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GLOBAL HEALTH PERSPECTIVES

Current Issues in Healthcare

Solvency II: Challenges for health insurance companies

Experiences from Holland and Germany

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BACKGROUND

Solvency II aims to create a uniform standard of supervisory-system, risk-management, and equity-capital requirements across the European Union (EU) for the entire insurance industry. Solvency II is not just a new guideline for holding sufficient capital, but rather a whole framework for statutory valuation basis and future reporting.

To assist the process of harmonisation, various quantitative impact studies (QISs) have been undertaken to test proposals for the calculation of technical provisions and for the determination of both required capital and available (free) capital. The framework for the QISs is directed by the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) and the European Commission (EC). Responsibility for the actual development of the quantitative impact studies falls to national supervisors, within the framework specified by the EC. CEIOPS published the results of the fourth such study, QIS4, on 18 November 2008.

The QIS4 results inform the final negotiations between the EC and the European Parliament, following which formal adoption of the directive should happen. Each country will then be required to transpose the directive into national law. A fifth QIS may be necessary to produce fine-tuning, but taking into account appropriate implementation deadlines for legislators, regulators, and the industry, we expect a first application of the new supervision rules at the end of 2012. In parallel with the Solvency II framework implementation, market-consistent accounting for insurance contracts under international financial reporting standards (IFRS) should be implemented by the end of 2012.

THE THREE PILLARS OF SOLVENCY AND INTERNAL MODELS

Solvency II is based on a three-pillar approach. The first pillar contains the quantitative requirements. There are two capital requirements, the solvency capital requirement (SCR) and the minimum capital requirement (MCR), which represent different levels of supervisory intervention. The SCR is a risk-based requirement and the key solvency control level. Solvency II sets out two methods for the calculation of the SCR: the European standard formula and firms' own internal models. The SCR will cover all the quantifiable risks of an insurer and take into account any risk-mitigation techniques. The MCR is a lower requirement and its breach triggers the ultimate supervisory intervention, a withdrawal of authorisation.

The second pillar contains qualitative requirements on undertakings such as risk management as well as supervisory activities.

The third pillar covers supervisory reporting and disclosure. Insurers will need to disclose certain information publicly, which will create a more disciplined and stable market. In addition, firms will be required to report greater amounts of information to their supervisors (supervisory reporting).

For most insurers, the use of the standard formula together with the associated tool appears the simplest way to comply with the supervisory regulations. However, the standardised approach will most likely be calibrated conservatively, suggesting that internal insurer-specific models will produce lower capital requirements. In addition, improved risk modelling and business insights will give a competitive advantage to those firms investing time and money in developing their own internal models.

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THE UNIQUE NATURE OF HEALTH INSURANCE

Some specific features of Solvency II will affect health insurers differently than insurers writing other lines of business. In some European countries, health insurance is mandated by governments (with premium subsidies) and covers the vast majority of the population. In other countries, private insurers simply offer supplemental coverage to tax-funded or social-insurance national-health schemes. In the latter case, the character of insurance is similar to property/casualty insurance and has to be handled accordingly under Solvency II.

In some specific countries, the nature of health insurance is quite different from other general insurance lines of business. For example, in Germany (and Austria to a small extent), a substitutive health insurance exists besides the statutory health insurance, offering lifetime full-health coverage based on governmental regulation. These full-coverage plans share characteristics similar to life insurance, except that insurers are not permitted to guarantee lifetime premiums. Instead, an insurer may increase premiums to meet increased claim costs, for example because of increasing costs in medical technology. Because of these features, the Solvency II proposals include the development of separate solvency-formula and risk-assessment methods for German health insurers. Similarly, the Netherlands health system consists of competing private insurance companies who must offer coverage to citizens and comply with a national risk equalisation system (RES). Solvency II proposals include an entirely separate module to cover the Netherlands health system.

QIS3 generally assumed that health insurers would use the standard models. However, the QIS4 technical specifications and calculation modules published in 2008 included new developments intended to allow for some of the specifics of health insurance. Under QIS4, the schedule applies generally for European health insurers.

QIS4 RESULTS: THE IMPACT ON GERMAN AND DUTCH HEALTH INSURERS

Germany

The participation rate for QIS4 in Germany was slightly lower than for QIS3, with 49% of companies representing 78% of health insurance market share. Under the QIS4 calculations, health insurers see their capital surplus rise by a factor of 2.9 on average. For most insurers the change in capital surplus varies from a decrease of 60% to an increase by a factor of 10. QIS4 technical provisions on average are 7% lower than the current technical provisions. For most participants, the decrease ranges from 0% to 25%. The value of assets increases by 2% on average. The eligible capital rises by a factor of 3.8, while the SCR is 3.7 times higher on average than the Solvency I capital requirement.

On average, the ratio of eligible capital to SCR increases slightly from 209% to 215%. For most participants, ratios between 100% and 300% can be observed. The average ratio of eligible capital and MCR is 860%.

Generally, market risk is the most important risk for German health insurers. On average, it amounts to 96% of the basis SCR (BSCR). The underwriting risk module accounts for approximately 20% of the BSCR. Default risk is 1% of the BSCR. For health insurers, the adjustment for the loss-absorbing capacity of future discretionary benefits (FDB) is the most important component of the standard formula calculation. On average, the adjustment eliminates 73% of the BSCR in health insurance.

In valuing their health liabilities, only two of 25 health insurers reported that their best estimate was determined from stochastic simulation of future cash flows. The vast majority of insurers used deterministic projections to calculate the provisions. Most of them applied an inflation-neutral valuation approach. The key uncertainties in their models are:

- Medical inflation trends
- Rates of exercising policyholder options, e.g., surrender options
- Effects of the premium adjustment clause
- Modelling of future investment profits
- Modelling of the time horizons for cash-flow projection compared with the full run-off period of the liability
- Modelling the projection of the SCR to derive the cost-of-capital margin

Although the solvency ratios decreased with QIS4 compared to QIS3, they remained robust and it does not appear that most German health insurers will require new capital. Therefore, at first glance, the development of an internal model appears to be a low priority for German private health insurers. However, for health insurers who are subsidiaries of other insurers, internal models are necessary to identify an adequate group SCR. For large or medium-sized insurers who do not have to calculate group SCRs, the development of an internal model still makes sense, since the application of the standard formula for determining the SCR does not include any risk management system. A risk management system is highly complex and demands management and IT investment to create, but should add considerable value to the insurer if implemented correctly. For smaller insurers, the initial and ongoing expenses to implement Solvency II rules and build internal capital models and risk management systems will be significant and may not be affordable. The cost of Solvency II, in combination with the restrictions on the business models of health insurers coming into force on 1 January 2009, is likely to lead to some market consolidation.

Netherlands

QIS4 results

Unlike in Germany, two-thirds of the participating health insurers in the Netherlands need to raise additional capital to cover the SCR under QIS4. However, several concerns were raised by health insurers about the QIS4 formula. The Dutch healthcare market has a unique risk equalisation system (RES) and therefore the technical underwriting risk module in QIS4 is adjusted to allow for it. The adaptations in the QIS4 formula now adequately account for the impact of RES when calculating the risk charge for the premium and reserve risk. However, in a number of areas, the QIS4 calculations were felt to be inappropriate.

First, most insurers have exposure to hospital-default risk because they make advance payments for expected claims.

Because the hospitals are generally unrated they receive a capital charge that is significantly higher than their risk characteristics would entail. A probability of default of over 30% for unrated counterparties seems overly prudent. Second, because Dutch law states that the government will cover expenses for any large health catastrophes, health insurers believe they are subject to only minimal catastrophe risk. In addition, the catastrophe-risk charge (10% of estimated next-year net earned premiums) does not take RES into account and thereby significantly overstates the actual risk level. This has a considerable impact on the total capital requirement for Dutch insurers.

Unlike in Germany, medical inflation trend is not a key uncertainty in the Netherlands. The budget received by health insurers according to the RES is adjusted overall when medical inflation trend is higher than was expected. The key uncertainty in the Netherlands Solvency II calculation is most likely the political risk of adjustments in the RES. A lot of health insurers are starting to develop internal models, partly because they are pre-financing hospitals for future claims. These amounts are in essence pre-paid claims made to the hospitals on behalf of policyholders. Under QIS4, these amounts have not been subtracted from the best estimate, but are included as a separate asset. This exposes the position to counterparty-default risk (because hospitals are unrated, the claims will receive the highest capital charge) and to spread risk.

LESSONS FROM EUROPE ON SOLVENCY II

The efforts of the EU to implement a principles-based supervisory law including risk management and calculation of different capital requirements based on actuarial methods are important to increase market safety for both consumers and companies. However, moving from a rules-based to a principles-based supervisory system has involved an elapsed time of eight to 10 years. For the European insurance industry, the new supervision rules will be an extraordinary challenge and are manageable only because of high levels of commitment and capital spending. The result will be a sophisticated legal supervision system across the European Union with allowances for individual circumstances, but a high level of responsibility for risk management. The development of new risk-sensitive models to calculate sufficient capital requirements is the right way forward for every insurance company. Foreign companies wishing to operate in Europe will face critical questioning about their own risk management system, their risk capital requirements, and solvency ratios. But even countries outside the EU are observing the Solvency II development process intensively and we expect several non-EU countries to adopt similar capital requirements for their own supervisory systems.

Will the high level of efforts be worth it in the end? As always, there are pros and cons. Proponents are confident that the high safety standard will almost exclude the risk of insurance-company insolvencies. Critics complain that the standard formula based on a 99.5% Value at Risk (VaR, a risk measure), together with the risk aggregation by the root formula, is insufficient and inappropriate. Others note that even the most sophisticated actuarial methods are not able to manage the whole spectrum of risks, which are dependent on a range of stakeholders and their unpredictable behaviours. The belief in a miracle formula that will achieve absolute security is a misconception. While investing huge time and effort into their Solvency II calculations, insurers and supervisors should not forget that there will always be risks that are not adequately explained or captured within formulas or models. Even after running the new Solvency II regime, insurers would do well to keep the mantra *common sense* at the front of their minds.

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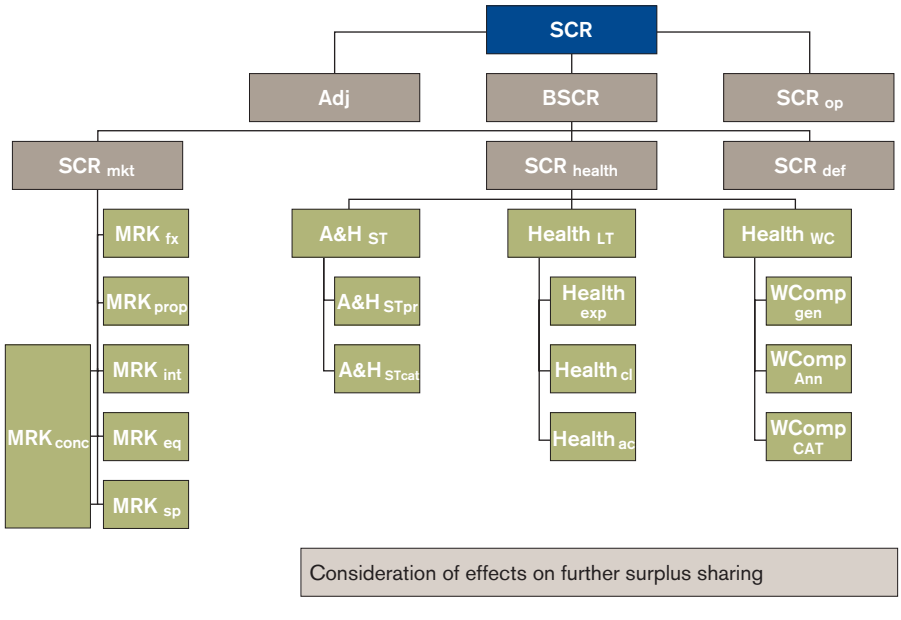
Figure 1



ABBREVIATIONS:

SCR	Solvency capital requirements
BSCR	Basis solvency capital requirements
SCR_{op}	Capital charge for operational risk
Adj	Adjustment term for loss-absorbing capacity of further surplus sharing and deferred taxes
SCR_{mkt}	Capital charge for market risk
MKT_{fx}	Currency market risk
MKT_{prop}	Property market risk
MKT_{int}	Interest-rate market risk
MKT_{eq}	Equity market risk
MKT_{sp}	Spread market risk
MKT_{conc}	Capital charge for risk concentrations
SCR_{health}	Capital charge for health underwriting risk
$A\&H_{ST}$	Accident and health short-term business risk
$A\&H_{STpr}$	Short-term pricing and reserve risk for A&H
$A\&H_{STCAT}$	Short-term catastrophe risk for A&H
$Health_{LT}$	Health long-term business risk
$Health_{exp}$	Expense health risk
$Health_{cl}$	Claims health risk
$Health_{ac}$	Epidemic/accumulation health risk
$Health_{WC}$	Workers' compensation (WC) business risk
$WComp_{gen}$	Premium and reserving risk for WC
$WComp_{Ann}$	Annuities risk for WC
$WComp_{CAT}$	Catastrophe risk for WC
SCR def	Capital charge for counterparty default risk

The role of the actuary in health insurance

By Jonathan L. Shreve, *FSA, MAAA,* **and Mary van der Heijde,** *FSA, MAAA*

The functions and responsibilities of actuaries in health insurance in Western countries may be reasonably well defined, but the growth of the profession in emerging markets has provided an opportunity to reexamine the role of the healthcare actuary. Are there differences among markets and clients around the world that affect the role of the actuary? Can emerging markets benefit from the same services provided by highly valued actuaries in countries like the United States and Mexico?

To understand the different roles health actuaries play around the world, Milliman consultants recently conducted an international study in association with the International Actuarial Association–Health Section (IAAHS).

To understand the different roles health actuaries play around the world, Milliman consultants recently conducted an international study in association with the International Actuarial Association–Health Section (IAAHS). A high-level survey was used to elicit information about common tasks and the issues encountered in performing those tasks. Following this initial survey, the research team, which included 31 volunteers in 14 countries, investigated further the tasks and issues common to most actuaries. Finally, a more in-depth survey was conducted examining the top 11 tasks and issues identified in the first part of the study. This article summarises four of these key tasks and issues.

THE DOMAIN OF THE ACTUARY

In some markets, actuaries have been leading professionals for decades. In others, the actuary is a relatively new role. Here are some of the differences we uncovered:

- **Mexico**: Actuaries are well-respected professionals and have a wide range of responsibilities, including some listed within the regulatory framework, such as development of premium rates, reserves methodologies, and solvency or dynamic capital-adequacy tests. Actuaries are found in most areas within an insurance company, including underwriting, IT, and sales.
- **United States**: Actuaries are policy-makers and price-setters; they also work with marketing departments and regulators.
- **Brazil**: Marked by lack of clarity, with actuaries often assigned diminished roles, the responsibilities normally associated with actuaries elsewhere are often handed off to accountants, economists, or statisticians.
- **Singapore**: The scope of the actuary is specifically dictated by law.
- **Australia**: Actuaries have a wide scope of responsibilities.
- **Europe**: Actuaries tend to have more narrowly defined roles.

In the emerging markets generally, actuaries struggle to define their roles, communicate their value, and be fully appreciated. We believe that insurers operating in these emerging markets would benefit greatly by promoting the role and responsibility of actuaries within their organisations. Defining the actuarial role from place to place remains an open and often difficult issue. Progress has been made over the past five years in Europe, where there has been a significant increase in the range and understanding of what health actuaries do. The ability of the actuarial profession to grow in emerging markets is based on stronger competency, education within the company, and continued enhancement of the role and value of the actuary.

DATA ANALYSIS AND QUALITY

It should not come as a surprise that an overwhelming majority of actuaries are involved with detailed data analysis. This was one area that clearly showed more similarities than differences. Most actuaries are experts in analysing health utilisation and cost trends. In some cases, other functional areas complete that work and the actuaries act as peer reviewers. In most cases, healthcare actuaries followed similar procedures of extracting, validating, and repairing data, and then analysing and reporting it.

Some specific techniques used in data analysis include:

- Spending time to understand the major parameters involved in pricing and claims management
- Combining data from different sources when necessary
- Summarising healthcare expenditures by injury year and by type of claim (drug, hospital, etc.)
- Comparing the claim data to the budgeted amounts for those categories and prior analysis

It is hardly surprising that a large majority of actuaries encounter issues with data quality and integrity, including limitations in data capture, data-entry errors, bad data, and inconsistent coding.

It is not uncommon, for example, to see a complete lack of standardisation in claim coding. Many systems are not designed to collect the necessary data. These issues highlight the need for professional actuaries who are used to working with such data.

HIGH MEDICAL COST INCREASES

Many respondents noted that large increases in medical costs are a major issue. The term 'medical inflation' refers to the increase in cost per service of a fixed set of medical care. The term 'medical trend' adds to this the overall increases in medical costs from utilisation and intensity changes. Generally, medical trend exceeds medical inflation, which in turn exceeds overall inflation. Regulators and consumers often do not expect rates to increase by this amount, which adds increased pressure to the system.

High medical trend has been a well-documented issue in most markets. In several markets, the media have helped spread the impression that insurance premiums should not rise, which causes additional market pressure. Some key causes cited for high medical trend include:

- Physician and hospital demands for higher tariffs for their services, using a combination of economics and politics to justify their demands
- New and expensive emerging technology
- Increased consumerism
- Aging population
- Monopolies in place by pharmacies and providers
- Increases in consumer fraud

Australia, which reported little inflationary impact, has adopted a counter-inflationary policy that strongly encourages bargaining to force efficiencies in hospital systems. Asia respondents said high medical trend is not a problem because private insurers sell mostly daily cash benefits or indemnity products. They are insulated from increases in medical cost because their plans have fixed pay-out provisions. If you are diagnosed with cancer, for example, the plan may provide a predetermined daily amount, as opposed to taking risk for the actual medical costs. Germany does not have any capability for utilisation of disease management programmes because of strict privacy laws that preclude private insurers from receiving highly detailed claim data. Because of this, private health insurers in Germany are experiencing high rates of medical trend, as they have no approval process for doctor visits and thus have no way to control or manage patient behaviour.

Although cash and indemnity products effectively remove insurer risk for high medical trend, they are not long-term solutions because consumers will demand higher coverage levels.

The overall conclusions of the responses indicate that either the marketplace understands and accepts that medical trend is higher than general medical inflation, or it does not. In the first case, there is less of a problem because the additional costs are appropriately built into premiums. In the second, it is an ongoing problem that likely only additional education can fix.

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REGULATORY CONSTRAINTS

In general, by its very nature, health is a public good; health insurance is more likely to receive regulatory pressure than other types of insurance (such as life or property/casualty insurance). Even in countries where healthcare is largely privatised, most health insurance is underwritten to complement public health programmes. As public programmes evolve, it becomes necessary for insurers to adapt. For example, US programmes such as Medicare, as well as state governments, often have significant input into pricing and design.

Regulatory restrictions often control the actions an insurer may take in product design, pricing, and other areas of insurance business. These controls on occasion cause difficulties for insurers or lead to business decisions that are less than ideal. Respondents were evenly divided here: Fewer than half did not see it as an issue they face. Those facing this issue often come from countries where private insurers have relatively more presence, compared with countries whose public sector provides most of the healthcare.

A number of factors come into play with these issues. Health coverage in some countries is secondary coverage added to life coverage; because the health markets are not as developed, the regulations are also sparser. In markets like Germany and Mexico, some regulators operate with strong directives, dictating terms

that the insurer has limited or no choice but to comply with. In other areas, such as the United States and Canada, actuaries develop more collaborative relationships with regulators enabling discussion with them of various issues and the efficacy of proposed changes.

One interesting trend is that solutions to common regulatory issues often develop in one place and spread quickly elsewhere. For example, changes in Brazil and Canada are currently under way based on recent developments in the United States. When possible, relationships with regulators are important as a means of predicting and affecting their behaviour. Although regulations often cause additional challenges, many respondents acknowledged their importance to ensuring individual company solvency and market stability.

CONCLUSION

We believe an experienced actuary is an incredibly valuable resource to insurers who are pricing and underwriting health insurance. The role of the actuary varies but, in markets with more established roles for actuaries, it is clear they add tremendous value in pricing, product design, risk management, financial forecasting, and strategic planning. An actuary can provide value significantly beyond that of a technician.

It often falls on actuaries to ensure compliance with government regulations, to monitor and maintain data quality, and to perform non-standard tasks such as forecasting economic conditions. As insurers come to fully realise the actuary's indispensable role in measuring risk and facing market challenges, we believe their competitive advantage will increase.

The full body of the reference report *International Survey of Actuarial Issues and Practices* is available for download on www.milliman.com; search keyword *IAAHS*.

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Health cost management strategies for health insurance

By Lisa L. Mattie, *RN*, **and Pat Zenner,** *RN*

A health insurer's claim costs are primarily influenced by the member's use of services and the price of those services. These two factors allow us to classify a heath insurer's performance by its ability to control or manage healthcare costs into categories of *loosely managed*, *moderately managed*, and *well managed*. 'Loosely managed' refers to the lowest possible degree of healthcare management, which equates to the highest cost and utilisation. Likewise, the term 'well managed' refers to the highest possible degree of healthcare management, which equates to the lowest cost and utilisation. 'Moderately managed' lies between.

The strategies for containing costs, or cost management, are used by health insurers to move them from a loosely managed health plan toward a well managed health plan, optimising financial results, but also increasing quality of care. The degree of healthcare management is influenced by a variety of factors, including cost-management efforts. Attempts to manage these factors evolved into what is now referred to as managed care. Although managed care has seen the greatest development in the United States, countries like Canada, the United Kingdom, Germany, Netherlands, South Africa, Chile, Colombia, and Spain have developed and adopted managed-care techniques and tools with varying degrees of success.

COST MANAGEMENT OVERVIEW

Cost management encompasses many different activities aimed at controlling medical-care costs. Basically comprising unit cost, which is controlled by contract rates, and utilisation, medical costs can be lowered using several utilisation-management and population-health-management approaches as depicted in Figure 2.

Health-cost-management priorities should be dictated by product design and reimbursement methodologies. For example, strategies typically employed for short-term return on investment (RoI)—primarily prior authorisation, along with concurrent and retrospective review—may not have the same effect on all products because of differences in provider reimbursement. In an environment with diagnosis-related group (DRG) or case rate, daily aggressive concurrent review may not be as effective in managing costs as retrospective review. Prior authorisation in an environment with no provider contracts may only be effective if you can build in member incentives to cooperate.

Likewise, population-health-management programmes must be customised to fit with the population. In addition to developing programmes that address common disease states, these programmes need to accommodate appropriate healthcare goals, communication mechanisms, and healthcare priorities in the population.

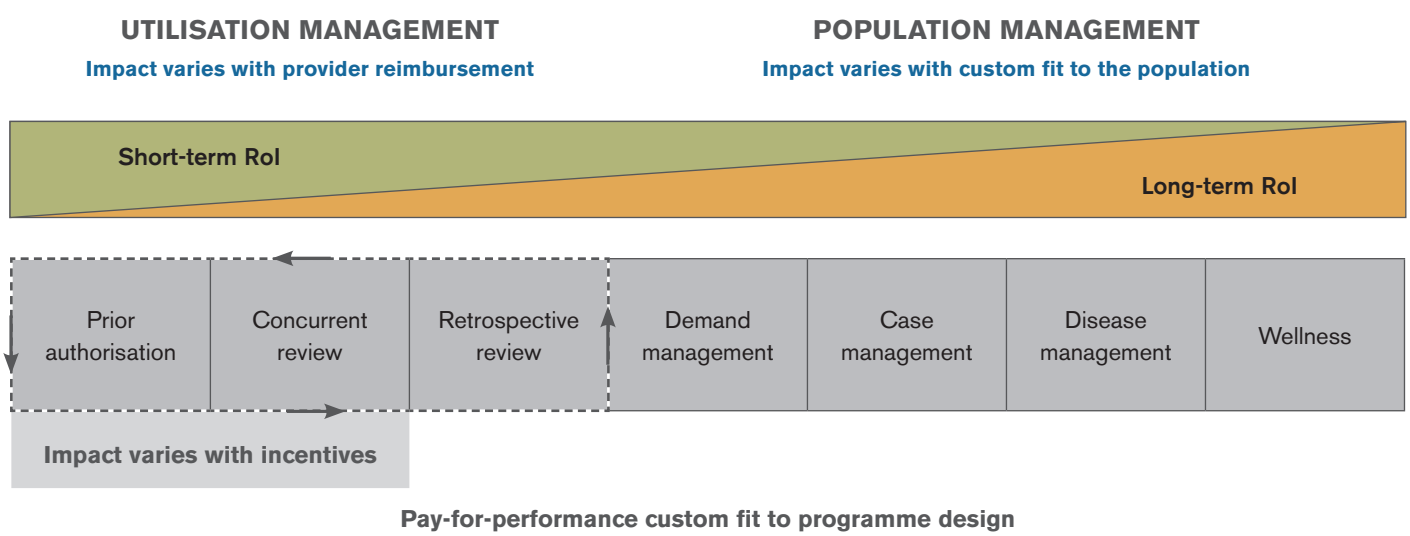
Although managed care has seen the greatest development in the United States, countries like Canada, the United Kingdom, Germany, Netherlands, South Africa, Chile, Colombia, and Spain have developed and adopted managed-care techniques and tools with varying degrees of success.

Pay-for-performance programmes, based on best practices, should be designed to reinforce programme goals and initiatives through partnerships with providers and a focus on improving efficiency and quality.

COST MANAGEMENT PROGRAMMES AND ROI

Unfortunately, there is little reliable published data on the financial benefit of cost management programmes. If all of the

Figure 2



programmes actually achieved the savings purported by various studies, healthcare costs in the United States and other countries should be considerably lower than their current levels.

It is clear that the range of actual savings for cost management programmes varies widely depending upon a number of factors. One key factor relates to the interaction between multiple initiatives. Savings for utilisation-management programmes alone are additive. However, the savings estimates for combinations of the various population-health-management and utilisation-management programmes are not additive, because of the objective of each programme to affect specific services (e.g., if a case manager avoids an admission, it will not be reviewed in prior authorisation).

Although operational costs for some programmes may be high and offset a great portion of cost management savings, growing use of technology, e-health, and predictive modeling may serve to lower administrative costs and increase medical-cost savings in the future.

UTILISATION MANAGEMENT

Utilisation management (UM) is employed by insurers to promote quality, evidence-based, and efficient delivery of care along with payment for medically appropriate and covered services at the lowest price. Of all health-cost management techniques, UM can provide the highest short-term RoI. Administered inappropriately, however, UM can also produce negative returns and be viewed as intruding in the doctor-patient relationship.

Prior authorisation

Prior authorisation (also called pre-certification, pre-authorisation, or prospective review) is intended to prevent reimbursement for inappropriate or inefficient use of services, providers, and service settings, ideally by redirecting the care (appropriate service and/or place of service) rather than reducing benefit payment.

Prior-authorisation best practices to optimise RoI include continuous refinement of the list of services requiring prior-authorisation review. Additionally, insurers are employing Web-based request and auto-approval systems incorporating evidence-based criteria to minimise administrative expenses and make the process more responsive to provider and patient concerns regarding appropriate decisions and timely response.

Concurrent review

Concurrent review is intended to promote appropriate use of inpatient services, providers, and service settings, ideally by redirecting or facilitating the care rather than reducing benefits or provider payment. Concurrent-review best practices can increase RoI by prioritising cases for insurer review based on:

- Reimbursement risk
- Diagnoses, procedures, or providers with the greatest variance in care management
- Clinical status of the patient
- Clinical management course throughout a stay
- Anticipated discharge date
- Complexity of anticipated discharge needs

Retrospective review

Retrospective review (also called medical-bill review or medical-claims review) is intended to avoid or recover payment for non-covered or inappropriate services or fees charged after services are rendered. The value of retrospective review depends largely on the types of cases reviewed and the reimbursement structure. Common functions include review of coding, non-covered services, fraud, and abuse.

POPULATION HEALTH MANAGEMENT

We refer to the term 'population health management' to describe the series of tactics used by insurers to improve the health of an insured population. The RoI for these programmes is considered long-term, although general consensus on measuring the savings and outcomes remains controversial. These programmes employ processes intended to lower healthcare costs by promoting self-care and shared decision-making regarding appropriate care, whether it be to maintain health, prevent complications, or prevent use of unnecessarily high-cost services.

Just as population-health-management tactics are evolving to find the right 'formula,' so is the nomenclature. We present common terms used to describe the various tactics, noting that others may define these terms differently.

Demand management

Demand management is intended to control utilisation by helping the member make wise healthcare choices. Demand-management programmes typically consist of extensive health-information libraries providing in-depth information on diseases, procedures, and care alternatives, with nurse 'call lines' for the member to call with health-related questions. They may also include general or targeted newsletters or mailings on health topics and offer members information on the cost and quality of specific providers and services.

The demand-management process is intended to lower healthcare costs by avoiding emergency and urgent-care services and directing members instead toward appropriate services and settings. The programmes are also designed to promote self-care and shared decision-making so that consumers can manage their own care, helping to prevent or manage conditions.

Case management

Case management is intended to improve episodic care and reduce cost through appropriate use of ambulatory and outpatient services, providers, and service settings for certain high-cost or potentially high-cost members.

Case management aims to lower health costs with several approaches, including education on managing the condition and steps to prevent worsening clinical status, channeling services to preferred providers, coordinating specialty physician services and referrals to ensure compliance and avoid duplication, and negotiation of reimbursement if contracted services are not available.

Disease management

Disease management targets patients with a particular disease to prevent complications and improve compliance with clinical practice guidelines. Disease management programmes focus on high-volume, high-cost chronic diseases where significant costs are preventable and there is considerable variation in treatment despite evidence-based guidelines. The anticipated medical-cost savings come from avoiding high-cost services through improved patient compliance with appropriate diet, medications, physical activity, medical care, and other management components.

No general industry agreement exists on how to measure disease management cost savings. There are few examples of population-health- or disease management programmes reporting savings that may be considered generally acceptable. In the United States, the Medicare Coordinated Care Demonstration set out to test whether providing coordinated-care services to Medicare beneficiaries with complex chronic conditions yielded better patient outcomes without increasing programme costs. The Centers for Medicare & Medicaid Services (CMS) may extend the three potentially budget-neutral demonstration sites for two more years to allow further study of their programmes.

Wellness management

Wellness management includes a broad range of activities unrelated to a specific disease and aimed at maintaining health, including providing or subsidising wellness education resources, health screenings, flu shots, health risk assessments, health coaches, smoking cessation and weight loss programmes, and fitness facilities or equipment. Estimated savings for wellness programmes relate to maintaining a healthier population, thereby preventing disease-related costs.

Estimates of the timeframe necessary to achieve a positive RoI from wellness programmes range from 18 months to decades for medical-claims costs. Less intangible savings may include improved presenteeism at work and reductions in absenteeism.

CONCLUSION

Whether an insurer employs only one or a combination of cost management strategies, the ultimate goal is to reduce healthcare costs and improve quality through appropriate use of healthcare services. There are a range of different managed-care techniques available, but priorities and likely RoI will depend on the interaction between the programmes, the robustness and effectiveness of any programme implementation, and the cultural, legal, and social environment within which the health insurer must operate.

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REFERENCES

2007 Milliman Health Cost Guidelines

Medicare Coordinated Care Demonstration Fact Sheet http://www.cms.hhs.gov/DemoProjectsEvalRpts/downloads/CC_Fact_Sheet.pdf, accessed 09/22/08

Disease management programmes for major depression: Making the financial case

By Joanne Buckle, *FIA, MAAA*

For many years now studies around the world have demonstrated conclusively that depression is expensive—not just to those who suffer from it, but to whole economies. The direct and indirect costs of depression in Europe alone amount to 1% of EU GDP. A US-based study from 1990 put the annual cost of depression at $43.7 billion, of which more than half stemmed from indirect costs such as workplace absenteeism and lowered productivity (known as *presenteeism*).

Yet, despite compelling evidence of the clinical efficacy of treatments and wide-ranging acknowledgments of the dire impact on quality of life for people living with the condition, a significant proportion of depression still goes undiagnosed and untreated. Using techniques from the field of actuarial science and health economics, we conclude there is strong clinical and financial case for a more structured approach to the treatment of depression.

Disease management programmes, commonly used in the United States to manage patients with long-term chronic conditions who tend to be high utilisers of health services, offer many useful characteristics that could help manage depression for a large proportion of the affected population. While some elements of disease management programmes have been adopted in a piecemeal fashion in the United Kingdom, few initiatives have been comprehensive enough to achieve real changes in clinical outcomes. Disease management programmes are only effective if all crucial elements are deployed and partial adoption of a few parts is clinically ineffective and unlikely to bring significant return on investment.

Our approach to investigating the cost-effectiveness of depression disease management programmes encompasses a two-part decision-analytic model, comprising a short-term decision tree to calculate average costs and a five-year semi-Markov model to estimate transition probabilities among the different phases of depression. This decision-analytic model compares the incremental costs and benefits of implementing a US-style disease management programme in a UK adult population suffering moderate or severe depression to the usual National Health Service treatment given by general practitioners in primary care.

The results are presented first as an economic cost-effectiveness analysis, comparing the benefits (using quality-adjusted life years [QALYs]) with the costs, and secondly as a financial projection model of costs and savings, familiar to actuaries. Costs are split into direct and indirect costs to allow the results to be viewed both from the perspective of a healthcare payer and from a societal or *total economy* perspective.

The results of the model show that, from a societal perspective, disease management programmes for depression are likely to both reduce costs and increase quality of life for patients in the overall adult population. Health economists refer to this as a *dominant* treatment, i.e., under most scenarios, a disease management programme both costs less and gives better clinical outcomes than the current level of care. This is also true from the perspective of an employer who bears the cost burden of direct medical costs and sickness absence.

For a healthcare payer who is not shouldering the cost of sickness absence, such as a primary care trust (PCT) or private insurer, disease management programmes are likely to improve quality of life, but increase direct healthcare spending. However, the additional cost is well below the familiar threshold in the United Kingdom of £30,000 per QALY; therefore, most health economists would deem disease management programmes for severe and moderate depression to be a good use of public healthcare funds. The actuarial calculations, which show an internal rate of return of 45% to 50% for investment in a depression disease management programme, echo this conclusion.

These models, discussed in much greater detail in the Milliman report *Disease Management Programmes for Major Depression: Making the Financial Case*, represent a theoretical approach to estimating cost-effectiveness for disease management programmes in the United Kingdom. Actual cost-effectiveness will depend on many factors: the treatment outcomes seen in practice, which may be highly correlated to the initial investment, the detailed design of the programme, and the method of measurement. In addition, populations with different demographics or disease profiles may experience very different outcomes.

At this point, the question regarding depression and its many debilitating effects—from its harmful impact on business productivity to the pains it causes both personally and in society at large—is not one of *if* it is dealt with, but rather *when* and then *how*. The evidence for the necessity of taking on the problem of depression is undeniable. Disease management programmes offer many attractive promises, financial and otherwise, for addressing it effectively.

For more information, reference the Milliman report *Disease Management Programmes for Major Depression: Making the Financial Case*. The report is available at http://www.milliman.com/expertise/healthcare/publications/rr/index.php.

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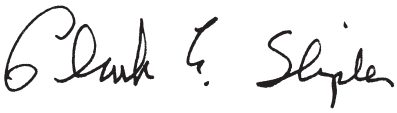
It's long been said that "all healthcare is local." While that remains true, for the first time we are starting to see the emergence of a global market for healthcare. The evidence for this arises from three trends. First is the increasing willingness of governments to learn from the successes and failures of other countries' healthcare financing and delivery systems. Second is the rise in medical outsourcing and medical tourism, where payers and patients are prepared to shop around the world for quality, cost-effective care. The increasing number of globally accepted quality metrics and accreditation standards will go a long way towards creating a more global health economy. Finally, the free flow of information empowered by the Internet age is also allowing for a freer flow of medical research across borders. Clinical trials, comparative effectiveness research, and other best practices are often quickly absorbed outside their countries of origin.

While all health systems have unique local features, many of the challenges faced by payers and providers are similar the world over. High medical inflation, reducing unnecessary variations in care delivery, and increasing efficiency and cost-effectiveness are common themes. Alongside these are issues specific to private healthcare payers, such as the impact of new solvency regimes on capital requirements and profitability, not to mention the complications posed by transborder health threats such as pandemic influenza, obesity, and smoking.

Healthcare payers and providers can learn a significant amount from the outcome of experiments in other countries; the secret is translating these lessons into a local context.

It's an exciting time in global healthcare. We offer a few related perspectives in this, the inaugural issue of Global Health Perspectives.

Sincerely,



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