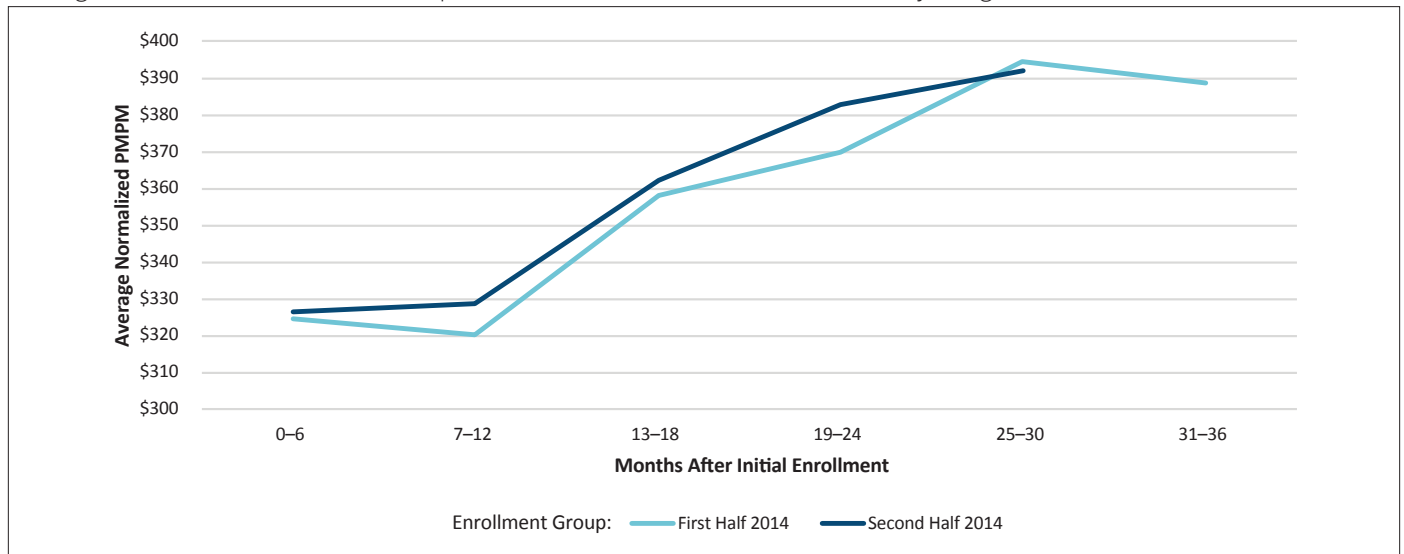
Most important, the study provides new data on the cost trends for the expansion population. In contrast to early forecasts released by CMS and other entities, this analysis shows that claims costs did increase over time for the expansion population—even after adjusting or normalizing for age and sex. While some enrollment groups experienced a dip in claims costs during the second six months of enrollment, suggesting some pent-up demand, the overall trend was toward higher claims costs over time. (See Figure 2.)

For example, among those who enrolled during the first half of 2014, average claims costs were \$324 per member per month (PMPM) during the first six months of coverage and rose to \$389 PMPM during the final six months of the study period.

Notably, costs rose substantially after an initial decrease during months 7 to 12 following initial enrollment.<sup>5</sup> This suggests that, despite some pent-up demand for services, remaining enrollees used more services or required more costly services.

Relative spending by claims type also suggested that expansion enrollees have chronic health care needs. While inpatient claims declined fairly quickly as a share of total claims costs, the share of professional and outpatient claims was consistent over time and prescription drug spending increased significantly as a share of total claims costs.

Figure 2  
Average PMPM Costs for Medicaid Expansion Beneficiaries Enrolled in 2014, by Length of Enrollment



Adapted from *Profile of the Medicaid Expansion Population: Demographics, Enrollment, and Utilization* by Avalere Health. Copyright © 2018 Avalere Health. Adapted by permission.

For the group who enrolled in the first half of 2014, Figure 3 (on page 28) shows that inpatient claims initially accounted for the largest share of claims costs—nearly one-third—suggesting that expansion enrollees had significant medical needs upon enrollment, or that many expansion enrollees enrolled as a result of an inpatient encounter (hospitals may presumptively determine Medicaid eligibility).<sup>6</sup>

However, as beneficiaries spend more time with comprehensive insurance coverage and establish relationships with physicians, their health care costs shift toward outpatient visits and prescription drugs—a core component of chronic disease treatment—and away from hospitalizations, which reflect acute health needs. The study showed that pharmacy costs (excluding hepatitis C) almost doubled over the two-and-a-half-year time period that the initial cohort was tracked. This is likely an indication that the previously uninsured population may have had untreated conditions and gaining access to health insurance helped provide needed care to these enrollees.

### LIMITATIONS

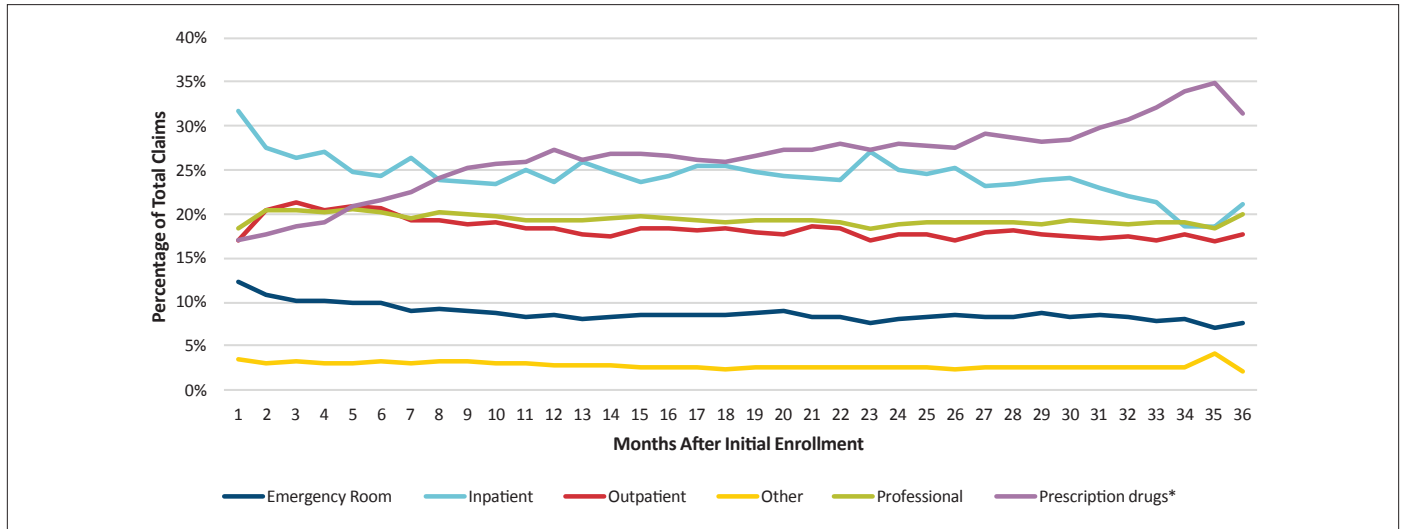
Because plan data were blinded in this study, there are limitations in the conclusions that can be drawn from the results. MCO experience could differ across states and plans due to covered benefits, plan capitation rates, negotiated rates with providers, and if a state has a unified formulary. Finally, states have different processes for eligibility applications and redeterminations with some states allowing enrollees to stay enrolled until eligibility is re-determined, while others disenroll enrollees until they are re-determined eligible.

### CONCLUSION

This study meaningfully expands on the information available about the Medicaid expansion population by examining enrollment, demographic and utilization trends across states and health plans. While some studies have examined early utilization and spending for the expansion population, this analysis provides additional clarity by following individual health plan enrollees over time. Major findings are:

- Across plans and states, the expansion population experienced **high disenrollment rates**, indicating that, as in other Medicaid eligibility groups, there is substantial churn in this population.
- **Even after adjusting for age and gender, claims costs increased steadily over time**, suggesting that expansion enrollees have complex and/or chronic conditions. For some enrollment cohorts, average claims costs decreased modestly in the second half of the first year of enrollment, suggesting **some initial pent-up demand for services**, though claims costs increased steadily from that point forward.
- Across enrollment groups, **PMPM spending on prescription drugs increased with enrollment duration**.
- Among enrollees who remained enrolled the longest, **inpatient claims initially made up the largest share of claims costs, but were surpassed by prescription drug claims by month 8 of enrollment**, on average.

Figure 3  
Percentage of Health Care Costs by Type Over Time, First Half 2014 Enrollment Group



\*Excludes claims for hepatitis C treatments

Note: Claims not adjusted for age and gender.

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The results of this study provide valuable insights into the Medicaid expansion population and MCOs' experience across multiple states and enrollment cohorts, which can inform policy and program changes and assist state regulators in establishing payment rates and program standards. ■



Mitchell Cole is a senior associate in policy analytics at Avalere Health. He can be contacted at [mcole@avalere.com](mailto:mcole@avalere.com).



Tony Marko, FSA, MAAA, is a staff vice president for Anthem. He is a member of the Society of Actuaries Medicaid Subgroup. He can be contacted at [tony.marko@anthem.com](mailto:tony.marko@anthem.com).



Joshua Kuai, FSA, MAAA, is an actuarial director for Anthem Blue Cross. He is a member of the American Academy of Actuaries Medicaid Subcommittee. He can be contacted at [joshua.kuai@anthem.com](mailto:joshua.kuai@anthem.com).



Sabrina Gibson, FSA, MAAA, is a vice president and the chief Medicaid actuary for WellCare Health Plans. She is a member of the AAA Medicaid Subcommittee and the SOA Medicaid Subgroup. She can be contacted at [sabrina.gibson@wellcare.com](mailto:sabrina.gibson@wellcare.com).

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# Commercial Health Care: What's Next?

## A Health Section Strategic Initiative

By David Dillon

In June 2017, the Society of Actuaries (SOA) Health Section released a new strategic initiative titled “Commercial Health Care: What’s Next?” This initiative was designed to be an anthology series of white papers and articles focusing on education and research concerning key issues associated with health care reform. This article contains a summary and brief excerpts from a recent white paper. All articles and newly released companion pieces are located at [www.theactuarymagazine.org/category/web-exclusives/commercial-health-care-whats-next/](http://www.theactuarymagazine.org/category/web-exclusives/commercial-health-care-whats-next/).

### NEW RULES TO EXPAND ASSOCIATION HEALTH PLANS: HOW WILL THEY AFFECT THE INDIVIDUAL MARKET?

By Sabrina Corlette, Josh Hammerquist and Pete Nakahata

On June 19, 2018, the Trump Administration released new rules<sup>1</sup> that would expand enrollment in association health plans (AHPs). In a recent article for *The Actuary*,<sup>2</sup> we provided an overview of the federal and state regulatory framework for AHPs and project enrollment and morbidity in the Affordable Care Act (ACA)-compliant individual markets under an expansion of AHPs.

#### A New Regulatory Framework for AHPs

Prior to publication of this regulation, the U.S. Department of Labor (DOL) did not consider an AHP offered by an association of member employers to be a single employer benefit plan subject to ERISA except under rare conditions. However, if DOL deems an association a single employer group with more than 50 employee members, it can be regulated under large group market rules, even if its primary membership is derived from small employer groups (see Table 1 on page 30). Until now, DOL has not considered associations with self-employed members to be eligible for this group status.

The Trump Administration’s new policy allows groups to more easily form AHPs so that they can offer coverage that is regulated under federal law as large group coverage. Under this more flexible approach:

- An AHP can have as its primary purpose the provision of insurance benefits, although it must have at least one substantial business purpose unrelated to providing benefits, such as public relations or educational support for members.
- AHPs must include employer-members that are either (1) in the same trade, industry, line of business or profession or (2) located within the same geographic region, either within a state or a metropolitan region that includes more than one state. In the former case, the AHP could sell coverage nationwide.
- Member employers must control the functions and activities of the group or association.
- AHPs may enroll the self-employed. Such self-employed members must work a minimum number of hours or earn a minimum income. However, the rule does not describe how the AHP should enforce this requirement.
- AHPs that gain single employer plan status under the DOL’s new rules cannot discriminate in eligibility, benefits or premiums based on a health factor between employer groups—including any self-employed members—that make up the AHP. The final rule does permit the use of unlimited age and gender rating and other nonhealth attributes such as industry or region to distinguish member employers, and nonhealth attributes to segment their workforce (such as employees’ occupations, date of hire, full-time vs. part-time status, and other factors).
- By easing the criteria by which an AHP can gain status as a single employer group, they can be exempt from key ACA provisions such as essential health benefits, the single risk pool and the risk-adjustment program.

#### Potential Impact of New AHP Regulation

Our analysis focuses on self-employed individuals enrolled in ACA-compliant plans who may have new incentives to shift to AHPs. The final rules create these incentives by offering lower-cost alternatives for self-employed individuals who are relatively young and healthy. Proponents of AHPs believe that they will

Table 1  
Application of ACA Insurance Protections by Market Segment (Fully Insured)

ACA Market Reform	Individual Market	Small Group Market*	Large Group Market*
Guaranteed issue	Yes	Yes	Yes
Pre-existing condition exclusions prohibited	Yes	Yes	Yes
Out-of-pocket maximums	Yes	Yes	Yes
Annual and lifetime limits prohibited	Yes	Yes	Yes
Preventive services covered without cost-sharing	Yes	Yes	Yes
Essential health benefits	Yes	Yes	No
Rating rules	Yes	Yes	No
Single risk pool	Yes	Yes	No
Risk-adjustment program	Yes	Yes	No
Medical loss ratio	80%	80%	85%

\*Applies to fully insured products. The small group market is defined in most states to be groups of up to 50 employees, with large group defined as groups with 51 or more employees.

provide individuals with lower-cost plan options, while critics note that they are likely to drive premiums up for individuals remaining in the ACA-compliant market.

A key area of uncertainty is the extent to which associations and individuals respond to the new rules, and the extent to which newly formed AHPs will market to self-employed individuals. Furthermore, other policy decisions, such as repeal of the ACA's individual mandate penalty and the expansion of short-term limited duration insurance may also influence the response to the new rules and the impact on the individual market.

Our analysis suggests that the positions of both AHP critics and proponents have merit. Younger, healthier individuals who are not eligible for the ACA's premium subsidies, who receive less generous subsidies due to higher income, or who are currently without coverage altogether, are likely to find less expensive plan options through AHPs. We estimate that between 5 and 8 percent of enrollees in the individual market will gravitate to lower-cost AHPs. However, this will result in lower

enrollment and higher morbidity in the ACA-compliant individual market, which we estimate will lead to a 2 to 3 percent increase in premiums. These changes will ultimately result in higher premiums for individuals remaining in the ACA-compliant market. ■



David Dillon, FSA, MAAA, is senior vice president and principal at Lewis & Ellis Inc. David leads the Commercial Health Care: What's Next? strategic initiative. He can be reached at [ddillon@lewisellis.com](mailto:ddillon@lewisellis.com).

**ENDNOTES**

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# Seasonal Flu Impacts: Flu Science Meets Actuarial Science

By Bethany McAleer

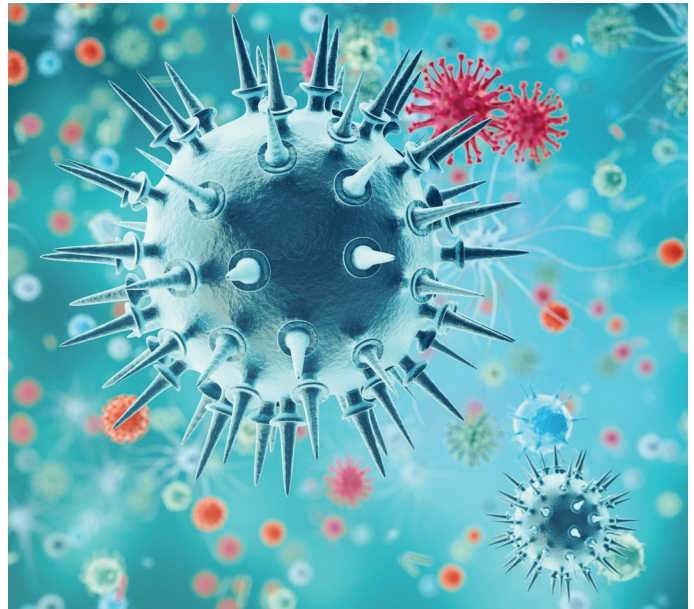
The seasonal flu comes every year with very broad (and sometimes deep) health and health care cost implications. As individuals, our interest in the flu is focused on making sure we're following recommendations around how to protect ourselves and our families from infection and what to do if we become ill. We want to be informed of the efficacy of the vaccine and virulence of the virus each year. As health care actuaries, our interest is focused on understanding its seasonal cost impacts for purposes of financial planning and projecting. We want to know if the current flu system is typical or anomalous, and if the latter, how our analyses should be adjusted to account for that variation.

I recently interviewed epidemiologist Zack Moore, M.D., MPH,<sup>1</sup> in order to learn more about the various types of flu viruses, the vaccine development process and vaccine efficacy. Dr. Moore is the state epidemiologist and epidemiology section chief in the Division of Public Health of the North Carolina Department of Health and Human Services. His insights were enlightening on both personal and professional levels. The remainder of this article summarizes the interview, subsequent research and key considerations for health care actuarial work.

## SEASONAL FLU VIRUS OVERVIEW

There are two main types of seasonal flu viruses that infect humans: influenza A and influenza B. Influenza A infects both humans and animals and is divided into subtypes based on two proteins on the surface of the virus: the hemagglutinin (H) and neuraminidase (N) proteins. There are 18 different H proteins (H1 to H18) and 11 different N proteins (N1 to N11), and the combination of these are how we name the A subtypes. Two of these subtypes, H1N1 and H3N2, are circulating today and are known to infect humans. Influenza B is a uniquely human virus, further divided into lineages. And then, within each subtype (A) or lineage (B), there are myriad specific viral strains.<sup>2</sup>

Flu viruses of both types are always changing. “Antigenic drift” is when there are small changes in the genes of the virus that



happen over time as it replicates. These changes are typically small enough in the short term that the immune system will still recognize and respond to the changed virus. Over time, however, the viruses become less similar, to the point that the immune system would no longer recognize the virus as something it's seen before. This type of change is why we need to get vaccinated annually (keep up with the changing viruses). “Antigenic shift” is an abrupt, more significant change in the virus that results in a new subtype to which humans have not previously been exposed or infected.<sup>3</sup>

Both influenza A and B undergo drift, but only A is subject to shift. For this reason, flu pandemics are always type A—the type of viral change required to get a truly new flu virus (shift) occurs at the human/animal interface. That said, illnesses resulting from B infections can be just as severe or deadly as A.<sup>4</sup>

## FLU VACCINE DEVELOPMENT

The seasonal flu vaccine is designed to protect against three or four flu viruses (trivalent and quadrivalent, respectively). Trivalent vaccines include two A viruses and one B virus, and quadrivalent vaccines include two of both types. Because flu viruses are always changing, the viruses included in the vaccines are reviewed in preparation for each flu season.

The World Health Organization (WHO) does year-round surveillance of flu viruses worldwide. In February each year, WHO convenes a group to look at what strains are being found and make recommendations for which specific viruses to include in the vaccines for the coming season in the northern hemisphere (this initial meeting occurs in September for the southern hemisphere). WHO then comes up with a list of viruses it



recommends for vaccine inclusion. In the United States, the Food and Drug Administration (FDA) then convenes to review WHO recommendations and make a final decision for U.S. vaccine production.<sup>5</sup>

Production of the vaccines then begins—a process that takes at least six months and varies depending on the production technology used. Different viruses grow at different rates, and different incubators (either chicken eggs, cell cultures or insect cells) replicate the viruses at different rates. Cell-based cultures (recently approved by the FDA) can be produced faster and also lower the risk of virus mutation during growth compared to egg-based cultures.<sup>6</sup>

### FLU VACCINE EFFICACY

There are many reasons for varying effectiveness of the seasonal flu vaccine. The following occurrences can lower vaccine effectiveness:

1. A change in the circulating virus versus what was included in the vaccine (i.e., a specific virus is recommended for vaccine inclusion based on what was circulating in January/February, but by September/October, there is a change in the predominant strain).
2. A mutation in the vaccine virus during incubation. Even small genetic changes in the virus can have a significant impact on vaccine effectiveness.
3. A new virus emerges altogether (i.e., pandemic).

Note that H3N2 subtypes are more prone than H1N1 to changes—both in the circulating virus itself and during the egg incubation process (see previous points 1–2). In general, if H3N2 is the predominant strain circulating during flu season, we can expect efficacy to be lower than if an H1N1 or type B virus is predominant.<sup>7</sup>

Also note that U.S. flu vaccine effectiveness data isn't available until February from the Centers for Disease Control and Prevention (CDC). While there will be information on which strains are predominant, which can be early indicators of

vaccine efficacy, no one can speak to the seasonal vaccine's true effectiveness in the U.S. until the CDC publishes its data.<sup>8</sup>

### ACTUARIAL IMPLICATIONS OF THE FLU

Health care actuarial work takes many specific forms, but much of it broadly boils down to understanding, accounting for and predicting health care costs. The flu fits into these functions in that it reliably brings increased costs every flu season, but to an unknown and ever-changing degree—both overall and across populations. Payers need to understand both historical flu patterns and expected future flu experience for many purposes. Some specific examples of how flu intelligence gets incorporated into actuarial work include:

- **Incurred but not reported (IBNR).** Depending on your IBNR modeling approach, average flu impacts may get added into reserve estimates as a part of seasonality adjustments. If an abnormally severe flu season emerges, additional intelligence on expected costs may be useful in interpreting paid claims.
- **Pricing.** Flu reporting can be important for making sure up and down flu seasons don't impact your prospective trend selections (e.g., do you need to normalize your experience period data for an abnormally high- or low-severity flu season?).
- **Trend/medical economics.** Flu is sometimes an explanation for costs emerging much differently than expected, particularly for more vulnerable populations. The extent of flu impact is not always obvious because there are so many health aftereffects of the flu, which can be difficult to estimate.
- **Budget/forecasting.** If early indicators show a severe flu season emerging, finance teams can use internal flu reporting to adjust expectations and modify budgets to account for that unexpected experience.

Actuarial or medical economics teams should have robust flu reporting to draw from in order to closely monitor seasonal flu impacts and have a good understanding as early as possible of the financial implications of the emerging flu season. This flu reporting will provide the information needed to support the actuarial functions mentioned previously. There are three key considerations in developing an effective flu reporting package.

#### Capture All Flu-Related Costs

From a payer perspective, the burden of the flu is largely driven by complications that develop because of the virus (e.g., bacterial pneumonia, ear infections, encephalitis) and/or worsening or flare-ups of underlying medical conditions due to

The extent of flu impact is not always obvious because there are so many health aftereffects of the flu, which can be difficult to estimate.

the additional stress flu puts on the body (e.g., congestive heart failure, asthma).<sup>9</sup> In any flu reporting, these impacts need to be considered.

Basic flu reporting should look at both medical claims (split into inpatient, outpatient, emergency room and professional) and pharmacy claims—both visits and costs—in two ways:

- **Flu-specific claims/scripts only.** This type of view becomes a proxy for total flu activity. With good historical analyses, you can develop a reasonable projection from early volume to expected seasonal activity.
- **All flu-influenced claims.** This view captures the full impact of flu on a population; as flu activity and/or severity increases, so do the impacts of chronic conditions and flu-related illnesses mentioned earlier. There are multiple ways to develop this view: You could define specific flu-correlated illnesses/conditions to review, or you could include all claims for the month in which a member had a flu claim. Ideally, you would review both as each has its gaps.

### Track Emerging Claims Against History

Internal claims data should be monitored weekly, if possible, in comparison to historical flu seasons. Early in the flu season, reviewing flu scripts and professional visits may provide some indications around the impact of the season to come from a volume perspective. Hospitalizations and emergency room visits may provide some insight into the severity of the emerging flu. Additionally, though, this internal monitoring should be supported by reviewing official public health flu tracking, whether it be through CDC FluView, Canada’s FluWatch, or another more local surveillance system. These reports are typically published weekly and they can provide insights beyond what you could see in claims data (e.g., predominant flu type, leading nationwide indicators, etc.).

### Review Flu Impacts by Population

While no one is immune to developing flu complications (even young, healthy individuals), some populations are more vulnerable than others. Typically, small children, pregnant women, people 65 and older, and those with underlying health conditions are most vulnerable to complications. Tracking impacts of the flu by population is important for accurate projections. A severe flu season will hit Medicare, Medicaid and commercial populations much differently, for example. And within those populations, there will be significant variations for individuals with chronic conditions. Looking at seasonality of costs for these different subsets of the population will give you insights into the full impact of the flu and allow you to make more accurate projections.

The basic reporting and tracking approach described in this article arms the actuary with the ability to inform, adjust and project for the flu. Reviewing leading indicators early in the season using both internal and public data, knowing the implications of predominant flu type, knowing your specific population, and having estimates of full flu-related costs provides you with all the tools you need to put together a best estimate for the financial impacts of the flu. The most critical piece of this type of analysis is doing a robust historical analysis to create the correlations you need to develop solid projections. And, all that said, it is important to remember that the flu virus is ever-changing, and no two seasons are the same.

### CONCLUSION

As common as the seasonal flu is—touching all of us at some point in some way—it is still an unpredictable and evolving virus with the potential for serious health and health care cost implications. As actuaries, it is important both to have an understanding of the nature of the flu and the flu vaccine and to have access to current and robust flu reporting to develop the most informed estimates of flu impact each year. We should make use of the public health knowledge and data available to us to improve the internal reporting we do to support our day-to-day work. ■



Bethany McAleer, FSA, MAAA, is a consulting actuary in the Washington, D.C., office of Axene Health Partners LLC. She can be reached at [bethany.mcaleer@axenehp.com](mailto:bethany.mcaleer@axenehp.com).

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# How to Prepare a Health Actuarial Memorandum That Makes Your Regulator Smile

By Annette James and Nancy Hubler

One of the most important roles of the state insurance regulator is monitoring the financial health of insurance companies by analyzing and evaluating the company's statutory financial statements. The actuarial items (liabilities and assets) included in the financial statements are oftentimes some of the largest on an insurer's balance sheet and are particularly difficult to assess without detailed documentation of the methodology, assumptions and calculations used to determine them. The actuarial memorandum (AM), which is prepared in support of the annual statement of actuarial opinion (SAO), provides the missing link. It allows the regulator to gain insight into the reasonableness of the actuarial items included in the annual financial statements, the appropriateness of the type of actuarial opinion (unqualified, qualified, adverse and inconclusive) and ultimately the determination as to whether regulatory action needs to be taken to improve the financial health of the company.

Regulators usually have to review several companies within a short time frame. A well-written AM, which provides sufficient support for the actuarial assets and liabilities included in the scope of the actuarial opinion, will allow the regulatory actuary to efficiently analyze these items. This reduces the number of follow-up questions that the appointed actuary may have to answer, streamlines the regulatory decision-making process, and creates a win-win situation for both parties.

Currently, health actuaries do not have detailed or prescriptive guidance for preparing AMs in the form of an Actuarial Standard of Practice (ASOP) or model regulation published by the National Association of Insurance Commissioners (NAIC) to ensure that appointed actuaries consistently prepare the AM with information that is sufficient to satisfy the target audiences.

Of the guidance available on AMs, the definitive guidance is found in the NAIC Health Annual Statement instructions

("NAIC instructions"). However, these instructions are not detailed enough to ensure consistency among appointed actuaries preparing AMs. Additionally, the focus of the instructions is on the unpaid claims liabilities and they do not adequately address all of the actuarial liabilities and assets that may be included in the SAO. Therefore, actuaries are left to determine for themselves what should be included in the AM. The result is that AMs prepared by appointed actuaries can vary from a two-page letter to a voluminous tome that would make *War and Peace* look like a pamphlet.

The ensuing discussion provides the perspective of two regulatory actuaries, based on our experience reviewing a large number of AMs, which represented the entire spectrum: the good, the bad and the ugly. We hope that this discussion will be helpful to appointed actuaries and their staff as they prepare AMs in support of the health annual statement (Orange Blank).

## COMMON MISPERCEPTIONS

We acknowledge that there are a few widely held misperceptions that tend to create a gap between what appointed actuaries and regulators believe is a well-crafted AM. We would like to address these misperceptions before presenting our suggestions for creating a well-written AM.

### The AM is for the Board of Directors

One misperception is that the AM is intended for the insurance company's board of directors (BOD), so the less detail the better. They will not understand it anyway.

The AM is a regulatory requirement that provides important information for the regulator to evaluate insurance companies' financials. Further, it is an actuarial communication, subject to the requirements of ASOP 41, Actuarial Communications. While the NAIC instructions state that the appointed actuary must report to the BOD or the Audit Committee of the BOD on the items within the scope of the actuarial opinion, and make the SAO and the AM available to the BOD or the Audit Committee, there is no prescribed format for the report to the BOD. Therefore, the appointed actuary may choose to prepare a separate report to the BOD/Audit Committee in a format that specifically serves the needs of that audience. However, that report does not replace the need for an AM that complies with the requirements of the NAIC instructions.

### The Regulator Does Not Really Use the Actuarial Memorandum

Another misperception is that regulators only look at the AM every three to five years, during the financial examination. The appointed actuary is only required to provide the AM to the



state upon request and some states never request them. So why bother? The BOD requires a report every year so the appointed actuary should make sure that the memorandum satisfies their needs. If a state requests additional information, the appointed actuary can provide it at that time.

While it is true that some regulators only request the memorandum during the financial examination, some do request it every year. Additionally, the memorandum is supposed to provide support for the analysis performed in determining the actuarial items that are included in the scope of the annual actuarial opinion regardless of how the memorandum is actually used. Therefore, it should be prepared to fulfill its intended purpose and include the required level of detail.

### **The AM Might Disclose Confidential or Proprietary Information**

A third misperception is that the AM will provide proprietary information to competitors, so less detail is better.

The NAIC instructions state that the AM is expected to be held confidential. If confidentiality is a concern, we recommend that you contact your regulator to determine how best to protect the confidentiality of the AM.

### **The Appointed Actuary is Not Responsible for Information Provided by Another Actuary**

An additional misperception is that if some of the information included in the actuarial opinion is provided by another actuary, the appointed actuary does not need to review it.

There is only one actuarial opinion for each company's annual statement. The appointed actuary is signing the opinion with regard to all of the actuarial items included in the scope of the actuarial opinion.

### **AM GUIDANCE**

The NAIC instructions define the AM:

“Actuarial Memorandum” means a document or other presentation prepared as a formal means of conveying the appointed actuary's professional conclusions and recommendations, of recording and communicating the methods and procedures, of assuring that the parties addressed are aware of the significance of the appointed actuary's opinion or findings and that documents the analysis underlying the opinion.

The NAIC instructions require the AM to include both narrative and technical components:

- The narrative component of the AM provides a high-level description of the appointed actuary's findings, recommendations, and conclusions for the regulator and company management.
- The technical component of the AM provides sufficient detail so that a reviewing actuary, such as a regulatory actuary or auditing actuary practicing in the same field, would be able to evaluate the work performed and the conclusions reached by the appointed actuary. However, it is not

intended to be a dump of data; it should be well-organized, providing a clear roadmap of the actuarial analyses, starting from the basic data to the conclusions. For appointed actuaries, this has proven to be the more challenging of the two components.

The AM must also include:

- An exhibit that ties to the annual statement and compares the actuary's conclusions to the carried amounts
- Reconciliation of the data used for analysis to the NAIC's Underwriting and Investment Exhibit, Part 2B
- Other follow-up studies documenting the prior year's claims liability and claim reserve run-off as considered necessary by the actuary
- Documentation of the assumptions used for contract reserves and any material changes to those assumptions from the assumptions used in the previous AM. Such documentation should address any studies that support the adequacy of any margin in such reserves
- Language regarding any deviation from the ASOPs

The AM is an important tool for both regulators and company management to understand the appointed actuary's conclusions and recommendations.

Recommended elements of a well-written actuarial memorandum include:

- Use clear and accurate language. Attention to detail is important. Grammatical or typographical errors undermine the credibility of the author.
- Follow any state-specific guidance for preparing the AM—there could be differences from the NAIC instructions.
- Identify the audience and clearly indicate the technical and narrative components. Using a letter format addressed to company management incorrectly suggests that the AM is intended for use by the company's management only. Using

a report format with specific section(s) for the narrative and technical components is recommended.

- Include all of the required items listed in the NAIC instructions.
- Include sufficient detail in the AM so that a qualified health actuary would be able to form an opinion regarding the analysis and conclusions. Each of the examples we included illustrate different aspects of this issue.
- Include an analysis of each item within the scope of the actuarial opinion, regardless of the numerical value. Since the AM is intended to support the SAO, it is a good idea to include a discussion of each item in order to ensure the reader knows that each item, even the zero items, was explicitly determined, using sound actuarial principles. Example 2 illustrates this issue.
- Where appropriate, provide a lookback (or hindsight) summary of historical actuarial estimates such as unpaid claims, risk adjustment, medical loss ratio (MLR), compared to actuals and provide a discussion of the analysis that supports the methodology and assumptions used for the current estimate.
- Document the assumptions used and any significant changes to those assumptions. Provide support for all material assumptions. Examples 1 and 2 illustrate this issue.
- Provide sufficient detail regarding the appointed actuary's review of information when part or all of the analysis is provided by another party. See Example 3 for an illustration of this issue.
- Document any material deviation from prescribed wording on the actuarial opinion along with the reason(s) for the alternate wording, in accordance with Section 4.1 of ASOP 41.
- Document and justify the type of opinion. Since the type of actuarial opinion is an important conclusion of the SAO, even an unqualified opinion ought to be documented and justified in the AM.

#### TIPS FOR PREPARING AN EFFECTIVE AND COMPREHENSIVE AM

The following examples are intended to show some common issues that we have encountered in reviewing AMs, along with suggested questions for the appointed actuary to consider when deciding what information to include in the AM.

### Example 1: Documenting Unpaid Claims Estimates

#### Facts

In addition to the specific items identified in the NAIC instructions, documentation of the development of the unpaid claims liability (UCL) included the following:

- Due to the size of the groups, the final incurred claims were determined by taking a weighted average of actual claims and estimated (smoothed) claims experience.
- Smoothed claims were determined by applying completion factors to the average per member claim. A six- to 12-month average was used, depending on circumstances.
- A margin was applied to the reserves to cover potential unknown events and fluctuations.

#### Discussion

Since one of the goals of the AM is to provide enough detail so that another actuary, practicing in the same field, can evaluate the work, the explanation of “smoothing” is inadequate and the reason for using it is unclear. The actuary notes that the size of the groups drove the need for the smoothing process, but the size of the groups involved may be immaterial, if the total population is credible.

The application of a six- to 12-month average completion factor, “depending on circumstances,” does not provide adequate explanation of how the completion factor was chosen for each month. What circumstances determine which average factor is used?

In determining the unpaid claims, were there any offsets used, such as reinsurance recoverables or risk-adjustment receivables? What were the considerations in determining the amount of these offsets?

According to ASOP 5, Incurred Health and Disability Claims, a provision for adverse deviation, or margin, may be appropriate, but the level of margin used is an actuarial assumption that should be documented and supported. How was the margin selected? What were the considerations? Was historical experience used? How does the margin compare to prior years? The margin should be consistent from year to year, unless there is a reason for making a change. One of the statements in the *opinion* portion of the SAO is that the items in the scope are “computed on the basis of assumptions and methods consistent with those used in computing the corresponding items in the annual statement of the preceding year.” This AM did not state the actual margin used, nor if it was consistent with the prior year’s margin. If it was changed, the actuary needs to include the rationale for the change in the AM.

### Example 2: Documentation of Actuarial Items With \$0 Amounts in the Opinion

#### Facts

The following zero dollar amounts might result in incomplete documentation.

- No documentation of \$0 premium deficiency reserve (PDR)
- No documentation of \$0 MLR rebate liability
- No documentation of \$0 Affordable Care Act (ACA) risk-adjustment amounts
- The company writes significant ACA-compliant business

#### Discussion

Every item included in the scope of the SAO should be documented in the AM, even when the amount is \$0.

The \$0 amounts in the opinion may be appropriate. However, unless the appointed actuary’s analysis is documented, the reviewing actuary has no basis for evaluating the reasonableness of the actuarial estimate.

In justifying a \$0 PDR, it is not sufficient to say that the company expects to make a profit in the following year; therefore, no PDR was needed. The PDR is one of the components of the aggregate health policy reserves (page 3, line 4). While the aggregate health policy reserves may be reported as a single number in the SAO, it is good practice to itemize each of the components in the AM and provide documentation of the analysis performed to determine each component, regardless of the numerical value.

Other actuaries or even non-actuaries may have calculated the MLR and risk-adjustment amounts, but they are considered to be actuarial items and must be included in the scope of the actuarial opinion and documented in the AM. The opining actuary is expected to review the work of those who prepared the estimates, document the level of review, and provide sufficient detail in the AM so that the reviewing actuary is able to judge whether the estimate is reasonable.

### Example 3: Reliance on Other Parties

#### Facts

At times, the company may need to use outside resources to complete the analysis.

- Excerpt from AM: “In forming my opinion on the ACA risk-adjustment payable (part of the aggregate write-ins for other liabilities), I relied upon data prepared by Reliable Actuarial Consulting Inc., as certified in the attached statements.”

- No documentation is provided regarding the information provided by Reliable.
- No further discussion of the risk-adjustment transfer payment estimate is provided in the AM.

### Discussion

The ACA risk-adjustment transfer payments receivable or payable is a particularly challenging item for an actuary to estimate because it depends not only on the risk attributes of a company's membership but also on the statewide average risk and premiums. Therefore, it is particularly important for the actuary to document the assumptions and methodology used to determine this estimate.

Many valuation actuaries do not have the requisite expertise for calculating this estimate and therefore rely on the expertise of other actuaries. This reliance is generally appropriate. However, it does not absolve that actuary of the responsibility for determining that the actuarial reserve or asset is reasonable. If consultants provided a range of results, how was the final estimate chosen? What, if any, adjustments were made to reflect specific circumstances that may have emerged since the consultant's estimate was determined?

It is good practice for the appointed actuary to include details of his/her review of the risk-adjustment transfer payment, or any other estimate provided by other parties, which are included in the scope of financial opinion.

### CONCLUSION

The AM is an important tool for both regulators and company management to understand the appointed actuary's conclusions and recommendations. It is intended to be kept confidential, so appointed actuaries should not be concerned with sharing proprietary information. In preparing the AM, the appointed actuary should always keep in mind that he/she must provide enough detail, within the technical component of the memorandum, to allow an actuary practicing in the same field to evaluate their work.

It is a good idea for actuaries to review applicable ASOPs prior to preparing or documenting actuarial liabilities, reserves and assets that will be included in the SAO. The actuary should review ASOP 5 and ASOP 42, Health and Disability Actuarial Assets and Liabilities Other Than Liabilities for Incurred

Claims, to ensure recommended practices are followed in developing the estimates included in the opinion. ASOP 41 should also be used as a guide to ensure clear and appropriate communication. ASOP 28, Statements of Actuarial Opinion Regarding Health Insurance Liabilities and Assets, includes guidance to actuaries issuing a written statement of actuarial opinion regarding health insurance liabilities and assets, and is a good resource for appointed actuaries.

A well-written, thoughtfully prepared AM will ultimately save time for the appointed actuary and the regulatory actuary who is reviewing the opinion and memorandum. ■



Annette James, FSA, MAAA, is lead actuary with the Nevada Division of Insurance. She can be reached at [ajames@doi.nv.gov](mailto:ajames@doi.nv.gov).



Nancy Hubler, ASA, MAAA, is chief health actuary for the Ohio Department of Insurance. She can be reached at [nancy.hubler@insurance.ohio.gov](mailto:nancy.hubler@insurance.ohio.gov).

### ADDITIONAL RESOURCES

For more information, please refer to:

- Actuarial Standard of Practice (ASOP) 5, Incurred Health and Disability Claims
- Actuarial Standard of Practice (ASOP 28), Statements of Actuarial Opinion Regarding Health Insurance Liabilities and Assets
- Actuarial Standard of Practice (ASOP) 41, Actuarial Communications
- Actuarial Standard of Practice (ASOP) 42, Health and Disability Actuarial Assets and Liabilities Other Than Liabilities for Incurred Claims
- American Academy of Actuaries. 2007. Premium Deficiency Reserves Discussion Paper.
- CMS MLR instructions
- National Association of Insurance Commissioners. Annual Statement Instructions
- National Association of Insurance Commissioners. Health Insurance Reserves Model Regulation (# 10).
- National Association of Insurance Commissioners. 2007. *Health Reserves Guidance Manual (HRGM)*, Feb. 14.
- National Association of Insurance Commissioners. Statement of Statutory Accounting Principles (SSAP) No. 54.
- State law

# Initiative 18/11: What can we do About the Cost of Health Care?

By Brian Pauley, Joan Barrett and Joe Wurzburger

For many health actuaries, March 23, 2010, the day the Affordable Care Act (ACA) was signed into law, was a career-changing day. Suddenly, there were regulations to be read, new policies to be written, new pricing methods to be developed and so much more.

In the midst of this activity, however, there was, and still is, an elephant in the room: the cost of health care. Currently, health care in the U.S. represents 18 percent of the gross domestic product (GDP) compared to 11 percent in comparable countries like the United Kingdom. In dollar terms, the cost of health care here is roughly double that of comparable countries. (See Figure 1).

Clearly, this cost level is not affordable and it is not sustainable. But, what can we as a nation do about it? What is the role of actuaries in solving the problem?

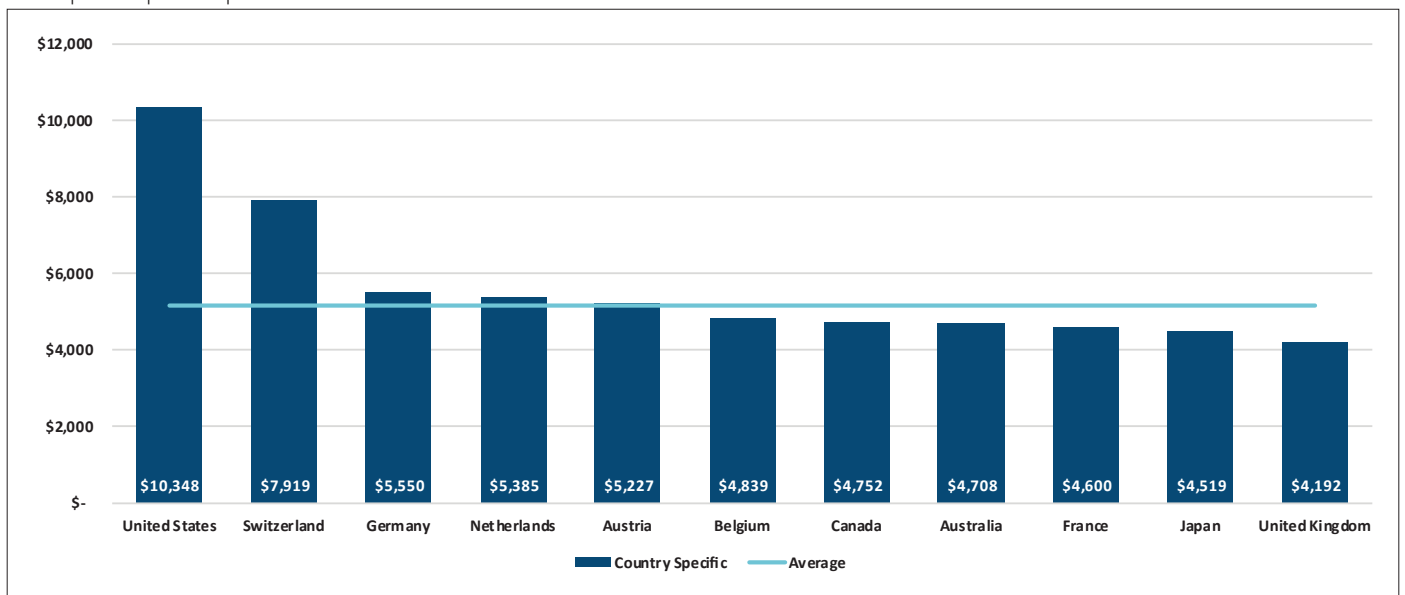
## ABOUT INITIATIVE 18/11: WHAT CAN WE DO ABOUT THE COST OF HEALTH CARE?

Last year, the Society of Actuaries (SOA) joined forces with the Kaiser Family Foundation to charter Initiative 18/11: What Can We Do About the Cost of Health Care? The Kaiser Family Foundation is a nonpartisan source of analysis of current health policy issues, with a longstanding interest in how health spending growth affects government, employers and consumers. The phrase “18/11” is a reference to the relative percentages of GDP discussed previously.

The purpose of this initiative is threefold:

- Identify the key drivers of the cost of care in the U.S.
- Identify actionable steps that can be taken to reduce the cost of care without compromising quality
- Break down the silos between the actuarial profession and other professions to facilitate the process of addressing these issues

Figure 1  
2016 per Capita Expenditures



Source: Sawyer, Bradley, and Cynthia Cox. How Does Health Spending in the U.S. Compare to Other Countries? Peterson-Kaiser Health System Tracker. *Healthsystemtracker.org*, Feb. 13, 2018, [https://www.healthsystemtracker.org/chart-collection/health-spending-u-s-compare-countries/?\\_sf\\_s=compare#item-average-wealthy-countries-spend-half-much-per-person-health-u-s-spends](https://www.healthsystemtracker.org/chart-collection/health-spending-u-s-compare-countries/?_sf_s=compare#item-average-wealthy-countries-spend-half-much-per-person-health-u-s-spends) (accessed Aug. 2, 2018).





The emphasis in the first phase of this initiative was to begin the process of breaking down barriers and to identify the key issues that may be causing the cost of care to be so high. This phase is complete. The second phase, developing and implementing an action plan to meet our goals, is still in progress.

The team leading this initiative includes Brian Pauley, Joan Barrett and Joe Wurzbarger from the SOA and Larry Levitt, Gary Claxton and Cynthia Cox from the Kaiser Family Foundation. Of course, the Health Section Council is providing valuable support, especially the leadership team of Sarah Osborne, Karen Shelton and Jackie Lee.

## PHASE 1: IDENTIFYING THE ISSUES AND POTENTIAL SOLUTIONS

The inaugural event for Initiative 18/11 occurred on March 7, 2018, in Washington, D.C., at an all-day event moderated by Ian Morrison. Ian is an internationally known author, consultant and futurist specializing in long-term forecasting and planning with an emphasis on health care and the changing business environment. The attendees at this meeting included 30 thought leaders throughout the health care community, including actuaries, health economists, employee benefits experts and hospital administrators. Of course, representatives from the American Academy of Actuaries (AAA) were an integral part of the event and will be an integral part of the ongoing efforts.

The conversation focused on identifying cost drivers, potential solutions and emerging issues.

### Cost Drivers

Although there are several factors impacting the cost of care, including new technologies and aging, several key studies have posited that price is one of the major drivers of costs. In the conference, many participants referenced the term “health care identity.” The term “health care identity” refers to the notion that health care costs = health care income. In other words, any attempt to reduce costs will result in lower income, so providers and administrators can be expected to develop countermeasures to keep income constant or increasing. The traditional laws of supply and demand do not necessarily hold in health care, so we quickly concluded that we cannot control costs without some type of forcing function. The group used analogies like trying to keep a “balloon in a box” or cutting off the spigot of water going into a funnel to describe forcing functions. Examples of forcing functions used in other countries include global budgets and price regulation. It is unlikely that the U.S. will adopt these types of methods on a national basis in the near future.

Chronic disease and consumerism were also a focus of many of the conversations. Consumers impact the cost of health care in two important ways: the management of personal risk factors and the demand for services. Although the demand for services often receives the most attention, the management of risk factors is key to managing chronic diseases. According to the Centers for Disease Control and Prevention (CDC), 86 percent of all costs are attributable to chronic diseases like hypertension, diabetes and cancer.<sup>1</sup> For many chronic diseases, the major risk factors include smoking and obesity, both of which are influenced by consumer behavior. Health actuaries will be key to determining the best ways to influence consumers in terms of incentives, population health and other techniques.

Finally, several studies have pointed to potential savings by simplifying and improving administrative processes with an emphasis on reducing fraud. Two potential obstacles to these efforts are the lack of consistency in data systems and duplicative and/or ineffective regulation.

### Potential Solutions

As noted earlier, with all the current emphasis still on the ACA, it is unlikely that there will be any type of coordinated national effort to reduce the cost of health care in the near future. That said, there are many smaller efforts underway that may have a significant impact.

Currently, value-based reimbursement methodologies are a major focus of attention. Under a value-based reimbursement

methodology, provider reimbursement depends on meeting specified quality and efficiency; there is a possibility these methodologies will serve as the forcing functions described earlier.

Direct care models are expected to evolve rapidly over the next few years, as new technologies, data sources and analytical tools become available. We can expect each effort to claim significant savings. That said, undoubtedly, there will be significant overlap between these activities, which will make it difficult to measure the overall impact on the cost of care and to prioritize activities. New evaluation methods will be needed to measure this impact.

Third-party players, like public health organizations, nongovernmental organizations, disease management programs and employer wellness programs, have always played an important role in health care delivery by supplementing direct care. In many cases, solutions to the health care issues depend on local conditions like the availability of providers and adequate social support, such as housing. The CMS Innovation Center and several states are actively seeking innovative state and local solutions focused not only on costs but also on meeting the needs of individuals. While many of these efforts have been successful, there has been no overall evaluation of the results at this point.

Although we tend to think of health care in broad terms, at the end of the day, health care is personal. Every individual's needs are determined by his or her own genetic make-up, risk factors and health status. An important part of finding a solution to the health care cost problem will be understanding various subgroups of the population with an emphasis on understanding the needs and possible solutions for that group. The group was particularly interested in the 5 percent of the population that causes 50 percent of the health care costs since that group would provide the opportunity for targeted interventions.

### Emerging Issues

Perhaps the emerging issue that is receiving the most attention right now has to do with the health care workforce structure. The proportion of physicians in the U.S. is lower than in comparable countries. In addition, over 23 percent of all active physicians are over age 65. One potential solution to this issue is to promote the growth of professionals who can practice at a lower level of licensure, like physician assistants. To be effective, however, this strategy will need to ensure that services performed are substitutions for more expensive providers and not in addition to.

These issues will be discussed in more detail in the conference report, which can be found under the resources tab at [www.soa.org/health](http://www.soa.org/health).

Health actuaries will be key to determining the best ways to influence consumers in terms of incentives, population health and other techniques.

### PHASE 2: TAKING ACTION

The first step in determining an action plan is to take stock of the tools the SOA and the Kaiser Family Foundation have available, which include:

- **Research projects.** The 18/11 leadership committee is exploring the possibility of research projects funded by the SOA alone or with other partners.
- **Health Section Council strategic initiatives.** The Health Section Council often sponsors volunteer efforts to examine specified issues in-depth, such as the recent report on the role of the actuary in self-insurance. The Health Section Council is considering several possible 18/11-related initiatives.
- **Health Section Council subgroups.** Currently the Health Section Council sponsors subgroups tasked with facilitating targeted continuing education and fostering ongoing education among interested parties. These subgroups present opportunities to address Initiative 18/11 issues through webinars and articles.
- **The American Academy of Actuaries.** The American Academy of Actuaries addresses cost-of-care issues through such activities as issue briefs, Capitol Hill visits, and letters to policymakers.
- **Joint research and continuing education efforts.** There is now an opportunity for joint ventures with other organizations like the Kaiser Family Foundation and the Healthcare Financial Management Association.

The 18/11 leadership team has determined priorities in consultation with the Health Section Council using the following criteria:

- Will the proposed priority help us understand the drivers of health care cost and potential solutions?
- Is the proposed priority data-driven and/or analytical in nature?

- Will the proposed priority advance the profession by:
  - Ensuring that the voice of the actuary is heard outside our traditional venues?
  - Helping us identify and develop the data and analytical techniques we need to do our work?



Brian Pauley, FSA, MAAA, is vice president, actuarial services at Highmark Health in Pittsburgh. He can be reached at [brian.pauley@highmark.com](mailto:brian.pauley@highmark.com).

The agreed-upon priorities include:

- **5/50 Research Project.** An SOA-sponsored research project focusing on the 5 percent of the population that causes 50 percent of health care costs.
- **Pharmacy Strategic Initiative.** The purpose of this Health Section Council Strategic Initiative is to document the pharmacy development and pricing process in order to increase its transparency.
- **Managed Care 3.0 Strategic Initiative.** This initiative, also sponsored by the Health Section Council, will examine anticipated changes in the clinical landscape due to increased utilization of predictive analytics and new technologies.



Joan Barrett, FSA, MAAA, is a senior consulting actuary at Axene Health Partners LLC in Tolland, Connecticut. She can be reached at [joan.barrett@axenehp.com](mailto:joan.barrett@axenehp.com).



Joe Wurzburger, FSA, MAAA, is Health staff fellow at the Society of Actuaries. He can be reached at [jwurzburger@soa.org](mailto:jwurzburger@soa.org).

We invite you to participate in Initiative 18/11 by providing comments, asking questions or volunteering to help out. Just send a note to Brian Pauley at [brian.pauley@highmark.com](mailto:brian.pauley@highmark.com), Joan Barrett at [joan.barrett@axenehp.com](mailto:joan.barrett@axenehp.com) or Joe Wurzburger at [jwurzburger@soa.com](mailto:jwurzburger@soa.com). ■

#### ENDNOTE

- 1 Gerteis, Jessie, David Izrael, Deborah Deitz, Lisa LeRoy, Richard Ricciardi, Therese Miller, and Jayasree Basu. 2014. *Multiple Chronic Conditions Chartbook: 2010 Medical Expenditure Panel Survey Data*, Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services, Pub. No. 14-0038. <https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/prevention-chronic-care/decision/mcc/mccchartbook.pdf> (accessed August 17, 2018).



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