Risk adjustment: Health calculus for the reform environment

A pragmatic guide to implementing risk-adjustment tools and strategies

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The concept of risk adjustment—a means to adjust or normalize healthcare costs to reflect the health status of a given population—has been around for decades, even if it has been poorly understood and viewed as a *black box*. But with the recent passage of healthcare reform, risk adjustment is getting lots of airtime, and with good reason. Risk adjustment will become a critical tool in successful implementation of reform.

Risk adjustment has already been used in the U.S. Medicare managed care programs to adjust payments to health plans participating in Medicare Advantage and Medicare prescription drug plans, and by state Medicaid programs to adjust payments to health plans covering Medicaid managed care members. Internationally it is used by government organizations to allocate budget resources according to the health needs of regions within a country. These initiatives have been employed with varying degrees of success. By demystifying the complexities of risk adjustment ahead of time, the *black box* can be opened, and the full potential of this powerful tool can be unleashed.

Risk-adjustment models start by classifying the medical diagnosis and prescription drug codes and other claim information into clinically coherent and statistically significant groups. They then apply regression techniques to predict a total or subset of the total healthcare cost at the individual member level. The results are presented in the form of relative risk scores, which is a numeric representation of members' health status relative to each other, i.e., a risk score of 2.7 indicates that a member is 2.7 times sicker than an average member in the population. The risk scores can be aggregated by age, gender, disease conditions, geographic area, and other dimensions for various analyses.

WHY NOW?

The recently enacted healthcare reform turns traditional methods of provider payment, pricing, underwriting, and health plan payment on their heads. As one example, consider the creation of state-based health insurance exchanges for individuals and small groups. For the exchanges to function effectively, states must implement methods to fairly adjust the payments to insurers participating in the exchange based on the health status of the members they each attract. Otherwise, insurers might shy away from participating because of concerns about adverse selection, or might design their products to only attract the healthiest people. Legislators, recognizing these issues, included a provision in the law for risk adjustment as part of the exchange setup.

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On the other side of the healthcare equation, doctors will need to be paid fairly, commensurate with the health burden of the new entrants into the system via the exchanges. Risk-adjusted payments to providers will help them manage the medical care of their varied patient population toward positive clinical and financial outcomes—a necessary component of real improvements in care.

These examples are just a few of many instances in which the reformed U.S. healthcare system will require risk adjustment in order to function. Risk adjustment can be used to:

- Assess the health status for individuals and groups and accurately predict future costs
- Base payments to health plans on the relative health of their covered populations, ensure fairness, and reduce adverse selection
- Address avoidable utilization, such as admissions, readmissions, and ER use
- Plan for and manage care effectively across large and varied patient populations
- Reform the way providers are paid
- Measure the quality of providers' care

As traditional methods of underwriting, rate-setting, and provider and health plan payment undergo radical transformation in the upcoming months and years, risk adjustment becomes a crucial tool for ensuring success. But getting risk adjustment right is no easy task. It's complicated, and organizations using risk-adjustment models to enable business decisions have to make sure they use the right models and that they use them to their greatest advantage. That's why risk adjustment, previously a little-understood and largely unappreciated concept, is now a skill set much in demand around the country. It is also important to realize that while risk-adjustment models have been around for many years, practical applications are still developing.

PUTTING RISK ADJUSTMENT INTO ACTION

There are three key steps to successfully execute a risk-adjustment strategy: selection, implementation, and evaluation.

SELECTING A RISK ADJUSTER

Choosing a risk-adjustment tool begins with a clear understanding of organizational needs. What are the organizational goals and desired results of a risk-adjustment methodology, e.g., is it about setting prospective payment rates or retrospective analyses of cost and utilization? How will results be used to satisfy business and reform objectives?

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Population. The selection process begins with a full understanding of the desired outcome, the available data, and the population that will be analyzed. Does the target population include commercially insured patients? Medicare patients? Medicaid patients? Uninsureds? Other special groups? Each is different. And even within these groups there are key distinctions: Adults and pediatric patients are unique in their own ways, as are healthy and unhealthy patients. Certain disease cohorts–diabetics or those with mental health issues, for example–may warrant specific focus. Choosing the right risk adjuster depends on a thorough understanding of these population characteristics.

Data. Just as important is an assessment of the available data. What data is available–diagnosis, pharmacy, or both? How reliable and complete is that data? How much historical data is available? Commonly used risk-adjustment tools rely on varying combinations of pharmacy data, encounter data, diagnosis codes, and other information to develop risk scores. Understanding the available information and matching it to a risk-adjustment tool will lead to better business decisions. There are situations in which the population is very unique, such as veterans or the uninsured, for which standard risk adjusters will not be applicable. In these cases, risk-adjustment experts need to be brought in to design custom models.

Vendor selection. Today's market offers a variety of risk adjusters from a number of vendors. While they all share some similarities such as scoring of patients at the individual level, each uses a unique underlying methodology and offers a different package of tools to the user.

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Fit. Published studies, as well as vendors' marketing materials, commonly compare R^2 results among products. R^2 is a statistic that indicates how much a model can explain in the total variation of the healthcare cost of a population. It is a widely accepted measure of a model's predictive accuracy, but it is not the only indicator and can be misleading from time to time.

The R^2 values found in published studies are the result of running models on a single dataset that may not be anything like an organization's unique data. As an example, models designed to fit a Medicaid population may be woefully inadequate for the uninsured population, whose utilization pattern tends to be more similar to a commercial population. Models developed to fit for a particular geographic area may not fit well in other parts of the country. To choose an optimal fit for a given population, dataset, and desired outcome, organizations would be well advised to get help from independent experts who know the field and understand the advantages and disadvantages of the available choices, and can design innovative solutions to meet unique challenges.

Strength. How strong is the vendor's model-development dataset? An acceptable risk adjuster needs to be developed on a large dataset that represents an expansive cross section of the entire population with regard to age, gender, geography, and disease conditions. The vendor should be able to clarify if there are any *holes* in the data in which any of these key dimensions may either be inadequate in sample size, or have inferior quality that is due to benefit carve-outs, capitation, and other data collection issues.

Understandability and face validity. Getting providers, insurance companies, health plans, or whoever else stands to gain or lose from the use of a risk adjuster to buy into the process is critical. How understandable and usable are the results? Methods that are too complex may not be the best choice for success if end users can't understand the results or if the process can't be administered efficiently, even though they may have equally good predictive accuracy. Choosing methods that all constituents can

MILLIMAN'S RISK-ADJUSTMENT EXPERTISE

Milliman consultants worked together with the Society of Actuaries to craft the standard working definition of risk adjustment and authored the widely used Society of Actuaries studies on risk adjusters. Milliman consultants have significant experience with risk adjusters on both fronts: technical experience working with all the major risk-adjustment models available in the marketplace, and consulting experience applying risk adjusters to state insurance exchanges, Medicaid and Medicare payments, commercial health plans, provider payment reforms, care and disease management, and international government health reforms.

Health exchanges, health plans, employers, and providers will all be affected by risk adjustment. It's time to demystify the selection and implementation of risk adjustment by seeking independent, expert advice.

comprehend, and looking for tools that enable concise and useful summarizations can help simplify a complex process. For instance, regression-based models are preferred for risk adjustment over artificial intelligence and neural networks models because, while they all have similar levels of predictive accuracy, regression-based models can more robustly accommodate new data and, over time, are more intuitive and straightforward to explain. The risk-adjustment process must yield credible results that users view as valid. For example, physicians will view a method as more valid when it correlates with their clinical experience.

Incentives. What incentives do the results create? When risk adjusters are used to adjust payment levels—to providers, insurance carriers, or others—those affected will try to work the system to their advantage. For example, a pharmacy-based risk adjuster used to determine the relative illness burden of providers' populations may result in an uptick in prescriptions.

Update frequency. Does the vendor routinely keep the risk adjusters updated? A risk adjuster used to make payments to providers or health plans should incorporate new medical and drug codes at least annually. If these new codes are not added to the algorithms, results will be less than optimal. Every two or three years, the risk-adjuster models themselves also need to be updated to reflect the most recent changes in the demographic and disease composition of the population, as well as the coding and treatment patterns.

Cost. Commercially available risk adjusters require a license and their fees are generally based on the size of the population that will be assessed. Most vendors offer a variety of models that perform well, but there are also publicly available risk adjusters, developed with government funding and widely used for Medicare Advantage payment or Medicaid budgeting.

Don't sacrifice success for a few pennies per life. No matter the choice, it is advisable to exercise caution when considering licensing fees versus model *fit*. Most publicly available risk adjusters will need a costly and complex recalibration in order to fit unique populations such as the uninsured. Hence, there are no *free* risk adjusters. The cost of risk adjustment must be evaluated based on the risk adjuster's ability to deliver a stable payment system that rewards health plans and providers for caring for the sicker patients, and is not subject to gaming. This type of evaluation is much more difficult to determine up front by comparing fees.

IMPLEMENTING A RISK ADJUSTER

As important as the choice of risk adjuster is, far more important is the application of the tool. Running data through a risk adjuster, generating risk scores, and analyzing the results is only the beginning. Turning those results into appropriate business actions—using them to make better business decisions than competitors—is where risk adjusters deliver value and help separate the winners from the losers in the reformed environment. Important operational issues, such as collecting data and using well understood actuarial processes, are prerequisite to success.

Communication and understanding. Risk-adjustment software vendors usually provide materials to explain at a high level how the models work. Outside experts with practical experience in applying risk adjustment may also need to be brought in to facilitate the communication and understanding of risk adjustment among all stakeholders. Otherwise, the *black box* will remain just that, and distrust of the process may follow. For instance, high-level presentations with real-world examples would be a helpful way of illustrating why risk adjustment is important and how it works. For a more technical audience, white papers on analytic methodology and detailed calculations would be appropriate. For clinicians and medical informatics, providing the underlying clinical classification system and examples of how risk scores are calculated and what drives risk scores would be necessary.

Data collection. Risk scores fluctuate with each data refreshment and update. It would be ideal to have real-time risk scores for medical management and business decision support. However, real-time analysis can be very costly. There is a proper balance to strike between timeliness and predictive value. Real-time risk scores are not necessary for budgeting and payment allocations. In practice, quarterly and semiannual data refreshments would be appropriate. For patient identification in medical management, it makes more sense to have real-time risk scores and associated drivers of risk available.

Actuarial considerations. Actuaries use risk-adjustment tools to establish premium, renewal, or capitation rates, and sometimes to profile providers for utilization. Risk-adjustment models tend to underpredict for new members or partial-year eligible members. As in any statistical models, risk-adjustment models are not 100% accurate and their accuracy can be quite low for small groups. In the rate-making process, actuaries are constantly challenged by these issues and need to develop methods that are actuarially sound and coherent with risk-adjustment results. Statistics such as confidence intervals and group R^2 on the client population can be extremely helpful.

Risk scores only compare patients' health status relative to each other based on coded medical conditions or prescription drugs. There are many other factors outside of risk adjustment to consider when profiling physicians on cost and utilization, among them provider specialty, panel size, patient attribution, and referral and other network arrangements.

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EVALUATION AND LONGER-TERM CONSIDERATIONS

Once implemented, risk adjustment will stay in the system for a fairly long time. However, it is by no means a static process. Nowadays, more and better data is expected every year. Risk-adjustment models need to be evaluated and recalibrated to newer and better data. Better modeling techniques should be incorporated to improve predictive accuracy and ensure fairer payments. For instance, state Medicaid agencies may start with a pharmacy-based risk adjustment system while building up a data warehouse to collect encounter data, and when encounter data is ready for use, switch over to diagnosis-based risk adjustment because it's believed to be more accurate, robust, and less able to be gamed.

CONCLUSION

In a reformed health system, risk adjustment will be pervasive for all stakeholders—government or governmental agencies, health plans, provider organizations, employer groups, and others. With so many entities looking to adopt risk adjustment at essentially the same time, there is a clear competitive opportunity for those that pursue the right strategies and tools and find a way to properly assess and implement those tools. The success of any organization's risk adjustment effort may go a long way toward determining its viability in the future of American healthcare.

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