

**TESTIMONY OF MARK E. SHAW, FSA, MAAA, CERA, FLMI
UNITED HEALTH ACTUARIAL SERVICES, INC.**

**DISTRICT OF COLUMBIA DEPARTMENT OF INSURANCE, SECURITIES
AND BANKING
THE HONORABLE CHESTER A. MCPHERSON, INTERIM COMMISSIONER**

**Hilton Garden Inn Astor Conference Room
June 25, 2014**

**Surplus Review and Determination
for Group Hospitalization and Medical Services, Inc.**

Introduction

Good Morning. I would like to begin by introducing myself and giving a little bit of background on my credentials and experience. I am Mark Shaw, Senior Consulting Actuary for United Health Actuarial Services, Inc. I am a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, a Chartered Enterprise Risk Analyst of the Society of Actuaries and a Fellow of the Life Management Association.

From an experience standpoint, I am in my 35th year as a practicing actuary. I have been a Senior Officer of three different Fortune 500 insurers as either the Chief Actuary or Chief Risk Officer. I have served as the appointed actuary for various insurance companies over the last 25 years. I have been a consulting actuary for the last 6 years and in that role, I am currently the appointed actuary for two different insurers. I have worked on various relevant industry committees over the years including leading the Society of Actuaries Enterprise Risk Management sub-group for three years. For the last few years I have actively participated in the American Academy of Actuaries Health Solvency Work Group. I authored a paper published in October 2012 by the Health Section of the Society of Actuaries on whether underwriting cycles currently exist in health insurance. My firm and I are employed by CMS as actuarial experts to review all medical rate filings that are presumptively unreasonable for states that lack actuarial expertise. I am regularly employed as an expert witness and have testified as such in Federal Court, State Court, Administrative Law hearings and an arbitration proceeding between two insurers.

I have been engaged in the examination of GHMSI's surplus since 2009. I produced a report for the current proceeding which was filed on June 10th. As that report ran almost 60 pages, I will of necessity try and summarize some of the key points of that report in today's testimony.

Highlights of the June 10, 2014 Shaw Report

There are a number of key points that I make in my June 10th report. I will discuss many of them in some detail, but I'd like to start by summarizing a few of the most important ones.

- 1) The Milliman model as used by Rector has two phases:
 - a. First, there is a stochastic modeling process that takes assumptions of probability distributions and impacts of various identified risks and, by selecting numbers randomly from those distributions over many iterations, and creates an expected gain and loss distribution. These gains and losses are then rank-ordered to identify an expected gain or loss outcome associated with a given confidence level. I have re-created this stochastic model and will testify about the inappropriateness of the probability distributions and impacts that were used in that model.
 - b. Secondly, there is a Pro Forma model that uses specific values (as opposed to a probability distribution of values as used in the stochastic model) for every assumption that affects the projected income statement, including the gain or loss outcome from the stochastic model, and on the basis of those specific assumptions, projects the surplus and calculates the required RBC at the end of the projection period. As I

understand it, the Pro Forma model calculates the surplus needed at the beginning of the projection period, such that the ratio of surplus to required RBC at the end of the projection period remains above 200%.

- 2) A model is only as good as the assumptions that go into it. Flawed assumptions produce flawed results – and that’s what we are dealing with here. The assumptions that go into both the stochastic model and the pro forma model need to be well grounded based on facts. Neither Milliman nor Rector cite the specific sources for their stochastic model assumptions. Many of their key assumptions are inconsistent with factual experience and cause their loss outcomes and ultimately the calculation of needed surplus to be grossly overstated. For each of the flawed assumptions in the stochastic model I derive a more appropriate assumption based on factual experience.
- 3) Validation is a critical step in determining whether key assumptions are appropriate and whether a model generates reliable outcomes. Rector and Milliman have provided very little validation of either assumptions or results. Rector is unable to fully explain, much less validate, the changes in its surplus recommendation from 2009 to 2013. I will explain why Rector’s key assumptions and the outcomes from Milliman’s model using those assumptions are unreasonable on their face. I will also explain why the FTI attempt at validation is ineffective.
- 4) I have compared GHMSI's claims adjustment and administrative expenses with those of its Blues peers. This comparison suggests that GHMSI’s administrative expenses are inefficiently high. Because expenses make a significant difference in the profit margins and thus the risk of loss as shown in the results of Pro Forma modeling, inefficiently high costs increase the calculated surplus need. Simply by reducing its expenses to the average of its peers, GHMSI could substantially reduce its surplus need.
- 5) I examined the premium growth assumptions assumed in the Rector report, and demonstrated how these assumptions fail to validate with recent company experience and overstate the likely impact of Affordable Care Act (“ACA”) provisions that became effective in 2014. I derived a premium growth probability distribution that validates to recent experience and still provides a possibility of higher growth rates due to ACA.
- 6) GHMSI has raised concerns about the potential negative impacts of the ACA. Rector accounts for negative ACA impacts in their model, but has chosen to ignore, however, the potential positive impacts of the ACA. Notably they ignore the impact of the three R’s (reinsurance, risk corridors, and risk adjustment) which together could significantly mitigate increased risks to underwriting margins due to various ACA provisions.
- 7) Rector claims to have received only four outcomes from Milliman running their assumptions through the stochastic model and then four results from running the stochastic model results through the Pro Forma model. When questioned, Milliman denied having saved any of the

results for the individual risk factors that yielded the aggregate stochastic model results. Moreover, Milliman claimed not to have the 500,000 rank-ordered results generated by their running their stochastic model. Using assumptions provided by Milliman and Rector and their description of the methodology, we were able to re-create the stochastic model and validate it against their four disclosed results.

Key Stochastic Model Assumptions

Rating adequacy and fluctuation factor - Rector acknowledges that "modeling choices relating to the rating adequacy and fluctuation factor ("RAAF") are crucial in the methodology used to select a loss income." Rector cites various reasons for changing the RAAF factor, but does not quantify the impact of any of those reasons and upon questioning, Rector cannot say how they modified the RAAF factor assumption for any of the various reasons it gives.

Ironically¹, Milliman does not disclose the sources or methodology it used for establishing its RAAF factor that Rector used as its starting point. Milliman's RAAF factors envision remarkably large negative results and a probability of negative results that is twice as high as actual experience. These assumptions account for a significant portion of the surplus that Milliman calculates is needed.

In contrast, we establish a revised assumption for the RAAF factor driven by historical data. Using 12-15 years of historical underwriting gain and loss experience for GHMSI and ten peers, we derive a loss distribution that is substantially different from that used by Rector or Milliman. Compared with Milliman's RAAF factor, our validated-to-experience assumption reflects a substantially reduced chance of loss, and the losses are far smaller.

We ran our historically factual probability distribution for the RAAF factor through our re-created stochastic model and estimate that **Rector's calculation of needed surplus even at the 98% confidence level it claims is appropriate would be 192 percentage points lower simply by using a valid RAAF assumption, all other assumptions being unchanged.**

Equity Portfolio Asset Value - Milliman and Rector have not disclosed how their EPAV factors were derived, whether or how they were validated, how the probability distributions were calculated, or the reasoning for the increase from their previous reports. Astoundingly, Milliman's assumption for the EPAV factor showed an expectation of loss for a 3-year period 53% of the time and an overall expectation of a loss in any given 3-year period in the 4-5% range.

We derived an EPAV probability distribution based on historical Dow Jones Industrial Average experience for the 39-year period from 1975 through 2013. Actual experience indicates that a historical

¹ See page 6 of the April 14, 2014 pre-filed testimony of Phyllis Doran. In a comment on the Unidentified Development and Growth assumption that Rector makes, she complains that "R&A does not cite its data source or methodology for compiling this industry average statistic...." Milliman's report does not cite its data source or methodology for the Unidentified Development and Growth assumption or any other risk factor assumption in its report.

loss over any 3-year period occurs less than 20% of the time (not 53%) and that there should be an overall expectation of a gain of 29% over a 3-year period (not a loss).

We show that the EPAV impact should have declined since the 2009 Rector and 2008 Milliman reports due to GHMSI's affected assets declining as a percentage of non-FEP premiums. Using our more appropriate and validated EPAV assumption and our re-created stochastic model, we estimate that **Rector's calculation of needed surplus at the 98% confidence level would be 215 percentage points lower simply by using a valid EPAV assumption, all other assumptions being unchanged.**

Other Risk Factors

Some of the remaining Risk Factors identified by Milliman also appear to have inappropriate values, or should already be accounted for in other factors, or they are not really risks to GHMSI at all. We conclude that six of these factors are ultimately unneeded or they are accounted for in our development of the RAAF factor. **Eliminating these unneeded or redundant risk factors in the Stochastic Model reduces the amount of needed surplus by an estimated 75 percentage points, all other assumptions being unchanged.**

Model Validation

Validation is a critical step in determining whether key assumptions are appropriate and whether a model generates reliable outcomes. Rector recognizes this to be the case and included the following statement in its 2009 report:

"[T]he Milliman methodology does not validate GHMSI historical results over the last 13 years. Based on a statistical analysis of the Milliman loss curve, it seems highly improbable that GHMSI's actual results could have been generated using the Milliman approach, a critical test for the validity of any modeling approach."²

Rector's most recent report³ expands on this theme:

"[W]e performed various tests to validate the general accuracy and completeness of the Milliman model and assumptions, as revised to take into account our findings and conclusions. The validation tests included tests both as to specific assumptions and as to the model as a whole."

However, when Rector was asked to describe their validation process, they were able to produce only a February 7, 2014 memo from FTI consulting. The FTI memo does not describe the validation of **any** assumptions. Instead, it attempts to validate the overall model results by "comparing the median one-year change estimate based upon assumptions from the Milliman model" to actual one-year changes in GHMSI surplus from 2001 to 2012. There are a number of issues with this supposed validation approach; among them are the following:

² Page 5 of Rector & Assocs., Inc., *Report to the D.C. Department of Insurance, Securities and Banking: Group Hospitalization and Medical Services, Inc.* (July 21 2010).

³ See page 34 of Rector & Associates, Inc., *Report to the D.C. Department of Insurance, Securities and Banking*, (December 9, 2013).

- 1) The driver of surplus needs in the Milliman model is extreme results associated with high confidence intervals, not median results, which occur at the 50th percentile.
- 2) FTI states that it validated Pro Forma results to one standard deviation below the historical median surplus change. The median is at the 50th percentile of results; one standard deviation below the median is at the 16th percentile of results. If the Milliman model calculates a 98% confidence based on reconciliation at one standard deviation below the median, then statistically Rector is really calculating a 99.8% confidence level of protection.

The whole purpose of any model used to calculate needed surplus is not to provide protection against the median result, but to provide protection against outlier results. Because it is outlier results that may endanger the surplus of the company, an appropriate dispersion of results is the most crucial requisite for validation. The median says nothing about the dispersion. Therefore, knowing that the medians of two distributions of results are identical tells nothing about the frequency or magnitude of outlier results. The point can be illustrated by two examples, showing numerical series with the same medians, but very different dispersions. Both examples have a median of 2. In the first example, the distribution is -1%, 1%, 2%, 3%, and 5%. In the second example, the distribution is -40%, -30%, 2%, 3%, and 6%. The dispersion with many extreme outliers would require significantly more surplus than a dispersion with relatively few and modest outlier results.

Here are some elements associated with Rector's weak attempt at validation with which we agree:

- 1) Rector believes that validation against the last 12-15 years of GHMSI experience is appropriate. And if that is the appropriate period to validate, then that is also the appropriate period to pull data from, for establishing model assumptions.
- 2) Rector believes that a growth assumption within one standard deviation of the actual historical results is acceptable. As I will testify later, we believe this is the standard that should be applied to the premium growth assumption.

The final element of validation I will discuss is the reconciliation of the 406% increase⁴ in required surplus to avoid 200% RBC with 98% confidence, between the 2009 and 2013 Rector reports. When asked to reconcile the two reports, Rector's first attempt left unexplained nearly the entire change. Their final attempt on May 13⁵ assigned 190 percentage points to the elimination of all management intervention, 150 percentage points to the RAAF factor (into which they claim to have incorporated some management intervention), and 70 percentage points to an increase in Equity Portfolio Risks. Rector further stated their belief that 100 to 150 basis points of these changes were associated with

⁴ The 2009 report concluded that 600% RBC was needed to avoid 200% RBC with 99% confidence. Adjusting that result to the 98% confidence level would lower 600% to 552%. The 2013 report concluded that 958% RBC was needed to avoid 200% RBC with 98% confidence. Thus, the increase to reconcile between the 2009 and 2013 Rector reports is 958% - 552% = 406%.

⁵ See pages 13 and 14 from the May 13, 2014 letter from Acting Commissioner Chester A. McPherson to DC Appleseed.

incorporating ACA impact. But since the Milliman stochastic model did not retain any details of the 12 risk factors associated with any confidence level, and Rector claims that it received only four results from the Pro Forma model, we are at a complete loss to understand how Rector made any of these estimates.

Expenses and GHMSI's Underwriting Margins

We compared GHMSI's claims adjustment and administrative expenses with those of its Blues peers. This comparison suggests that GHMSI's administrative expenses are inefficiently high. Because expenses make a significant difference in the profit margins and thus the results of Pro Forma modeling, inefficiently high costs increase the calculated surplus need. I demonstrate that GHMSI's expenses as a percent of premium have been, on average, 3.7 percentage points higher than the average among its peers each year for the past 5 years. The amount of needed surplus (as calculated by 3-year Pro Forma modeling on a pre-tax basis) would be reduced by an estimated \$153 million, or approximately \$51 million per year of the projection period, if GHMSI's expenses equaled the average of its peer Blues plans.

On page 6 of GHMSI's pre-hearing brief they state, "GHMSI's underwriting gains (the difference between premiums and total member claims and administrative expense) over the past five years have been historically low even including gains attributable to CareFirst BlueChoice: 0.31% in 2009, 3.85% in 2010, 0.77% in 2011, -1.16% in 2012, and -0.21% in 2013." While this is true and partially the result of GHMSI choosing to moderate rates beginning in 2011, this totally ignores the fact that over the exact same 5 years GHMSI has been so administratively inefficient.

Moreover, GHMSI suggests at page 6 of its brief that it is at a competitive disadvantage because other insurers have "large scale of operations [that] also enables them to spread overhead costs more effectively." Yet, the average non-FEP revenue of other Blues similar to GHMSI in 2013 was \$2.05 billion and GHMSI's non-FEP revenue (including their share of CF Blue Choice) was \$1.93 billion. And the average FEP revenue of the same peer companies in 2013 was \$0.34 billion and GHMSI's FEP revenue was \$1.81 billion, so in aggregate the average peer Blues plan spread overhead expenses over far less revenue. Also, similar to GHMSI, these same peers would have incurred all the implementation expenses of the ACA during the 5-year period in question.

Thus, if GHMSI had only experienced expense levels on par with the average peer Blues plan, their average underwriting margin over the last 5 years would not have been an "historically low" 0.66%, but it would have been a very healthy 4.35%.

Premium Growth

Outside the stochastic modeling process, the assumption with the greatest impact on surplus is the premium growth assumption that Rector uses in its Pro Forma modeling. Both Milliman and Rector assume premium growth rates that fail to validate with recent company experience and overstate the likely impact of ACA provisions that became effective in 2014. By creating a premium growth probability distribution that validates to recent experience and still provides a possibility of higher growth rates

(one standard deviation higher than historical experience) due to the ACA, we developed a revised premium growth probability distribution that is more appropriate and reduces the amount of needed surplus by an estimated 206 percentage points, all other assumptions being unchanged.

A Kaiser Family Foundation ("KFF") study released this week finds that 57 percent of people enrolling in exchanges enrolled from uninsured status. While this is higher than the RAND study (finding that 1/3 would have been uninsured) I cite in my report and use in part to estimate GHMSI's 2014-2016 exchange enrollment, the higher KFF statistic has these issues:

- 1) The estimated 57% reflects a national average.
- 2) The national uninsured rate was approximately 18 percent of the population under age 65 in 2012-2013, versus 13 percent in the National Capital Area. Adjusting for this difference alone would bring the KFF rate of uninsured enrollment in the Exchanges in MD/VA/DC down to about 41% ($0.13/0.18 * 0.57$)
- 3) About half of the states in a national estimate of uninsured enrollment in exchanges did not expand Medicaid. Maryland and DC, which constitute 88 percent of GHMSI's market area, did expand Medicaid, greatly reducing the number of uninsured who are eligible for subsidies in the exchanges, and therefore the likely proportion of exchange enrollees who had been uninsured.

Thus, I think the 30% previously uninsured estimate in my report is still an appropriate, reasonable estimate, and I stand by my conclusion that Rector's inflated premium growth assumption causes it to calculate a surplus need at least 200 percentage points above the level that more realistic assumptions would indicate.

I would like to turn now to GHMSI's pre-hearing brief and comment on a couple of items:

GHMSI's Source of Surplus

On page 6 of its pre-hearing brief GHMSI states, "As a non-profit health plan, GHMSI can build and hold surplus from only one source: the difference between what it collects in premiums and what it spends to conduct its business." It amends that statement slightly on page 7 of its prehearing brief where it acknowledges, "And yet GHMSI's small average margin, along with typically modest investment income from GHMSI's conservative investment of surplus funds, is the Company's only source of capital."

The reality is that the vast majority of GHMSI's surplus has not arisen from its margin between what it collects in premiums and what it spends to conduct its business, but from their "typically modest" investment income. The following chart is a compilation of data from the company's statutory annual statements for the 15-year period from 1999 to 2013:

	from 5 Year Historical Data				
Year	Year End Surplus	Change in Surplus	Taxes & Non-Oper Chg in Surplus	U/W Gain	Net Inv Incom
1998	158,715,529				
1999	186,845,537	28,130,008	(8,250,303)	16,392,086	19,988,225
2000	248,002,255	61,156,718	3,153,258	33,133,713	24,869,747
2001	273,984,510	25,982,255	(30,779,943)	27,900,833	28,861,365
2002	290,773,025	16,788,515	(30,382,290)	32,327,567	14,843,238
2003	392,008,160	101,235,135	21,228,655	52,926,355	27,080,125
2004	501,014,465	109,006,305	(4,264,481)	78,545,969	34,724,817
2005	560,967,145	59,952,680	(6,539,266)	35,364,848	31,127,098
2006	663,006,406	102,039,261	18,837,360	49,036,805	34,165,096
2007	753,558,921	90,552,515	7,523,874	40,903,814	42,124,827
2008	686,779,718	(66,779,203)	(100,613,938)	9,515,965	24,318,770
2009	761,458,437	74,678,719	31,358,353	(1,132,531)	44,452,897
2010	969,499,374	208,040,937	105,594,134	60,798,240	41,648,563
2011	963,581,310	(5,918,064)	(58,647,284)	14,704,541	38,024,679
2012	941,070,954	(22,510,356)	(12,735,230)	(47,874,136)	38,099,010
2013	934,751,475	(6,319,479)	(4,422,112)	(35,866,029)	33,968,662
	1999-2013	776,035,946	(68,939,213)	366,678,040	478,297,119

In fact, GHMSI's net investment income over the last 15 years equaled approximately 62% of the \$776 million increase in surplus during that time, and net investment income was 30% higher than underwriting gains. GHMSI had positive investment income in each of the three years in which it had underwriting loss

GHMSI's Growing Membership

On page 17 of their pre-hearing brief, GHMSI states that individual market enrollment is up 8% for GHMSI and 256% for CF Blue Choice. These numbers conveniently ignore what is happening to GHMSI enrollment in the group markets. Using their respective 1st quarter 2014 statutory statements GHMSI and CF Blue Choice have disclosed the following changes in their comprehensive coverage membership from 3/31/13 to 3/31/14:

Annual Change in GHMSI Membership				
	GHMSI	CF BlueChoice	GHMSI + 50%	
	Comprehensive	Comprehensive	Comprehensive	Annual
	Member	Member	Member	Change in
Year	Months	Months	Months	Members
1Q2013	945,010	1,505,314	1,977,819	
1Q2014	898,586	1,639,870	2,089,163	5.6%
Change from 1Q2013 to 1Q2014	-4.9%	8.9%	5.6%	

Thus, while CF Blue Choice has had some overall growth, GHMSI *lost* membership compared to the same quarter a year earlier. The magnitude of this reduction in quarterly membership is similar to reductions that have occurred in four of the last five calendar years for GHMSI. Also, given that Exchange enrollment was required to cease by the end of March, it is likely that the end of 1st quarter Exchange membership will likely be stagnant or decreasing until enrollment begins for 2015.

Impact of MIEAA

How should MIEAA impact the surplus modeling process? First, consistent with good actuarial practice and the purposes (financial soundness, efficiency, maximum feasible) for which the work is being done, the highest level of rigor and realism should be incorporated in the selection of probabilities and values for the assumptions in the stochastic model. The assumptions should be best estimates without any margins in the chosen assumptions. Second, the selection of the confidence level should be made consistent with the level of confidence that is both protective of financial soundness and satisfies the maximum feasible requirement of MIEAA. The choice of confidence level is not simply a mathematical exercise, but must reflect the Commissioner’s judgment in balancing the demands of additional financial soundness against the health needs of the community. Accordingly, I have calculated the impact of the needed assumption corrections at 98%, 95% and 90% confidence levels to facilitate the Commissioner’s balancing decision.

Conclusion

In my pre-hearing report, I provided a table (repeated below) to the Commissioner which shows how the use of more reasonable and validated assumptions would change needed surplus. The table indicates that, by adjusting RAAF, EPAV, and other risk factor assumptions, and also revising the premium growth assumptions to a level that can be validated against GHMSI’s experience, GHMSI’s permissible surplus level would be an estimated 399% RBC-ACL at a 98% confidence level—much less than Rector recommends. This estimate does not even account for GHMSI’s expense inefficiency and the reductions in needed surplus that could be achieved if GHMSI simply operated at the average efficiency level of peer companies. Nor does this estimate account for any reduction that would be needed if the confidence level were reduced from 98%.

Permissible Surplus (Using Given Confidence Levels of Avoiding 200% RBC)										
Rector		Stochastic Model Loss @ Confidence Level			No Chg in Prem Growth			Revised Prem Growth		
					Est. Pro Forma vs. 200%			Est. Pro Forma vs. 200%		
Model	Assumptions Changed	98%	95%	90%	98%	95%	90%	98%	95%	90%
UHAS	None	-23.2%	-17.6%	-12.5%	958%	795%	647%	752%	625%	509%
UHAS	Corrected RAAF	-16.6%	-13.1%	-9.8%	766%	665%	569%	602%	522%	447%
UHAS	Corrected EPAV	-15.8%	-10.4%	-4.9%	743%	587%	427%	584%	461%	335%
UHAS	Corrected Other	-20.6%	-14.6%	-9.0%	883%	708%	546%	693%	556%	429%
UHAS	Corrected RAAF & EPAV	-10.4%	-6.2%	-2.3%	587%	465%	352%	461%	365%	276%
UHAS	Corrected RAAF,EPAV & Other	-7.7%	-3.5%	0.8%	508%	386%	262%	399%	303%	205%

Given these results from using the Milliman model with validated assumptions, it is my recommendation that the Commissioner make all the stochastic model assumption changes indicated and then consider the appropriate premium growth expectation. Accepting my derived premium growth assumption would yield a required surplus of 399% at the 98% confidence level; even using the Rector premium growth assumption would yield a required surplus of 508% at the same confidence level. Each of these results not only reflect realistic and validated assumptions, but also provide ample protection. Specifically, it offers at least 98% confidence with respect to avoiding 200% RBC-ACL and can offer 75% confidence of avoiding 375% RBC-AC (which based on the losses at the 98% confidence level would require a target surplus of 441%), even accepting GHMSI's extraordinarily high administrative cost rate relative to peer companies. It could also accommodate Rector's proposal that GHMSI should avoid 375% RBC-ACL at even higher confidence, at 85%, if the Commissioner so chooses (which based on the losses at the 98% confidence level would require a surplus target of 476%).