Models Target Mental Health Risk Factors to Reduce Medical Costs

APS Healthcare’s proprietary predictive models identify appropriate members for healthcare management using a multi-faceted approach by primary author Damon Shepherd MS, informatics consultant, research and development, and secondary authors/editing assistants Bonita Westover MSPH, informatics consultant, research and development, and Scott Orme PhD, manager, external consulting, all in the Health Intelligence Division at APS Healthcare.

When using predictive modeling for member identification, it is important to not only profile conditions and escalating costs, but to consider behavioral health co-morbidities and disease severity as well. APS Healthcare, a specialty healthcare management company focused on improving quality of care and on providing clients integrated solutions to rising healthcare costs, recognizes the value of integrating behavioral and general medical care.

A growing body of research — Carlson & Bultz, 2003; Finison, Pearson & Leonard, 2000; McIntyre, Konarski, Soczynska, Wilkins, Panjwani, Bouffard et al., 2006; Opolski & Wilson, 2005; Osbom, 2001; and Simon, 2001 — documents the impact of mental disorders on utilization of healthcare resources and patient quality of life and on the morbidity and mortality associated with medical conditions. Specializing in identification of risk for potential physical conditions associated with mental health can mitigate future costs and enhance member health.

Early predictive modeling methods generally focused on cost only, which could produce a list of desired care management members, but which often included a large number of “inactionable” or inappropriate cases, resulting in insufficient case engagement rates. New methodologies refine data-driven participant selection, focusing engagement on highly actionable cases. Those newer results present better opportunities for measurable impact, and reduce the use of more costly and labor-intensive evaluation and identification resources.

LifeWise Uses Predictive Modeling for Renewal Underwriting in a Lot of Little Ways

Sharon Howe of LifeWise explains the risk assessment applications

Predictive modeling’s role in renewal underwriting at LifeWise Health Plan of Oregon and Arizona is broad but shallow. The carrier uses PM across a wide variety of products and renewal underwriting processes, but it’s not the key factor in any of the calculations it supports. It is, says Sharon Howe, director of underwriting there, one of many factors used to assess group risk and then to use that assessment to fine-tune claim projections.

LifeWise uses predictive risk modeling for four functions in three key market segments, Howe tells Predictive Modeling News: association employer group risk bucketing, predictive risk analysis for groups of 51 or more and portfolio risk management for groups of 51 to 199 plus applying predictive risk adjustments to smaller, unregulated groups. Predictive modeling is “just one of many components we use to look at risk for groups of 51 or more enrolled,” she says. “It’s by no means applied in a very credible way. It’s just a small increment to account for predictive risk, along with a demographic calculation, experience, large-claim information and other group risk factors.”

The company’s association employer group PM application was developed in-house using episode risk groups, episode treatment groups and pharmacy risk groups, Howe reports. The carrier then grouped the association pool into “risk buckets” determined by individual member companies’ prospective/demographic risk score.

Underwriters apply the predictive risk adjustments, which are based on comparison to LifeWise’s full book of business, by bucket, along with other adjustment factors – the loss-ratio and regional adjustments she mentions, plus demographic and large-claim adjustments, among others. “We used our whole 51-to-199 book of business in our model,” Howe explains, “comparing groups within an association to the risk on our books. We bucketed each member group according to the average, then applied a weighting to that.”

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Lifewise Uses PM for Renewal Underwriting…continued

LifeWise underwriters don’t “apply full credibility to the predictive risk,” Howe adds, “just a small weight, because we’re also applying the bucket adjustments for other factors.” The specifics for each association it covers vary, she adds; indeed, the company is restricted from that kind of group-specific underwriting adjustment entirely in its Oregon market. “Applying the predictive risk adjustment the way we do depends on our ability to do that type of association underwriting from a regulatory standpoint,” she notes. With some associations, each employer group is looked at with respect to its individual risk, she explains, but other associations may be set up with small-group rates or an association-wide experience-based rate.

“We use experience-based predictive risk and demographic predictive risk and weighting according to credibility, and apply an overall risk score regardless of size.”

LifeWise also applies predictive risk analysis to its non-association clients. “Using the same application as used for association risk bucketing, actuaries developed another analysis to determine group-specific predictive risk scores,” Howe says. “They used prospective and demographic risk scores once again, and added a group-specific retrospective risk score.” LifeWise’s member database includes predictive risk factors for each member, and those risk factors “roll up to the group-level risk score,” she adds. “The credibility applied to each group’s experience was lowered to accommodate our use of a predictive risk score.” Bottom line: “We use experience-based predictive risk and demographic predictive risk and weighting according to credibility, and apply an overall risk score regardless of size.”

But the predictive risk adjustments used in actual underwriting are less dramatic, Howe notes. “We may or may not use them,” she says simply. “With larger groups, we often develop a predictive risk adjustment, but we may not use it for renewal underwriting, or we may reserve it for negotiations.” It’s just “part of the art of underwriting,” she says. “We use experience-based predictive risk, weighted according to credibility, so it’s a blended factor that looks at predictive risk. As a group gets larger, we weight the experience-based retrospective over the prospective risk, so we’re looking at group-specific claims patterns on a predictive basis. We look at those two sides of the equation and apply the result to the overall claims rate.”

In November 2006, LifeWise also started using predictive risk on its 51- to 199-covered book of business in a way similar to how it applies predictive modeling to its association business, Howe reports. For those 51-to-199 clients, the carrier buckets risk, by market region, into five tiers and applies a group-specific predictive risk score. As with the association book of business and with the carrier’s efforts at predictive risk analysis for groups of 51 or more, LifeWise’s portfolio risk management for groups from 51 to 199 covered lives “looks at many different risk factors, and predictive risk is one of them,” Howe tells PMN. “We put all the groups on a predictive risk continuum and bucket them out in five tiers,” she explains. “Then each group’s adjustment is based on its bucket, where Bucket One may represent a discount, say, and Bucket Five represents a load.”

All the adjustments made to those clients are applied at renewal and are “tempered and revenue-neutral,” Howe emphasizes. “In total, the adjustments are neutral on the whole book of business,” using the tool as it does for the other predictive risk adjustment efforts, but looking at the entire book of business rather than at group-specific rates. Of course, all those adjustments are applied at the group level. Regulations limit the use of predictive risk adjustment in Oregon, and it’s not used in Arizona.

LifeWise uses data from Impact Pro, a product from IHCIS, an Ingenix company. Impact Pro software “provides a risk score on a line-of-business, group and member basis, and gives an estimated future cost,” Howe comments.

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Models Target Mental Health Risk Factors ... continued

APS Healthcare’s predictive modeling approach uses data beyond just diagnoses and prior costs. The models formulate specific case types developed from many and diverse data elements. Those case types -- 15 in all -- are identified prospectively and are statistically associated with mental health co-morbidities and high medical utilization. This article describes APS’s approach and methods in developing three specific models: “Undiagnosed Depression,” “(Continued) Diagnosed Depression” and “Substance Abuse.”

Methodology for Indirect Mental Health (Co-Morbid) Predictive Models

APS recognizes that most high-dollar cases are characterized by many different kinds of clinical episodes that drive costs. In this article, we will describe a methodology developed for finding case types that present high medical costs with frequent mental health service utilization. The data used for model development consisted of all inpatient, outpatient and pharmacy claims filed by more than 400,000 members over four consecutive years from a commercially insured health plan. From claims data analysis, we formulated predictive models to prospectively identify those cases most likely to incur high costs with associated mental health conditions.

To do that, we extracted a study cohort limited to health plan members representing the highest 5% of total dollars paid who also incurred mental health-related services in a one-year time period. We next grouped medical diagnoses, procedures and prescriptions that had a statistically significant association (p<.001) with those members. Factor analysis using principal components with Varimax rotation was applied to those data elements, forming 98 condition constructs, or sub-scores. Further analysis lead to 27 sub-scores that clearly ranked the entire population by both concurrent costs and mental health utilization.

Claims elements – including ICD9, CPT10, NDC and TOS data -- with loadings greater than or equal to ABS(0.15) making up the 27 sub-scores were then clinically evaluated for clinical grouping relevance. That evaluation determined that some case types, though statistically grouped separately, were very similar. Those case types were therefore combined, yielding 15 distinct case types incurring both high medical costs and mental health utilization. Those case types served as targets for predictive modeling development.

Association tests were applied to claims elements occurring by date of service at specific points in time for data spanning 12 months prior to indicators of those case types. Data elements found associated (p<.001) with indicators of case type were then collectively modeled through logistic regression, resulting in an assignment of likelihood for each member becoming any particular case type in the next 12 months. Predictive models were developed for each case type. The primary measure used to assess the strength of each predictive model was its positive predictive value, or the percent of members identified at risk in year 1 who progress to the case type for which they were at risk in year 2.

continued on page 4
An example of Case type identification for Prospective Targeting

### Co Morbid Costs by Axis 4
Coronary Artery Disease

<table>
<thead>
<tr>
<th>Case Type Construct</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axis 4</td>
<td></td>
</tr>
<tr>
<td>CAD</td>
<td></td>
</tr>
<tr>
<td>Other Case Types</td>
<td></td>
</tr>
</tbody>
</table>

Cases with strong loadings based on the above elements are indicated then serving as target variables for PM Risk Development.

### Year 2 Results by Year 1 Co-Morbid Risk

<table>
<thead>
<tr>
<th>Year 2 Targeted Case Types</th>
<th>Year 2 Condition Type</th>
<th>Year 2 % MH</th>
<th>Year 2 Medical Costs</th>
<th>Year 2 Medical Cost (Mental Health Cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>97%</td>
<td>11%</td>
<td>$6,882</td>
<td>$12,036</td>
</tr>
<tr>
<td>Diabetes</td>
<td>96%</td>
<td>11%</td>
<td>$7,610</td>
<td>$13,671</td>
</tr>
<tr>
<td>CAD</td>
<td>91%</td>
<td>15%</td>
<td>$9,968</td>
<td>$12,456</td>
</tr>
<tr>
<td>Stomach/Digestion</td>
<td>82%</td>
<td>28%</td>
<td>$10,479</td>
<td>$15,671</td>
</tr>
<tr>
<td>CHF</td>
<td>86%</td>
<td>19%</td>
<td>$15,492</td>
<td>$20,761</td>
</tr>
<tr>
<td>ESRD</td>
<td>75%</td>
<td>17%</td>
<td>$16,806</td>
<td>$24,102</td>
</tr>
<tr>
<td>Dysrhythmias</td>
<td>88%</td>
<td>16%</td>
<td>$8,750</td>
<td>$12,820</td>
</tr>
<tr>
<td>Congenital Anomalies Heart</td>
<td>44%</td>
<td>22%</td>
<td>$13,781</td>
<td>$20,264</td>
</tr>
<tr>
<td>Syncope, “Non-specific symptomatology”</td>
<td>52%</td>
<td>32%</td>
<td>$15,258</td>
<td>$18,243</td>
</tr>
<tr>
<td>Circulation/Coagulation Pathology</td>
<td>43%</td>
<td>21%</td>
<td>$16,386</td>
<td>$23,595</td>
</tr>
<tr>
<td>Parkinson’s/CNS</td>
<td>74%</td>
<td>44%</td>
<td>$9,750</td>
<td>$13,486</td>
</tr>
<tr>
<td>HIV</td>
<td>43%</td>
<td>30%</td>
<td>$19,601</td>
<td>$25,278</td>
</tr>
<tr>
<td>Autoimmune Disease</td>
<td>48%</td>
<td>23%</td>
<td>$16,826</td>
<td>$22,804</td>
</tr>
<tr>
<td>Cerebrovascular</td>
<td>56%</td>
<td>32%</td>
<td>$27,392</td>
<td>$56,892</td>
</tr>
<tr>
<td>Cancer – Top 0.2%</td>
<td>91%</td>
<td>21%</td>
<td>$57,781</td>
<td>$95,457</td>
</tr>
<tr>
<td>Cancer – Top 0.4 %</td>
<td>84%</td>
<td>15%</td>
<td>$47,030</td>
<td>$66,431</td>
</tr>
<tr>
<td>Cancer – Top 1 %</td>
<td>71%</td>
<td>22%</td>
<td>$26,749</td>
<td>$48,403</td>
</tr>
<tr>
<td>Total Risk Pool – Cancer at 1 %</td>
<td>57%</td>
<td>15%</td>
<td>$16,636</td>
<td>$27,694</td>
</tr>
</tbody>
</table>

### Actionable Indicators

The data elements that construct the individual predictive models are extensive in number, but we’ve found that the time involved in clinical evaluation of those claims indicators is well worth the effort. Not only can those factors serve to identify emerging risk, but some of the factors provide sound information that can be used to triage cases to specific lines of care, such as case management or disease management.

For example, our predictive model for diabetes is driven by 39 risk constructs made up of 155 distinct claims elements. Of those 39 risk factors, some indicate potential case management opportunities, such as members with factors containing claims elements with procedure codes for “Diabetes Only, Shoe Inserts/Fittings” and diagnoses indicating “Chronic Ulcers of Skin or Infective Arthritis and Osteomyelitis.” Similarly, different risk indicators of future high costs can suggest disease management may better serve the member, such as cases with factors containing claims elements of diagnoses of “Diabetes Mellitus Without Complications” and/or “Essential Hypertension” in absence of other complicating conditions.
Models Target Mental Health Risk Factors ... continued

Methodology for Direct Mental Health Predictive Models

'Undiagnosed Depression' Predictive Model

The "Undiagnosed Depression" predictive model uses claims to identify members who are likely to be diagnosed with depression in the next year, but who do not previously have claims activity indicating depression.

The current rate of undiagnosed depression to diagnosed depression cases identified by the model is 20%. A validation of the tool through a health risk assessment, the PHQ9, showed 23% of cases at risk fell into the depression range soon after the time of identification.

To develop that model, all members filing claims for depression in a one-year time frame were removed from the analysis database. Medical diagnoses, procedures, prescriptions and types of service that had a statistically significant association (p<.001) with members filing depression claims in the subsequent year (year 2) were grouped. Principal components analysis with Varimax rotation was applied to those data elements, forming a list of condition constructs or sub-scores occurring in year 1.

Logistic regression was applied to the year 1 condition constructs, targeting year 2 occurrence of depression, and, through logistic analysis, 40 significant factors were found associated with year 2 depression. The 40 factors were constructed from 130 claims data elements occurring in year 1. Examples of factors included, but were not limited to, the following:

- Cardiology Services (including EKGs)
- Cancer
- Chemotherapy Treatment
- Urinary Tract Infections
- Other Mental Conditions
- Substance Abuse-Related Disorders
- Other Skin Disorders
- Injuries Due to External Causes
- Headache/Migraine

'Diagnosed Depression' Predictive Model

The "Diagnosed Depression" predictive model uses claims to identify members who have been diagnosed with depression and who are likely to continue being diagnosed in the next year. The current rate of diagnosed depression cases continuing to be diagnosed identified by the model is 96%.

Using the same methodology as for the "Undiagnosed Depression" model, all members filing claims for depression in a one-year time frame were included in the analysis database for the "Diagnosed Diabetes" model development.

There were 23 weighted factors -- constructed from 67 data elements -- indicating a positive and significant association to future depression.

Examples of factors included, but were not limited to, the following:

- Hypertension
- Nervous System Disorders
- Pre-Adult Disorders
- Headache/Migraine
- Anxiety
- Menopausal Disorders
- Laboratory Examinations
- Surgical Extractions

'Substance Abuse' Predictive Model

The "Substance Abuse" predictive model uses claims to identify members at risk of incurring a diagnosis of substance abuse in the next six months. Currently, 33% of cases identified as at-risk result in a diagnosis of substance abuse.

All members filing claims over the course of two years were included in the analysis. There were 23 weighted factors -- constructed from 90 data elements -- indicating a positive and significant association to future substance abuse in the "Substance Abuse" predictive model.

Examples of factors included, but were not limited to, the following:

- Hypertension
- Anxiety
- Affective Disorders
- Open Wounds
- Trauma-Related Injuries
- Headache
- Liver Disease

It should be noted that the proportion of members identified as at-risk for future mental health occurrences who do not result in the specified mental health diagnoses in the post period may very well be mental health cases that are staying un-diagnosed and, hence, with intervention would or should file claims for those conditions.

Although numerous disease management guidelines exist to adequately treat patients, the real challenge of disease management is to identify and stratify those patients who could most benefit from specific interventions. As resources are in short supply, effectively using those limited resources delivers the best clinical and economic value to both the member and the payer.

The first generation of predictive models used basic patient demographic and clinical data -- age, gender and diagnosis. Those models provided a simple form of risk adjustment, but were limited by the simplicity of their design and by the limited variables that could be obtained and utilized.

With access to more refined clinical elements and the application of more advanced, multi-variate techniques, our models now are far more suitable for case selection than were models of the past.

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The data that drive predictive models often include pharmacy information, but truly integrated medical and Rx data are not being used to their fullest potential. That potential, when maximized, could change the PM game entirely. That’s, in effect, the bottom-line finding of three papers recently presented by the Journal of Managed Care Pharmacy, Alexandria, VA, in a continuing education-oriented supplement to its March 2008 issue. Here are highlights of the three articles.

### The Impact of Health Information Technology on Collaborative Chronic Care Management
by Janet M. Marchibroda MBA. J Manag Care Pharm. 2008;14(2)(suppl S-a):S3-S11

Noting that “more than 125 million Americans had at least one chronic care condition in 2000,” and that that number could grow to 157 million in 12 years, the researcher set out to “review the current challenges of chronic care management and explore how health information technology and health information exchange efforts at the national, state and local levels can be leveraged to address some of those challenges.” In short, the paper reports, “efforts to effectively manage chronic care have been hampered by a number of factors, including a fragmented healthcare system and the need for more coordination across the healthcare setting; the lack of inter-operable clinical information systems, which would help provide readily available, comprehensive information about the patient to those who deliver care, those who manage care and those who receive care; and, finally, the current predominantly fee-for-service reimbursement system that rewards volume and fragmentation and does not effectively align incentives with the goals of chronic care management.”

Introducing health IT, the paper continues, “holds great promise for addressing many of the barriers to effective chronic care management by providing important clinical information about the patient when it is needed and where it is needed in a timely, secure fashion. Having information from the care delivery process readily available through health IT and health information exchange at the national, state and local levels supports key components of the chronic care management process, including those related to measurement, clinical decision support, collaboration and coordination and consumer activation.”

The researcher’s conclusions? “Those engaged in chronic care management should seek to leverage health IT and health information exchange initiatives, particularly at the local level. Community-based initiatives have built social capital and trust across multiple stakeholders; enabled access to clinical data derived from the care delivery process that only resides locally; and, in many cases, aligned incentives around the mobilization of clinical information across care settings. While there is good research regarding interdisciplinary care models, more research is still needed to identify policies, practices and strategies for facilitating and building cooperation among those engaged in chronic care management and those engaged in multi-stakeholder efforts involved in the exchange of clinical health information electronically.”

### Information Technology for the Treatment of Diabetes: Improving Outcomes and Controlling Costs
by Kathleen Wyne MD PhD FACE. J Manag Care Pharm. 2008;14(2)(suppl S-a):S12-S17

The researcher cites the fact that “diabetes presents an ideal opportunity for the incorporation of information technology in the provision of care” as her reason for “reviewing practical applications of HIT for improving the delivery of care in diabetes management.” Her conclusions: “While uncontrolled diabetes remains a major concern in managed care from both a health and a cost perspective, implementation of information technology-enabled diabetes management – or ‘ITDM’ – has demonstrated significant potential for improving processes of care, preventing the development of diabetic complications and generating cost savings. ITDM improves the synthesis of information, the delivery of knowledge and the efficiency of communication, allowing for coordination of care across delivery teams. Of the existing technologies targeting providers, patients and payers, provider-centered interventions, such as diabetes registries, currently show the most potential for benefit in improving outcomes and reducing costs.”

### Operationalizing MTM Through the Use of Health Information Technology
by Robert McMahan PharmD MBA MATS. J Manag Care Pharm. 2008;14(2)(suppl S-a):S18-S21

McMahan notes that “health information technology tools are needed to sort the ever-increasing volume of available clinical data and thereby allow patients, practitioners and health plans to understand and use the data to their fullest potential. HIT offers the ability to help improve communication channels to share the increasing amounts of information available to managed care organizations today. In effect, medication therapy management programs are using HIT to identify an at-risk population and reach that population in the most appropriate measure.” So, the paper points out, his research sought to “identify and review the design components of an operationally effective MTM program, including the services offered,” as well as “the use of HIT in quality improvement initiatives at managed care plans.”

The researcher found that “the operational components of MTM programs that rely heavily on HIT include patient identification, stratification of care, coordination of care and safety evaluation.

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**MEDai Product ‘Informs the Cost-Containment Process’**

Managed care customer uses firm’s predictive modeling to show its clients the “what” and “why” behind their healthcare costs

_This client case study was submitted by MEDai Inc. Send yours to info@predictivemodeling.com._

QualChoice of Arkansas had a business problem to address: The clients of this managed-care company and health-benefits administrator wanted to know why their healthcare costs were going up. These employers weren’t just asking why healthcare in general was becoming more expensive but wanted to know what was driving their specific costs with their employees.

QualChoice wanted to provide a better answer than merely handing these customers utilization reports printed from a raw database. While standard utilization reports showed number of hospital and emergency-room visits, lengths of stay for inpatients, and other broad totals and averages, they were not customizable or analytic enough to provide actionable data in the way that employers are coming increasingly to demand. “We have large-group clients and smaller, self-funded employers, and both are interested in finding ways to exert more hands-on control over costs,” says Cindy Furgerson, QualChoice’s Vice President of Quality & Care Management. “Much of the question for them was where to start.”

These clients suspected that certain diseases and conditions, employee subgroups, and lifestyle and prevention factors represented target variables that they could influence to make their provision of healthcare more efficient, effective, and more affordable. They expected QualChoice’s staff to guide these efforts. After careful evaluation of available solutions that would help it bring to the surface the necessary data evaluation and results, QualChoice chose and implemented MEDai’s Risk Navigator Clinical.

**A Process that Gets the Client Involved**

QualChoice found that it could soon produce both broad category reports and analyses that dug deeper into patient information, patterns, and trends for each client. Its staff could easily designate report tables looking at patient categories, dollars spent, and risk factors.

“These clients suspected that certain diseases and conditions, employee subgroups, and lifestyle and prevention factors represented target variables that they could influence to make their provision of healthcare more efficient, effective, and more affordable.”

That reporting permitted QualChoice and its clients to look, for example, at specific diseases driving costs and to identify patients who had not had the best practice, acute or preventive care. The capability was an adjunct to QualChoice’s wellness and health-promotion feature, QualCare, a service that clients wanted to take advantage of but weren’t always sure how best to use.

One seemingly simple and yet difficult challenge for both the managed care company and its clients had been identifying the right members to place into this program.

“Each month, we query our members about what areas they want to focus on in prevention, and now we’re providing them the information to rationally answer that question,” Furgerson explains. “Pulling information from Risk Navigator Clinical, we have developed a basic report for wellness and health promotion indicating the cost drivers, with actions the employer can take to decrease future costs or risk.”

QualChoice’s employer customers now had evidence for entering not just individuals but groups of workers into the QualCare program. Employers could now take steps for patients who were not receiving or compliant with standards of care across certain clinical areas. It was the jump-start they needed for their cost-containment efforts.

**Employers Embrace Results-into-Action**

QualChoice began tailoring reports to clients’ needs and requests. It now had the ability to design the reports around actions that the employers might take, both internally and through the QualCare health promotion service. “Cost drivers are the natural focus for employers. They have no choice today. And these analyses are primarily organized by disease-specific areas,” Furgerson says, “especially in regard to the gaps in care and compliance in high-costing conditions.”

“In addition to the desire clients have to increase compliance rates, they are also saying, ‘We’ve put a lot of measures in place to educate and coach employees. Now we want to look at outcomes.’”

Employers subscribing to QualChoice could now review an assortment of areas, including what drugs might be influencing costs, what impact unusual or nonstandard interventions might have had, and other factors. Some were also interested in dividing data by worksite to see which of their business locations might be producing more or less costs in healthcare for employees - and why.

Employers decided on and supported a variety of steps as a result. They included encouraging employees with diabetes to remain conscientious in their monthly meetings with a health coach, to stay active with the counseling process and report their blood sugars in a diary. Preventive measures by other employers included attention to musculoskeletal risks and issues by looking at measures like the use of ergonomics in their workplaces and establishing a back-safety program.

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Thought Leader’s Corner

Each month, Predictive Modeling News asks a panel of industry experts to discuss a topic suggested by a subscriber. To suggest a topic, send it to us at info@predictivemodeling.com. Here’s this month’s question:

Q: “How much interaction do you typically see between actuarial and care management executives and staffs? To what extent do they, or should they, get involved in each other’s planning, strategy, workflow and communications?”

“Historically, there has not been a great deal of active interaction between those departments. However, as predictive modeling solutions become more robust, we are seeing a growing number of exceptions to that generalization. For example, in several health plans, we have observed that the departments not only work together from a strategic perspective, but also operationally.

In one such plan, case management staffers develop employer-specific reports focused on forecasted high-risk and high-cost employees. They provide supporting information and recommendations to the underwriting staff for those employees to be enrolled in specific high-intensity case management or health management programs. The underwriting staff also uses the predictive modeling tool to develop the overall renewal proposal. Once all parts of the renewal analysis and proposal are complete, staff from both the underwriting and clinical management departments meet with the employer group to discuss proposed premium adjustments and opportunities to reduce its health services costs during the upcoming year. The directors from the clinical management and finance departments work together to ensure that that integration supports their business and medical management objectives.

In another health plan, the analysts and leadership from medical economics, rating and underwriting and the information technology department meet on a monthly basis to review detailed and high-level issues impacting both the clinical and financial departments’ efforts to use predictive modeling tools. Issues discussed during those monthly meetings range from assessing the impact of a new claims processing system’s implementation on the timeliness of predictive modeling data delivery to the impact of adjusting the predictive model methodology on the reports used in each of the departments.”

Swati Abbott
President, MEDai, Inc.
Orlando, FL

“How much interaction? Unfortunately, very little, except in best-in-class organizations. Usually, those organizations have established a medical economics/informatics department led by actuaries or with dedicated actuaries on staff. The typical pricing/valuation/corporate actuaries aren’t trained in what it takes in those areas, and separate staff dedicated to speak ‘actuarial-ese’ with a clinical accent or ‘clinic-ese’ with an actuarial accent is what it takes to make it work. How much should they get involved in planning, strategy, workflow and communications? Best-in-class organizations are heavily involved in all of those areas. A wise care management executive needs to know the impact of his or her initiatives and needs to be able to present it in a way that others in the organization — the CEO and CFO, among others — will believe it. The actuary provides the much-needed credibility. I have personally been involved in doing that for more than 30 years and find that very few actuaries ‘get it,’’ which is probably the reason so little interaction really exists.”

David Axene
President, Axene Health Partners
Winchester, CA

“There is minimal interaction, if any. They are missing an opportunity.”

Joel V. Brill MD AGAF FASGE FACG CHCQM
Chief Medical Officer, Predictive Health LLC
Phoenix, AZ

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Thought Leader's Corner continued

“There has been an increasing amount of interaction between medical management and actuarial staff over the last 10 years, starting from a very low level. Care management operations, unlike most other areas of a plan, tend to be relatively independent of financial oversight. As budgets have grown, and trend has stubbornly failed to decline, plan financial managements have involved actuaries more in assessing the objectives and value of medical management programs.”

Ian Duncan FSA FIA FCIA MAAA
President, Solucia Inc.
Farmington, CT

“I have seen significant interaction between actuarial and care management staff. That interaction is driven primarily by [a] the catastrophic nature of certain diseases/conditions and its implications on rating, [b] ongoing costs and utilization metric monitoring and comparisons with benchmarks and [c] the role of medical management in containing/bending the trend. Actuarial and medical management should get involved in each other’s planning, strategy, workflow and communications. Having one predictive model for both actuarial and medical management can offer advantages and facilitate that relationship.”

Soyal Momin MS MBA
Manager, R&D and Consulting, BlueCross BlueShield of Tennessee
Chattanooga, TN

“Some plans have a well-integrated program between the actuaries and the care management teams. Others do not. It is important that the care managers understand predictive models to help with the stratification and selection of cases for intervention. There is an improvement in using predictive models to help with that endeavor, and the actuaries are getting involved in the development of the reports and tools needed to simplify the process for the case managers. There are still areas of improvement in every plan to coordinate those efforts.”

Russell D. Robbins MD MBA
Principal & Senior Clinical Consultant, Mercer
Norwalk, CT

“In many, if not most, organizations, there is limited interface between the actuarial and care management teams. It is not uncommon for those two groups to use different risk measurement methods, analytic approaches and terminology. In fact, at times, the goals of the two groups are at odds: One group tries to help the company identify and ‘avoid’ risk, the other tries to identify and ‘manage’ risk. For sure, actuarial and care management teams would have a lot to learn from one another, but the first order of business would probably be to figure out how and whether the gulf between their two sets of methods and missions can be bridged.”

Jonathan Weiner DrPH
Professor, Health Policy and Management; Director, PhD Program in Health Services Research and Policy; Deputy Director, Health Services Research & Development Center, Johns Hopkins University
Baltimore, MD

Subscribers’ Corner

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INDUSTRY NEWS

Connexions Beefs Up Analytics, CRM Products

Orlando’s Connexions Inc. says that two of its software-as-a-service-based technology solutions, the Market Compass analytics suite and the bConnected customer relationship management platform, “have been enhanced with additional functionality to address the growing need of health insurance plans to acquire, retain and service individual consumers.” Shrinking employer-based group coverage and the growth of private Medicare plans, the company adds, “have increased the need for health plans to meet the needs of retail customers.” Toward that end, the Market Compass “is a portfolio of analytical tools that enable health plans to measure, forecast and optimize customer acquisition and retention programs,” a statement points out. The bConnected CRM platform “harvests information as a means to manage and improve the customer experience for plan members.” Connexions is a privately held company, part of the New Mountain Partners II LP portfolio. Visit www.connexions.com.

IIR Announces 13th Annual Health Management Congress

The 13th Annual Health Management Congress, sponsored by the Institute for International Research, will be held July 22-24, 2008, at Disney’s Contemporary Resort, Lake Buena Vista, FL. For more information, visit www.healthmanagementcongress.com.

Silverlink, IncentOne Join to Better Change Patient Behavior

Burlington, MA-based Silverlink Communications Inc., a leader in healthcare communications, and IncentOne, a Lyndhurst, NJ-based provider of integrated incentive solutions, have announced a partnership to “provide incentives as an integral part of strategic healthcare communications.” Under the deal, “incentives will be used as a key component of Silverlink’s services to engage healthcare consumers in embracing healthier lifestyles and adopting more cost-efficient health behaviors,” a statement says. The new incentive capability will be available immediately through all Silverlink service offerings, with incentive options and fulfillment managed by IncentOne. “If applied appropriately in healthcare, incentives are an influential lever to motivate healthcare behaviors, arguably the most powerful force for changing the economics of healthcare,” comments Stan Nowak, CEO and co-founder at Silverlink.

The use of incentives to drive behavioral change is gaining momentum in healthcare, the statement adds. “A survey of 450 major employers last year by Hewitt Associates found that nearly half either currently offer or plan to offer incentives to employees who participate in wellness or health-related initiatives,” it says. “Other recent research from Watson Wyatt, a global consulting firm, also shows that the use of incentives increases participation [in] and completion of health and wellness programs and that the most effective programs are three times as likely to use incentives to promote participation.” Visit www.incentone.com and www.silverlink.com.

Journal Articles Examine Health IT…continued

Primarily, HIT plays a significant role in identifying the services offered to MTM program patients in MCOs. For example, the Humana MTM program offers personalized educational mailings, telephone consultations and face-to-face consultations with the community pharmacist. Within the plan, HIT is used to score and stratify eligible patients according to those available services. HIT is further employed to coordinate the collective efforts of pharmacists and physicians in the administration of care as well as to monitor medication safety measures.” McMahan’s conclusions? “As the amount of data available to managed care stakeholders increases, HIT is becoming a crucial tool for sorting and stratifying the information. MTM programs provide another example of the application of HIT in managed care, with involvement on every level of the care continuum: payers, providers and patients. Services offered by MTM programs are useful and varied, including process-improving initiatives,” such as those detailed in the Humana plan. “The end result is quality improvement in the delivery of care with a focus on improving medication adherence and safety.”

Marchibroda is CEO at the eHealth Initiative and the eHealth Initiative Foundation in Washington, DC. Contact her at janet.marchibroda@ehealthinitiative.org. Wyne is assistant professor in the Division of Endocrinology and Metabolism in the Department of Internal Medicine at the Dallas-based University of Texas Southwestern Medical School. Contact her at kathleen.wyne@utsouthwestern.edu. McMahan is director of pharmacy at Fidelis Care, Rego Park, NY. Contact him at rmcmahan@fideliscare.org. For more information, visit AMCP at www.amcp.org.
MEDai Product … continued

Translating Rational Efforts into Dollars

Next steps include taking advantage of QualChoice’s ability to use Risk Navigator Clinical to evaluate compliance with preventive measures and to track progress in those realms. Then, with the use of modules by QualChoice’s underwriting staff, the health benefits company and its customers will gain a better understanding of the savings generated from those programs.

“In addition to the desire clients have to increase compliance rates, they are also saying, ‘We’ve put a lot of measures in place to educate and coach employees. Now we want to look at outcomes,’” Furgerson explains. “Defining their return on investment is obviously the next stage for those clients.”

QualChoice’s client companies are also developing approaches to working with physicians as a result of this data, and to influencing the performance of these and other providers. They are just starting to integrate incentives for this purpose.

Keeping Pace with Customer Expectations

Today, employers are aware of the type of analyses that can be mined from their group healthcare data, and they expect such evaluation. QualChoice wanted to be responsive, but before implementing Risk Navigator Clinical was having trouble providing reports that were clear and easy to digest. Now, the insurer feels it is producing the type of intelligence and feedback that its clients are requesting to answer their questions. With the options available in this solution, QualChoice views its analyses as enhanced in clarity and format, as well as being more concise and robust — and all this makes the reporting function more efficient and effective.


Models Target Mental Health … continued

Multi-variate data-driven tools enable APS to better identify at-risk members and design appropriate interventions according to risk stratification.

Our predictive models now more efficiently and more effectively identify future at-risk members with co-morbid mental health conditions, allowing us to intervene in a more focused manner with patients who have the greatest potential to incur the highest healthcare costs.

References


Models Target Mental Health … continued


LifeWise Uses PM … continued

“An underwriter can determine whether a nurse is needed to provide a prognosis, because both are using the same app, allowing for resource-use efficiencies.”

LifeWise, she adds, “can create reports within Impact Pro and will ultimately extract data from it to package with our monthly employer group reporting.”

Indeed, she adds, like predictive modeling itself, the Impact Pro data are not yet used as fully as they could be. “Right now, Impact Pro is basically a reference tool for our underwriters,” she explains, “allowing them access to a lot of large-claim information they’d otherwise have to search through several screens for. With Impact Pro, they have the same information the nurses are looking at on large-claim status, so they’re both getting the same full story on a large claimant.”

The carrier also looks at the predictive risk factors in Impact Pro, but doesn’t use them in its calculations. “We may use it on a line-of-business basis and compare it to that group to get a feel for predictive risk in Impact Pro as well,” she says.

“It’s basically a large-claim reference tool and indicator of predictive risk, but we use it separately. It’s not linked now to any of our reporting systems or rating models, which means we’re not using it to its fullest ability. Eventually, we want to use its predictive risk factors in our calculations.”

Howe also discussed predictive modeling’s use in renewal underwriting in a session called “Understanding the Extensive Benefits and Uses of Predictive Modeling in Renewal Underwriting” at World Research Group’s “4th Annual Predictive Modeling Implementing for Underwriting,” held recently in Las Vegas.

For more information, contact sharon.howe@lifewiseor.com.
Survey: Behavioral Economics Applied to Health Care

Each month, Predictive Modeling News provides exclusive results from a survey of health plan and healthcare professionals conducted by MCOL on various issues that relate to predictive modeling. Survey participants typically have a more active interest in predictive modeling issues.

This month, we addressed behavioral economics (economic modeling that takes into account how behavior and biases influence economic decisions). We asked participants to respond to three items:

1. Please categorize your organization.
2. What do you feel is your level of understanding of the concept of behavioral economics?
3. Please rank your perception of relevance of the field of behavioral economics to the following concepts.

The concepts that respondents were asked to rate for relevance to behavioral economics, were:

- Consumer-Driven Plans (CDH)
- Consumer Health Portals (Portal)
- Health Benefit Plan Design (Design)
- Predictive Modeling (PM)
- Prescription Advertising (RxAd)
- Provider Transparency Initiatives (Trans)

Here’s what we found:

- Overall, 28.6% of respondents were “Reasonably Familiar” with behavioral economics; 47.1% “Have a Vague Understanding”; 11.4% “Have Heard of the Term, but Do Not Understand It”; and 12.9% are “Unfamiliar with Even the Term.”

- Providers were the least familiar with the term, compared to Payors and Vendors: 35.8% of Providers were either unfamiliar or had heard of, but didn’t understand, the term.

- Plan design had the greatest percentage answering “Highly Relevant” for Payors (63.2%), while CDH plans had the greatest percentage answering “Highly Relevant” for Providers (58.1%) and Vendors (62.5%).

- Payors disagreed with Providers and Vendors about the relevance to PM. Only 21.1% of Payors felt it was “Highly Relevant” to PM, compared to 45.2% of Providers and 54.2% of Vendors.

- General category of respondents (N = 77):
  - Payer 26.0%
  - Provider 41.5%
  - Vendor/Other 32.5%

Level of Understanding of Concepts:

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<thead>
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<th>Concept</th>
<th>Unfamiliar</th>
<th>Heard of/Don't Understand</th>
<th>Vague Understanding</th>
<th>Reasonably Familiar</th>
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<tr>
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<tr>
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<td>11.5%</td>
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<tr>
<td>Provider</td>
<td>35.8%</td>
<td>35.8%</td>
<td>16.9%</td>
<td>11.5%</td>
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</table>

Relevance Level of Concepts:

Avg Relevance Score: Highly =3; Somewhat =2; Little =1
Not Sure = (not included in scoring)

Percent Responding Concept was Highly Relevant:

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<tbody>
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</table>

- See subscriber web site for additional details -