Article from

Reinsurance News

March 2019

Issue 116

A Look at Two New (Surprising) Drivers in Catastrophic Exposures

Hemophilia and hereditary angioedema have turned into key drivers of the large medical claim trend in U.S. health care insurance.

By Yang Hu

The increasing frequency of catastrophic exposures greatly challenges today's managed-care reinsurance market. Catastrophic-claim "horror stories" now refer to exposures in excess of $5 million to $10 million, whereas only a few years ago, this threshold used to be "only" $2 million. That latter amount now instead seems to be a working layer. This trend is driven by the rapid progression in health care technology and new specialty drugs that can relieve human suffering.

To that end, according to the Swiss Re's large-claim study on U.S. commercial health plan costs, historical large claim (more than $1 million) frequency experienced a near doubling in growth from 2012 to 2016.

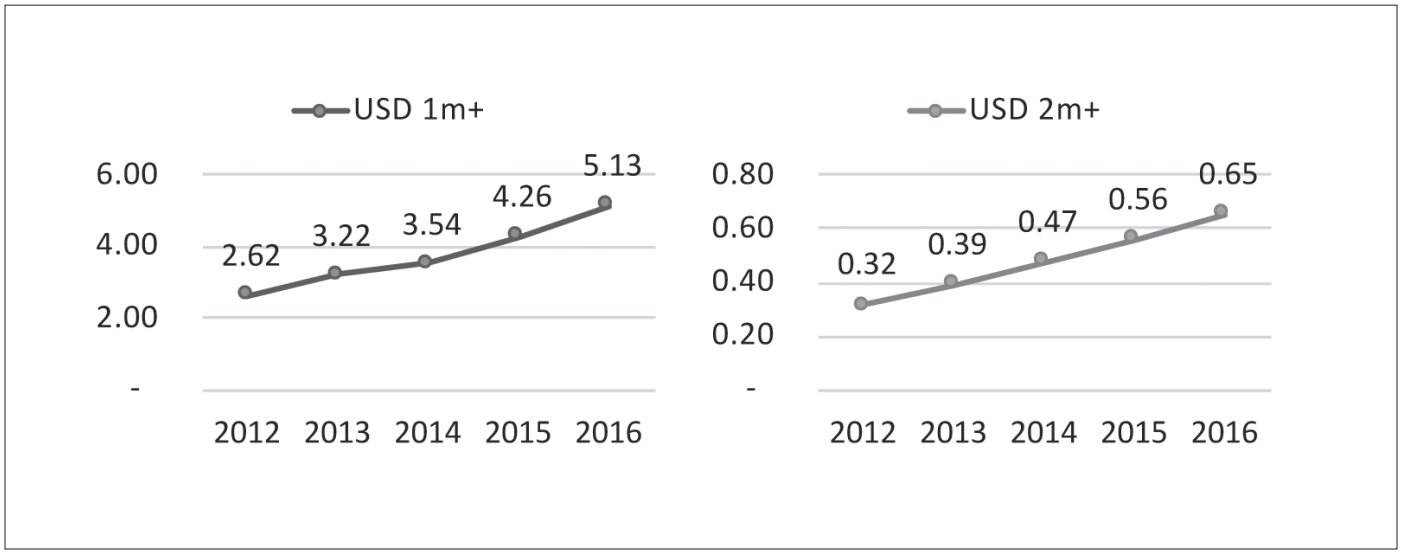
Among the key driving medical conditions behind this trend, two emerging conditions stood out clearly: hemophilia and hereditary angioedema (HAE).

LARGE-CLAIM FACTS

According to the Swiss Re large-claim study[1] on commercial health plan costs, during 2016, the average frequency of claims in excess of $1 million and $2 million were 5.13 and 0.65 per 100,000 members, respectively. These two numbers were the result of a near-doubling frequency trend from 2012 to 2016, which is expected to continue. According to Swiss Re's projection, the two frequency numbers for 2018 are expected to be 6.39 and 0.91 per 100,000 members for claims of more than $1 million and $2 million. This suggests that for any commercial health plan (self-funded by an employer group or fully insured) that has enrollment of more than 100,000 members, there is a high chance that the plan will experience a claim of more than $2 million in 2018.

Behind these large claims, the top three drivers, or the "large-claim conditions" by total ground-up claims cost, were 1) neonatal (usually preterm infants), 2) malignant neoplasm (cancer, including leukemia), and 3) cardiovascular disease. However, not far from these three and still among the top 10 are two emerging catastrophic drivers with astounding growth in severity and frequency during the last few years: HAE and hemophilia.

Figure 1
Historical Large-Claim Frequency (per 100,000 Members) for Claims of More Than $1 Million and $2 Million



ALL ABOUT HAE

Hereditary angioedema[2] is a rare and potentially life-threatening genetic disorder where the patient experiences recurrent episodes of severe edema (swelling) in various parts of the body. The most common areas of the body to develop swelling include the hands, feet, face and airway (throat). Patients often suffer excruciating abdominal pain, nausea and vomiting caused by swelling in the intestinal wall. Swelling of the airway or throat is particularly dangerous, because it can cause death by asphyxiation. HAE is caused by a defect in the gene that controls a blood protein called the C1-inhibitor. This defect causes a biochemical imbalance that produces swelling. HAE is also known as C1-inhibitor deficiency, with type I and type II. According to the US Hereditary Angioedema Association, the frequency of this condition is one in 10,000 to 50,000 people, with a death rate of 15 to 33 percent for patients suffering from the disease. In the U.S., HAE causes 15,000 to 30,000 emergency department visits every year.

HAE is very difficult to diagnose accurately due to the wide variability in disease expression and the unpredictable and diverse course of the disease. The treatment relies on specialty drugs that are used as a C1-inhibitor at an average cost of roughly $350,000 per year to maintain patients. To add to the complexity, each HAE patient is different, requiring various amounts of the drug depending on the patient's specific needs. It is not uncommon for a patient to go from being stable with a relatively limited use of drugs to frequent use of drugs costing millions of dollars.

The drugs listed below may be required to relieve the swelling that a patient is experiencing. Prior to the development of these drugs (less than a decade ago), a patient who had a severe swelling episode could have died. The rapid increase in price for these drugs has also added to the exposure.

Figure 2
Five Drugs to Treat HAE

PROPRIETARY NAME	COST/INJECTION
Cinryze	$5,000–$11,000
Firazyr	$7,000–$8,000
Ruconest	$6,000
Berinert	$6,200
Kalibitor	$4,000–$5,000

ALL ABOUT HEMOPHILIA

Hemophilia[3] is an inherited genetic disorder where the blood's ability to form a clot at the site of blood-vessel injury is impaired. It is characterized by extended bleeding after injury, surgery, trauma or menstruation. Sometimes the bleeding is spontaneous, without a known or identifiable cause. Improper clotting can be caused by defects in blood components, such as platelets and/or clotting proteins, also called clotting factors. The body produces 13 clotting factors. If any of them are defective or deficient, then blood clotting is affected. There are many different types of bleeding disorders. The most well-known types are hemophilia A (factor VIII deficiency), hemophilia B (factor IX deficiency) and von Willebrand disease. There are also other relatively rare factor deficiencies, including I, II, V, VII, X, XI, XII and XIII.

According to the National Hemophilia Foundation and the U.S. Centers for Disease Control and Prevention, the frequency of hemophilia is approximately one in 5,000 live births and there are about 20,000 people with hemophilia in the U.S.

Hemophilia patients can present a large exposure (from birth) due to the factor VIII drugs required to maintain clotting capabilities and reduce the prevalence of bleeding. Experience shows that maintenance costs can average up to $100,000 per

month, or even higher depending on which drug is used, the volume of the drug, and the setting where it is administered. In addition, once a spontaneous bleed happens, the inpatient stay in ICU can be extremely costly as they use additional factor drugs to stop the bleeding. Hemophilia can be classified as mild, moderate or severe, depending on the number of units of factor required to maintain clotting. Some of the claimants have costs of between $3 million and $5 million per year when there is a spontaneous bleed requiring hospitalization. This uncontrolled variable presents a difficult underwriting dilemma.

ACTUAL COST IMPACT OF THE TWO CONDITIONS IN CATASTROPHIC CASES

Due to the nature of cause and treatment of the two diseases, the majority of the cost of care is billed as specialty drugs. The Swiss Re large claim study shows that based upon data in 2014–16, roughly 20 percent of all claims of $2 million or more (summation of the annual inpatient/outpatient/physician/prescription drug costs for any individual) are due to either hemophilia or HAE, counting by the total number of claims. The distribution of this percentage between hemophilia and HAE is fairly even. For HAE in particular, there has been a spike from 2014 to 2015–16. (See Figure 3)

At the same time, counting by the total ground-up claim costs, the total of all claims of more than $2 million due to HAE/hemophilia is roughly 25 percent. The HAE cost spike between 2014 and 2015–16 is also obvious. (See Figure 4)

In the Swiss Re large-claim study, the highest annual claim in 2016 ($8.5 million), the second-highest claim in 2015 ($6.4 million), and the fifth-highest claim in 2014 ($7.3 million) were all due to HAE.

IMPLICATIONS TO EXCESS OF LOSS REINSURANCE

Next, we turn to the excess per-member per-month claim costs, which are important metrics for insurers and reinsurers involved in excess of loss protections (usually with $1 million or higher deductibles). Excess of loss protection is a nonproportional reinsurance coverage designed to protect against the severity or frequency of catastrophic claims. These protections are usually priced at a small percentage of the total premium of the underlying health plan but can effectively eliminate the volatility from catastrophic claims.

Regarding the excess of loss coverage costs, it is commonly understood that the claim cost above retention tends to grow much faster than the normal ground-up claim cost trend, due to the mathematical effect called "leveraging." The impact of this leveraging effect increases with the magnitude of the retention.

Figure 3
Frequency of Catastrophic (More Than $2 Million) HAE/Hemophilia Claims

YEAR	NUMBER OF CLAIMS OF MORE THAN $2 MILLION	NUMBER OF CLAIMS OF MORE THAN $2 MILLION DUE TO HAE	NUMBER OF CLAIMS OF MORE THAN $2 MILLION DUE TO HEMOPHILIA	PERCENTAGE OF CLAIMS OF MORE THAN $2 MILLION DUE TO HAE	PERCENTAGE OF CLAIMS OF MORE THAN $2 MILLION DUE TO HEMOPHILIA	PERCENTAGE OF CLAIMS OF MORE THAN $2 MILLION DUE TO EITHER HAE OR HEMOPHILIA
2014	82	5	8	6.1%	9.8%	15.9%
2015	74	8	7	10.8%	9.5%	20.3%
2016	84	9	9	10.7%	10.7%	21.4%

Figure 4
Total Ground-Up (GU) Costs Impact of Catastrophic (More than $2 Million) HAE/Hemophilia Claims

YEAR	PERCENTAGE OF CLAIMS OF MORE THAN $2 MILLION (TOTAL GU AMOUNT) DUE TO HAE	PERCENTAGE OF CLAIMS OF MORE THAN $2 MILLION (TOTAL GU AMOUNT) DUE TO HEMOPHILIA	PERCENTAGE OF CLAIMS OF MORE THAN $2 MILLION (TOTAL GU AMOUNT) DUE TO EITHER HAE OR HEMOPHILIA
2014	7.7%	11.1%	18.8%
2015	13.2%	11.7%	24.9%
2016	14.1%	11.9%	26.0%

Figure 5
Impact on Excess Claim Costs

YEAR	RETENTION	PERCENTAGE OF EXCESS COST DUE TO HAE	PERCENTAGE OF EXCESS COST DUE TO HEMOPHILIA	PERCENTAGE OF EXCESS COST DUE TO EITHER HAE OR HEMOPHILIA
2014	1,000,000	5.5%	8.3%	13.8%
	2,000,000	10.8%	13.6%	24.4%
	3,000,000	13.6%	14.2%	27.8%
2015	1,000,000	8.4%	9.8%	18.1%
	2,000,000	17.8%	16.1%	33.9%
	3,000,000	21.5%	16.5%	38.0%
2016	1,000,000	7.6%	9.1%	16.6%
	2,000,000	17.5%	16.2%	33.6%
	3,000,000	23.4%	20.5%	43.9%

Leveraging applies not only to trend. We can anticipate that the impact on the claim costs of HAE and hemophilia are also "leveraged."

The actual findings from the study, however, still amaze us. Based on 2015–16, at a $1 million retention, more than 15 percent of the excess claim costs are due to either of these two conditions. At a $2 million retention, this number is further leveraged and is higher than 30 percent. At a $3 million retention, the number increases to more than 40 percent. (See Figure 5)

Unlike some of the traditional drivers of large claims (e.g., transplants) that don't usually recur in subsequent years due to death or recovery, the large claims due to HAE and hemophilia tend to continue for multiple years, as the patient needs to receive injections on a continuous basis. This has caused higher and higher financial pressure on health care insurers and reinsurers, especially when a "no new laser" commitment is made.

CONCLUSION

As the large-claim trends continue to accelerate in the current health care environment, it is very important to recognize some of the main drivers behind catastrophic claims. Specifically, during the past couple of years, HAE and hemophilia were the two new emerging, and increasingly frequent, causes of "jumbo claims." This frequency and severity is on the radar of the stakeholders in the health insurance market. These conditions now represent a significant portion of the high excess risk (especially excess of $2 million) and therefore need to be carefully considered and monitored. Insurers will need to understand the magnitude and trend of the catastrophic risk and consider excess of loss reinsurance not only for the protection at the high layer but also for obtaining access to the reinsurer's care-management vendor program which may help significantly reduce the cost through specialty case management. Reinsurers will need to adequately model risk in the excess coverage rating, provide care management services to their clients to help them contain the costs, and consider innovative reinsurance solutions. That may include carve-out coverage for these types of special and extremely expensive conditions. ■

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ENDNOTES

1 The Swiss Re large claim study was based on Truven MarketScan Research Database 2012-16 commercial data.

The underlying data of the study includes more than $383 billion in ground-up claims, representing comprehensive benefits including inpatient, outpatient, physician and prescription drug services costs, and covers more than 1 billion member months of exposure during the years 2012 to 2016 from various fully insured and self-funded health plans across the U.S.

2 The US Hereditary Angioedema Association website, *https://www.haea.org*, source for the definition, symptoms and frequency of the disease.

3 National Hemophilia Foundation website, *https://www.hemophilia.org*, source for the definition, symptoms and frequency of the disease.