How can health insurers minimize risks with predictive analytics
Insurance companies design and offer standard health insurance plans based on market research. Variety of riders like disability rider, accidental death rider, term rider etc. are added to these plans to suit individual needs. Customers’ pre-existing and current health conditions determine the choice of insurance plan. Since customers’ future health conditions are not evaluated, insurers are exposed to an extent of additional risk due to critical illnesses that may occur in future.

Consider a scenario where the insurer can know all critical and non-critical health issues a customer could face in the future! This would mean customized insurance plans borne out of this knowledge. Premium of the policy, exclusions, riders, deductibles, co-payments, co-insurance can be customized accordingly. The insurer will be able to manage risks better through such plans, leading to lesser number of claims by virtue of disease exclusions in the policy, and risk-sharing with customers in the form of co-payments or higher premiums.

Customers will also benefit from such personalized approach. They will get to choose from dynamic options of best-drafted plans designed according to their needs. Also, this approach would help the customer combat future health risks. On being informed about the health risk possibilities by the insurer, customers can take preventive measures to minimize risks. Customers can make lifestyle changes to stay healthy and prevent diseases. Insurance companies can offer incentives in the form of premium reduction and others to customers willing to make required changes.

While creating a customized health insurance policy, an insurance company will not only concentrate on future health risks, it will also take into account other factors and information collected from customers like how price sensitive the customer is, his future lifetime value to the insurance company, credit history, customer location, family physician, and nearby hospitals etc. This information can help the insurer estimate the potential risk.

Total healthcare costs are rising constantly and insurance companies have been suffering losses due to higher number of claims with high claim amount. Necessary changes in the designing of healthcare plans is one of the most obvious steps an insurer can take to reduce healthcare costs and risks, and Analytics is the essential game changer.

**Designing it right!**

Advanced analytics has the potential to transform the business of insurers. An analytics approach results in the creation of a competitive and profitable policy. The design of a customized healthcare policy undergoes a certain process, starting from policy request by the customer to final policy creation (See Figure 1).

**Data consolidation & aggregation**

For any health insurance requirement, the customer connects with the company via an agent, online request, email, or phone call. This request is assigned to a relevant underwriter. The underwriter collects all information required to process the application for the healthcare policy including demographic information, pre-existing conditions, previous policies, previous claims etc. Data residing at multiples sources like databases, flat files, data marts etc. are consolidated. Insurers may contact third party companies to retrieve additional information like medical history, claims history, diagnosis and prescribed drug plans etc. about the customer. This data is combined and aggregated using programming scripts at the desired level of granularity.

**Data analysis & insight extraction**

Once the data is ready, it is analyzed from multiple dimensions to extract meaningful information. By analyzing customers’ data using exploratory data analysis, univariate analysis and multivariate analysis, deeper understanding of customers’ physical conditions, disease patterns, treatment requirements and details like claims frequency are identified. These insights suggest the value of the customer to the company.

**Health prediction using analytics**

Customer’s data is ingested into a series of developed analytics models that will predict the list of diseases that the customer is susceptible to. Predictive analytics uses a variety of statistical techniques and technology to analyze huge amount of information to predict outcomes for individual patient. That information includes data from past diagnosis and treatment outcomes.
**Policy building**

Based on the predicted health outcomes, customized policies are designed to meet the customer requirements and minimize company’s risk. Couple of versions of the policy with different terms and prices are offered to the customer. Here is a hypothetical example: A conventional plan covering 100 diseases costs a customer a premium of $100. As per predictions, he might be susceptible to five diseases in the future for which hospitalization would be required. The customer can be offered these options:

- **Option1:** Exclude 5 diseases, cover 95 diseases, cost $60
- **Option2:** Co-pay 30% for 5 diseases, full coverage for 95 diseases, cost $85
- **Option3:** Full coverage for 100 diseases, cost $120

Finally, policy is confirmed based on the customer’s choice. Also, based on the health predictions, multiple recommendations are given to customers regarding healthcare like precautions, preventive measures, change of lifestyle, change in eating habits etc.

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**Figure 1: An approach to healthcare policy design**

Analytics not only help insurers manage risks and add to revenue, but also is a lifesaver for their customers. They can be made aware of impending health risks which will encourage customers to live a healthy life and minimize the possibility of exposure to critical illnesses. Analytics plays a vital role and works as a true companion to insurance companies.
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