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Medical Underwriting: Protective Value Study of MIB's Checking Service

by Jonathan Shreve

Abstract

Medical underwriting is the cornerstone in the evaluation of individual medical risks. However, one of the largest challenges an underwriter can face is insufficient information on health conditions provided by the applicant. Part 2 medical questionnaires can be inherently confusing to applicants; consequently, relevant medical information may go unmentioned. Some applicants may have poor recall or think that a condition is not worth mentioning since it is being medically treated. Worse yet, some may intentionally omit information in an attempt to receive a more favorable rating or increase their insurability. Ordering traditional underwriting requirements such as APSs can slow time service and add cost; rescission strategies based on fraudulent misstatements can pose considerable public relations challenges. Increasingly, health underwriters are utilizing an industrywide database of pooled medical information from prior insurance applications to help them verify applicant statements and uncover missing health information relevant to accurate risk selection.

MIB engaged Milliman to study the protective value of this service, comparing the cost of the service to the savings from either charging additional future premiums or avoiding unexpected claim costs. Milliman made every effort to develop the protective value estimates using objective and realistic methods. Historic prescription drug utilization provided by services such as IntelliScript (Milliman) and MedPoint (Ingenix) perform a similar function although in a different way. This article is intended to inform readers on the MIB Checking Service (checking service) as well as lay out a framework that can be used to quantify the protective value of other underwriting tools.

Milliman performed an analysis of 894 uses of the checking service on individual medical health insurance applications to gain a better understanding of its protective value. The results showed the carrier used for this analysis improved its loss ratio by approximately six percentage points as a result of having access to medical information from prior insurers. Additionally, we found the protective value accrued to the carrier in their health underwriting process was between $43 and $51 for each dollar it spent on MIB services including the internal costs associated with using the service.

The changes in loss ratio and the protective value may vary depending upon the additional sources of information available to a company for underwriting decisions, the underwriting actions and the efforts taken by a company to further develop information that it received from the service.

Data Gathering Approach

Milliman based the protective value analysis on 894 uses of the Checking Service by USHEALTH Group, Inc. The loss ratio analysis calculated projections of premiums and claims both with and without use of the checking service; the improvement represented by the difference.

We reviewed the statistical method used to select cases. Each case was reviewed to determine whether information from the checking service was returned, whether the information was useful and/or not otherwise available to the company, and the expected value of this information to the insurer. We then estimated the present value of savings the company realized as a result of its underwriting actions. Data and information for the analysis was supplied by MIB. This information included data on the number of cases where the checking service information was and was not found and the underwriting results for the cases where information was found. Policy data such as premiums, age, sex and other census data was sourced from the carrier. An underwriting consultant provided descriptions of the conditions uncovered by the checking service, the estimated usefulness of the results and the indirect costs associated with submitting a case to the checking service. The carrier provided information on profitability data for the product—expected loss ratios, lapse rates, commissions and other expense data as

well as the marginal underwriting costs associated with acting on information found by the checking service.

Study Sample

Selected cases for this investigation were from applications underwritten by the carrier during the period October 2004 to March 2005. This study was based on 894 uses of the MIB service by USHEALTH. Each use was reviewed to determine whether (a) information from MIB was returned, (b) whether the information was useful and/or not otherwise available to the company, and (c) the expected value of this information. MIB randomly sampled and accumulated 894 cases (stratified to match USHEALTH's age distribution) in order to find those 296 cases for use in this study. These 296 cases represent cases where MIB information was potentially available and useful. Of these 296 cases, 31 were eliminated because the applicant and the person for whom MIB returned the information did not match. Of the 265 remaining cases, 189 cases were eliminated because, in the underwriter's judgment, MIB provided no new information. The underwriting consultant concluded that there was full or partially new information provided in 76 cases. In these 76 cases, the carrier applied five possible underwriting decisions:

- 8 cases were issued as applied for;
- 51 cases were declined;
- 9 cases were issued with an exclusion rider;
- 5 cases were charged an additional premium; and
- 3 cases were filed incomplete, indicating clarifying medical information requested from the proposed insured was never returned and a policy was never issued.

Therefore, 68 cases (all except the eight that were issued as applied for) were considered to have received "useful" information from the checking service, which appeared to have changed the action taken by the insurer. Cases that were offered with an exclusion rider or a rated-up premium and then not taken were treated as declines. In 56 of these cases, the underwriting consultant concluded that the MIB information was entirely new information, and the case would have been issued as standard had that information not been available. In 12 cases, the underwriting consultant felt that the information was only partially new, and only half of the savings (the "exclusivity ratio") were considered in the study. If there was a question of exclusivity, the consultant indicated that she erred on the side of less exclusivity assigned.

Underwriting Analysis

With current underwriting information about height, weight, age, gender, tobacco use, medical tests, and medical conditions, the *Milliman Individual Medical Underwriting Guidelines* were used to estimate annual costs over the term of the analysis. The expected savings was calculated by using the *Guidelines* to retrospectively medically underwrite all of these 68 applicants and determine potential or actual claim costs.

Declined Applicants

Fifty-one applicants were declined coverage, after the insurer verified additional information from the checking service. For each of these 51 applicants, Milliman calculated the savings to the company as the present value of the additional excess costs above the expected premiums received for the person over a seven-year savings horizon. After seven years, our model showed very little present value savings because of lapses and discounting. The impact on the loss ratio calculations is to remove both the standard premium and the claim costs associated with these applicants.

Rated Up Applicants

For five applicants, the insurer decided to increase the premium charged to the applicant because of information verified from the checking service. For these cases, the value to the insurer of the additional information from the checking service was the present value of the amount of excess premium they received, net of commissions and premium taxes. Commissions and premium taxes were excluded, because they have no impact on whether MIB is used or not. The impact on the loss ratio calculations is to add the additional premium collected.

Rider Applied to Applicant

For nine applicants, the insurer decided to apply exclusionary riders to applicants after it learned of pre-existing conditions from the checking service and separately confirmed these conditions. These riders exclude a portion of coverage for these applicants. We used analysis from the development of the Guidelines, which calculates the expected value associated with various riders, to estimate the portion of costs that were now excluded, which they would have previously covered. The impact

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on the loss ratio calculation is to remove the excess claims covered by the rider.

Development of Cost Assumptions

The cost of the fee for providing the checking service was $2.42 per policy. The $2.42 is the actual cost per policy for the observed company. MIB fees are based on a mixture of fixed and variable costs. For a smaller company, the costs would be higher than stated. We would characterize USHEALTH as a medium-size client company for MIB. For policies that generated a return of information from MIB that was found to be useful and exclusive to any degree, we assumed (based on discussions with the company's chief underwriter) a $50 per policy cost for additional underwriting activities undertaken due to this information. For policies that generated a return of information from MIB that was not found to be useful, we similarly assumed a $10 per policy cost for the time taken to review the results.

Development of Loss Ratio Improvement and Protective Value

The improvement to the loss ratio (the ratio of expected claims to premium) can be measured by comparing the loss ratios with and without receiving additional information from the checking service. For simplicity, we used a 60 percent expected loss ratio when there was no assumed usage of the checking service, and did not include expenses, reserves, investment income, taxes or cost of capital. The most obvious cost associated with the screening service is the fee charged by the service. Other indirect costs occur when information is returned from the screening test, such as additional time spent processing the application, gathering further laboratory tests and obtaining APSs.

We assumed the same durational pattern as present in the Milliman *Medical Underwriting Guidelines*, which outlines the progressions of costs from time of diagnosis. Because acute medical costs often decrease in cost over time, and from the impact of discounting, 68 percent of cost savings were in the first three years (using a 12 percent discount rate).

The loss ratio calculation, without the checking service information is:

$$\text{Loss Ratio} = \frac{\text{Present Value (Claims)}}{\text{Present Value (Premium)}}$$

The loss ratio calculation, after the impact of the checking service information is:

$$\text{Loss Ratio} = \frac{\begin{array}{l}\text{Present Value (Claims) -}\\ \text{Present Value (Declined Claims)}\\ \text{- Present Value (Ridered Claims)}\end{array}}{\begin{array}{l}\text{Present Value (Premium) +}\\ \text{Present Value (Rated Up)}\\ \text{- Present Value (Declined}\\ \text{Premium)}\end{array}}$$

There are a number of assumptions required in order to calculate the present value of the future expected savings and changes in loss ratios. These assumptions include excess morbidity levels associated with the findings of the test, policy termination rates, medical trend rates, exclusivity ratios and the discount rates to use in the present value calculation. The policy termination rate assumptions were based on USHEALTH's overall lapse rates; however, it was assumed that substandard policies would have half that normal lapse rate, due to adverse selection. For policies that generated a return of information that was found to be useful and exclusive to any degree, a $50 per policy cost was assumed for additional underwriting activities undertaken due to this information. For policies that generated a return of information from the checking service that was found not to be useful or exclusive to any degree, a $10 per policy cost for the time taken to review the results are assumed.

Findings

Our calculations show that the checking service projects a reduction in the overall loss ratio by 6 percent at a 15 percent discount rate or 6.3 percent at a 6 percent discount rate. Other companies or other samples from this company would produce differing results. The projected loss ratios, with and without the checking service, are shown in Table 1 on page 15.

Jonathan L. Shreve, FSA, MAAA, is a consulting actuary and equity principal at the Denver Health practice of Milliman. He can be reached at 303-299-9400 or at *jon.shreve@milliman.com.*

The results of the protective value calculation for two discount rates are shown in Table 1 below. There is no one correct discount rate. The optimal discount rate would be one that is appropriate based on the desired hurdle rate, cost of capital and views about the potential variance of results. We believe the range of 6 percent to 15 percent for discount rates is appropriate for these results.

As shown in Table 2 in the right column, the per-policy protective value ranges from $367 at a 15 percent discount rate to $438 at a 6 percent discount rate. The savings/cost ratio ranges from $43 of savings for every $1 of cost at a 15 percent discount rate to $51 of savings for every $1 of cost at a 6 percent discount rate. As previously indicated, results will be expected to vary from company to company and even with different sample data for the same company.

While this average savings/cost ratio seems very high, it is also volatile because there were extremely large savings generated from a few policies that increases the overall average savings per policy. The level of savings will vary significantly based on the differences such as underwriting philosophy, level of rigor in initial underwriting application, the frequency of obtaining APSs and additional phone interviews.

Before using the checking service or enhancing your underwriting methods in any way, it is important to consider HIPAA compliance issues. As well, it is important to understand the impact that tightening your underwriting will have on your distribution channels and overall volume of business. Passing loss ratio savings onto your policyholders through reduced rates can potentially offset at least a portion of the negative impact tighter underwriting may have.

Table 1
Summary of Projected Loss Ratios

Projected Loss Ratio - without usage of Checking Service	Discount Rate	
	6.00%	15.00%
PV of Claims	$4,804,591	$3,885,976
PV of Premium	8,007,321	6,476,367
Projected Loss Ratio (without Checking Service)	**60.0%**	**60.0%**

Projected Loss Ratio - with usage of Checking Service	Discount Rate	
	6.00%	15.00%
PV of Claims	$4,804,591	$3,885,976
- PV of Declined Claims	(882,410)	(681,513)
- PV of Ridered Claims	(13,121)	(10,063)
PV of Net Claims	3,909,061	3,194,400
PV of Premium	8,007,321	6,476,367
+ PV of Rated Up Net Premium	30,570	23,467
- PV of Declined Premium	(754,851)	(579,451)
PV of Net Premium	7,283,040	5,920,383
Projected Loss Ratio (with Checking Service)	**53.7%**	**54.0%**

Table 2
Summary of Protective Value Results

	Present Value at 6.00%	Present Value at 15.00%
Savings	$399,656	$335,894
Costs	7,843	7,843
Protective Value	391,813	328,051
Policies Reviewed	894	894
Protective Value per Policy Reviewed	$438	$367
Savings/Cost Ratio	51.0	42.8