



2019 HEALTH
MEETING

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Session 45, Operational Risk Management for Health Insurance

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2019 Health Meeting

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Bios

Ed Mailander is a Senior Consulting Actuary in the Denver office of Wakely Consulting Group. He joined the firm in 2016 and has over 35 years of experience as a health actuary. Prior to joining Wakely, he was Chief Actuary for over nine years at two different East Coast health insurers. Ed has managed actuarial teams for Commercial, Medicare Advantage and Medicaid lines. He oversaw the pricing of health exchange business. He has managed informatics and underwriting teams. He managed a 250 person systems department during a health administration system conversion. He has provided actuarial support to provider contracting departments and to a 450 physician staff model medical group. He has participated in several merger and acquisition projects being responsible for the actuarial and forecasting aspects of the projects.

Bios

Marc Lambright is a Senior Principal in the Philadelphia, PA office of Oliver Wyman Actuarial Consulting, Inc. He has over 25 years of actuarial experience working in various roles as a Company actuary, consulting actuary, and auditing actuary for a significant number of insurers, Blue Cross and Blue Shield plans, managed care organizations, regulators, and government agencies.

His work has included pricing, valuation, and financial modeling work for most significant individual and group Accident and Health products, including Comprehensive Medical, Stop-Loss, Long Term Care, Long Term Disability, and other supplemental health products.

Marc is the Chairperson of the American Academy of Actuaries' Health Financial Reporting and Solvency Committee, and a frequent speaker at Society of Actuary, Valuation Actuarial Symposium, and The Actuarial Club of Philadelphia meetings.

Agenda

- Introduction and Settling of Crowd
- Definitions- What is Operational Risk?
- Examples of Operational Risk
- Causes and Solutions
- ERM & ORSA Framework consideration of Operational Risks
- Quantitative Modeling of Operational Risks
- Role of the Actuary
- Discussion and Q&A

Operational Risk Defined?

- Operational Risk (This Session): Operational risk is the risk of impact on financial outcomes due to operational events, involving internal systems, personnel, procedures or controls, and also external events.
- Operational Risk (NAIC): Operational risk is defined as the risk of financial loss resulting from operational events, such as the inadequacy or failure of internal systems, personnel, procedures or controls, as well as external events. Operational risk includes legal risk but excludes reputational risk and risk arising from strategic decisions. Operational risk has been identified as a risk that should be explicitly addressed in the RBC formulas. The Operational Risk charge is intended to account for operational risks that are not already reflected in existing risk categories.

Source: https://www.naic.org/documents/cmte_e_op_risk_sg_180412_materials.pdf

Operational Risk Defined?

- Overview: The International Association of Insurance Supervisors (IAIS) defines "operational risk" as the risk of adverse change in the value of capital resources resulting from operational events such as inadequacy or failure of internal systems, personnel, procedures or controls, as well as external events. It refers to risk that result from shortfalls or inadequacies in the management of otherwise quantifiable risk, and from unforeseen external events that can impact an insurer. Operational risk potentially exists in all business activities; it encompasses a wide range of events and actions or inactions, such as fraud, human error, accounting errors, legal actions and system failures. Many of these problems arise during the course of conducting day-to-day business operations and are typically managed with little or no incident.

Source: https://www.naic.org/cipr_topics/topic_op_risk.htm

RBC Risk Categories

- H0 – ASSET RISK – AFFILIATES: Generally RBC amounts calculated for entities that sit below a company within a corporate structure
- H1 - ASSET RISK – OTHER: Risk of assets' default of principal and interest or fluctuation in market value
- H2 - UNDERWRITING RISK: risk of underestimating liabilities from business already written or inadequately pricing business to be written in the coming year
- H3 - CREDIT RISK: the risk of recovering receivable amounts from creditors
- H4 - BUSINESS RISK: general business risk
 - Basic Operational Risk- 3% add-on circa 2018

RBC Operational risk definition is broad, but largely quantified in other RBC categories

RBC Quantification of different types of Risks

2017 Health RBC Excluding ACA Fees	
Companies that have an RBC loaded on the database	937
Companies with action levels:	42
Percentage of total RBC's loaded	4.48%
Company Action Level - Trend Test	23
Company Action Level	24
Regulatory Action Level	10
Authorized Control Level	0
Mandatory Control Level	8
Total H0 (H0 - Asset Risk - Affiliates w/RBC)	4,332,880,131
Total H1 (H1 - Asset Risk - Other)	8,315,790,867
Total H2 (H2 - Underwriting Risk)	38,787,031,590
Total H3 (H3 - Credit Risk)	3,143,155,975
Total H4 (H4 - Business Risk)	5,739,438,653
Total RBC Before Covariance	60,318,297,216
Total Adjusted Capital	132,169,821,412
ACA Fees	9,892,443,636
Authorized Control Level RBC *	23,228,424,178
Aggregate RBC %	526%
Median RBC %	609%

RBC Approximate Attribution to H1-H4

<u>Contribution to RBC</u>	<u>RBC Risk Category</u>
4.2%	H1 - ASSET RISK – other than affiliate
90.4%	H2 - UNDERWRITING RISK
0.6%	H3 - CREDIT RISK
2.0%	H4 - BUSINESS RISK- general business risk
2.9%	Basic Operational Risk- 3% add-on circa 2018

Methodology

1. H0 Affiliate Risk ignored, it is largely based on the same H1-H4 RBC calculation and then added to total calculated RBC
2. Attribution based on square of amounts in table to left divided by sum of squares for H1-H4 divided by 1.03
3. Basic Operational Risk = 3%/103% to account for it not being in 2017 base year data

Limitation - illustrative approximation, detail not available to calculate precisely

H4 and 3% operational add-on would traditionally be thought of as operational categories, but H2 risk that drives RBC calculation clearly includes operational risks

Operational Risks- What are we actually talking about today?

RBC treatment is a bit schizophrenic

- **Definition very broad** - Operational risk is defined as the risk of financial loss resulting from operational events, such as the *inadequacy or failure of* internal systems, *personnel*, procedures or controls, as well as external events.
- **Risk charged limited** – Prior slide indicates that H4 general business risk and 3% add-on introduced in 2018 for operational risk contributes about 5% to the calculated CAL RBC
- We have latitude to define operational risk the way that we want to which is: *It refers to risk that result from shortfalls or inadequacies in the management of otherwise quantifiable risk*
- We will focus on Comprehensive Medical business

Comprehensive Medical-Operational Risk Examples Across Functional Areas

Poor Distribution resulting in revenue misses

1. Internal sales force ineffective or not properly staffed
2. Breakdown of Broker relationships
3. Online portal doesn't work properly
4. Marketing doesn't effectively promote brand
5. Uncompetitive pricing due to poorly managing multiple operational risks

Pricing - Misestimation of Medical Costs

1. Weak actuarial process
2. Poor care/disease management
3. Provider contracting ineffective, including OON overexposure
4. Proper data difficult to obtain or utilize due to poor systems

Underwriting- Inability to meet revenue targets

1. May estimate costs effectively, but do not achieve price targets
 - Aggressive Underwriting and Sales sacrifice margin for sales
 - Overly conservative Underwriting results in loss of sales

Customer Experience - diminishes product value

1. Customer service representatives poorly trained, aggravate members
2. Online tools don't work well
3. Member materials difficult to properly explain
4. Claims processed poorly - members have challenges getting \$\$.

External Risks Poorly Managed

1. Cyber Risk processes worse than peers resulting in unfortunate events

High Administrative Cost Structure

1. Need to pay more than competitors for distribution if product is hard to sell
2. Basic functions cost more for any number of reasons
 - Poor HR, recruiting means high turnover/low productivity
 - Poor systems
 - Reliance on consultants if talent cannot be hired internally

Specific Examples of Operational Risk

- Systems Conversion
- Data Quality
- High Margin Pricing

Causes and Solutions

- Fundamental Cause
 - Not Recognizing There Is a Risk
- Solutions
 - Recognition
 - Gather Information
 - Contingency Plans

Systems Conversion

- Why Things Do Not Go Well
 - Admin systems tend to have unique data structures and older ones are highly modified
 - Some of the modifications may be undocumented
 - Very complex logic
 - Provider business rules and provider contracts very complex
 - Effort underestimated
 - Risk underestimated

Systems Conversion

- What Goes Wrong when Things Go Wrong
 - No claim payments
 - Data blackout for data warehouse, IBNR, and trend analysis
 - Providers upset
 - Members upset
 - Regulators start asking questions
 - Overpayments

High Margin Pricing

- Examples
 - One LOB Subsidizing Others
 - Rebates and Spread Pricing
- Things Can Change Rapidly

Causes

- Lack of Information or Data
- Low frequency
- Lack of Measurement
- No Alternatives
- Cannot Think of Everything
- Unknown Unknowns

Solutions

- Recognition of Risk
- Measurement
- Contingency Plans
- Respectful Skepticism

Operational Risk Management-Frameworks and Quantification

- RBC recognizes Operational Risk, but is a blunt tool in quantifying in and is not a Risk Management Framework
- Frameworks like COSO and ORSA (more of an implied framework, i.e. you need to explain how risk management process properly manages risk) do a better job of addressing management of operational risks
- How to quantify Health Insurer Operational Risks for Health Insurers?

RBC vs. ERM – Frameworks and ORSA requirements

RBC Limitations

- Prescribed one size fits all calculations
- Retrospective in nature relying on metrics in prior year
- Doesn't necessarily consider all risks of an insurer

ERM frameworks (COSO) allow for an enterprise view of risk, along with process to allow for companies to be tactical about managing all risks, including Operational

ORSA is essentially Statutorily Required ERM that takes RBC regulatory capital several steps further

- Requires evidence of a robust ERM Framework that is used in the management of all of an entity's risks
- Requires insurers to assess current and prospective capital levels and solvency based on own risks rather than RBC generic risks
- Completed at the Group level and also considers risks for entities that regulators do not have jurisdiction over, (e.g. hospital system of a provider-owned insurer; affiliated management services organization that is not an insurer)

COSO ERM Framework – Risk Management Components Integrated into Management Process

1. Internal Environment
2. Objective Setting
3. Event Identification
4. Risk Assessment
5. Risk Response
6. Control Activities
7. Information and Communication
8. Monitoring

Source: <https://www.coso.org/Documents/COSO-ERM-Executive-Summary.pdf>

ORSA Requirements

The ORSA process is one element of an insurer's broader Enterprise Risk Management (ERM) framework. It links the insurer's risk identification, measurement and prioritization processes with capital management and strategic planning. The ORSA Summary is required to address:

- Section 1 - Description of the Insurer's Risk Management Framework
- Section 2 - Insurer's Assessment of Risk Exposure
- Section 3 – Group Risk Capital and Prospective Solvency Assessment

Source: *NAIC OWN RISK AND SOLVENCY ASSESSMENT (ORSA) GUIDANCE MANUAL*

ORSA Section 1– ERM Framework

Section I should provide a summary of how the framework addresses the following framework principles:

- **Risk Culture and Governance** – Governance structure that clearly defines and articulates roles, responsibilities and accountabilities; and a risk culture that supports accountability in risk-based decision making.
- **Risk Identification and Prioritization** – Risk identification and prioritization process that is key to the organization; ownership of this activity is clear; the risk management function is responsible for ensuring that the process is appropriate and functioning properly at all organizational levels.
- **Risk Appetite, Tolerances and Limits** – A formal risk appetite statement, and associated risk tolerances and limits are foundational elements of risk management for an insurer; Board understanding of the risk appetite statement ensures alignment with risk strategy.
- **Risk Management and Controls** – Managing risk is an ongoing enterprise risk management activity, operating at many levels within the organization.
- **Risk Reporting and Communication** – Provides key constituents with transparency into the risk management processes and facilitate active, informal decisions on risk taking and management.

Source: *NAIC OWN RISK AND SOLVENCY ASSESSMENT (ORSA) GUIDANCE MANUAL*

ORSA Section 2– Assessment of Risk Exposures

Report should document the quantitative and/or qualitative assessments of risk exposure in both normal and stressed environments for each material risk category identified in Section 1

- **Range of Outcomes**- consider normal and stressed environments
- **Assessment Techniques**- appropriated relative to the nature , scale, and complexity of the risks
- **Examples of types of risks**– credit, market, liquidity, underwriting, and operational
- **Use of Quantitative vs Qualitative can be considered**- qualitative assessments may be appropriate where quantitative methods are not well established
- **Quantitative Methods** – may vary (e.g. simple stress tests or stochastic Modeling), determine the likelihood of risk manifestation, along with financial impact on income, balance sheet, future cash flows and capital – including capital relative to requirements.

Source: NAIC OWN RISK AND SOLVENCY ASSESSMENT (ORSA) GUIDANCE MANUAL

ORSA Section 3– Group Risk Capital and Prospective Solvency of Assessment

Section 3 of the ORSA Summary Report should document how the company combines the qualitative elements of its risk management policy and the quantitative measures of risk exposure in determining the level of financial resources it needs to manage its current business and over a longer term business cycle, such as the next 2-5 years. The information provided in Section 3 is intended to assist regulators in forming subjective assessments of the quality of insurer's risk and capital management.

Group Risk Capital Assessment - Capital adequacy assessment can be broadly defined as the testing of aggregate available capital against the various risks which may adversely affect the enterprise.

Prospective Solvency Assessment - The company's prospective solvency assessment should demonstrate it has the financial resources necessary to execute its multi-year business plan in accordance with its stated risk appetite.

Source: NAIC OWN RISK AND SOLVENCY ASSESSMENT (ORSA) GUIDANCE MANUAL

ORSA Section 3– Group Risk Capital Assessment Considerations

Definition of Solvency – how the insurer defines solvency for the purpose of determining risk capital and liquidity requirements

Accounting or Valuation Regime – basis for the measurement of risk capital requirements and/or available capital (e.g. GAAP, Statutory, Economic or Market Consistent, IFRS, Rating Agency model)

Business Included – subset of business included in the analysis of capital

Time Horizon – time horizon over which risks were modeled and measured (One-year, multi-year, lifetime, run-off, etc.)

Risks Modeled– risks included in the measurement of risk capital including a comment about whether all relevant and material risks have been considered

ORSA Section 3– Group Risk Capital Assessment Considerations

Quantification Method– Describe the method used to quantify the risk exposure (e.g. Deterministic stress tests, stochastic modeling, factor-based analysis, etc.)

Risk Capital Metric– measurement metric utilized in the determination of aggregate risk capital, examples of risk metrics:

- **Value-at-risk or VAR** - quantifies the capital needed to withstand a loss at a certain probability
- **Tail-value-at-risk or TVAR**– quantifies the capital needed to withstand average losses above a certain probability
- **Probability of Ruin**– quantifies the probability of ruin given the capital held

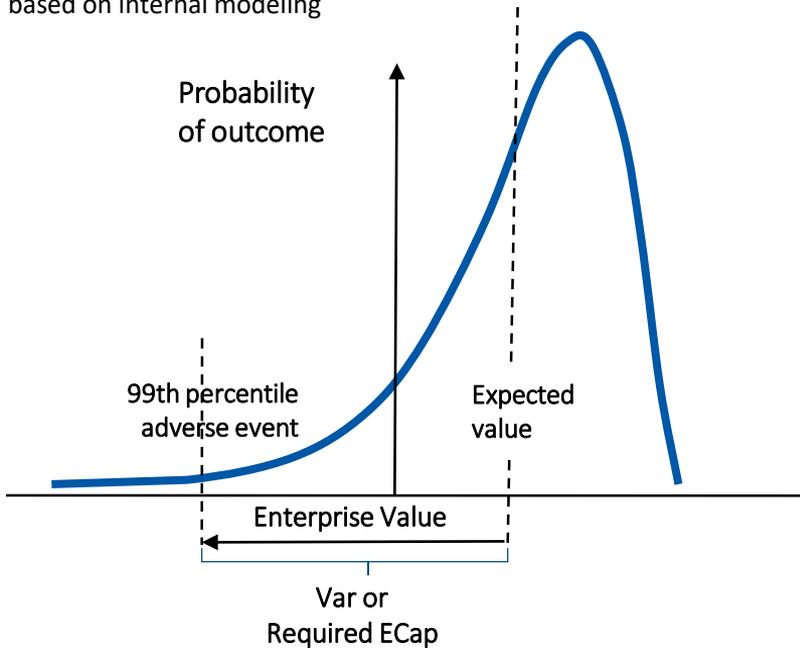
ORSA Section 3– Group Risk Capital Assessment Considerations

- **Defined Security Standard-** security standard utilized in the determination of risk capital requirements, including linkage to business strategy and objectives, and risk tolerance (AA solvency, 99.X% 1-year VAR, Y% TVAR or CTE, X% of RBC, etc.)
- **Aggregation and Diversification** – method of aggregation of risks and any diversification benefits considered or calculated in the group risk capital determination (Correlation matrix, dependency structure, sum, full/partial/no diversification)

Source: NAIC OWN RISK AND SOLVENCY ASSESSMENT (ORSA) GUIDANCE MANUAL

Capital Modeling of Operational Risks- Economic Capital vs. RBC

Economic Capital ECap= Capital required to cover prospective losses at some confidence level based on internal modeling



Risk Based Capital (RBC)= Capital required per regulation based on prescribed RBC framework utilizing historical financials

H2 - UNDERWRITING RISK		
(21) Net Underwriting Risk	XR012, Underwriting Risk Page, L(18)	\$24,384,000
(22) Other Underwriting Risk	XR014, Underwriting Risk Page, L(22.2)	\$0
(23) Disability Income	XR014, Underwriting Risk Page, L(23.3)+L(24.3)+L(25.3) +L(26.3)+L(27.6)+L(28.3)+L(29.3)	\$0
(24) Long-Term Care	XR015, Underwriting Risk Page, L(38)	\$0
(25) Limited Benefit Plans	XR016, Underwriting Risk Page, L(39.2)+L(40.6)+L(41)	\$0
(26) Premium Stabilization Reserve	XR016, Underwriting Risk Page, L(42)	\$0
(27) Total H2	Sum L(21) through L(26)	\$24,384,000

RBC Ratio	Regulatory Action
> 300%	None
200% - 300%	Trend Test
150% - 200%	Company Action Level Event
100% - 150%	Regulatory Action Level Event
70% - 100%	Authorized Control Level Event
< 70%	Mandatory Control Level Event

Economic Capital Modeling of Operational Risks

Difficulties in EC modeling for operational risks

- Lack of historical distributions (own and industry)
- Difficult to substantiate judgment around what can go wrong, impact, and loss distributions assumed for quantification
- Without developing stochastic distributions for nearly all risks, it's difficult to do stochastic modeling

A few ideas for quantifying operational risks

- Aggregation of multiple operational risks into manageable buckets (note simplifies correlation/diversification assessments and math)
- Industry References
- Actuarial Judgment

Modeling- Aggregation of Risks

Potential Aggregation of Risks for Modeling Purposes

- Loss Ratios- may try to break down between pricing cost misestimates and sold rate expected margins vs. expectations
- Revenue Variance- enterprise value may change as margins change due to revenue coverage of fixed expenses
- Admin expense risk
 - primarily focus on variation in variable admin (e.g. per policy or % of premium)
 - fixed expense which is somewhat counterintuitive, though costs that are generally considered fixed, i.e. executive salaries might have variances vs. expectations

Example 1 - Quantification of Loss Ratio Variability

Recap of potential Operational Risks impacting Actual Loss Ratios:

Pricing - Misestimation of Medical Costs

1. Weak actuarial process
2. Poor care/disease management
3. Provider contracting ineffective, including OON overexposure
4. Proper data difficult to obtain or utilize due to poor systems

Underwriting- Inability to meet revenue targets

1. May estimate costs effectively, but do not achieve price targets
 - Aggressive Underwriting and Sales sacrifice margin for sales
 - Overly conservative Underwriting results in loss of sales

Example- Quantification of Loss Ratio Variability

Historical Variability



Loss at 99.5% one-sided confidence interval assuming normal= 2.9%

Problems:

What's distribution?

Limited data points- 20 data points to estimate impact of 1 in 200 event

Modeling doesn't consider "Black Swan" Events

Modeling with historical data may not consider plausible adverse scenarios

Example 2- Quantification of Revenue Miss

Recap of potential Operational Risks impacting Revenue Miss:

Poor Distribution resulting in revenue misses

1. Internal sales force ineffective or not properly staffed
2. Breakdown of Broker relationships
3. Online portal doesn't work properly
4. Marketing doesn't effectively promote brand
5. Uncompetitive pricing due to poorly managing multiple operational risks

Potential modeling technique:

- Develop the probability of revenue “misses” vs. expectations and budgets, this distribution will require a lot of judgment
- The impact of a miss on income is primarily dependent upon how much of a company’s cost structure is fixed versus variable,
- Reduced revenue will change profit margins and create economic gains and losses based on the change in the fixed expense ratio versus expectations multiplied by actual premiums

Example- Quantification of Variable Expense Ratio Differences versus targets

Calculate impact of a expense ratio miss (all other things being equal) expected premium x (actual variable admin% (stochastically modeled) minus expected LR) impact on income (stochastic output)

Modeling and Quantification – Other Shocks

Examples

- Cyber
- Epidemic
- Natural disaster (positive from pure healthcare loss ratio perspective)

Role of Actuary

- As a Part of the Actuarial Department
- As a Member of, or Advisor to, Senior Management

Discussion—Q&As

- Comments
- Questions
- Share an Experience



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