

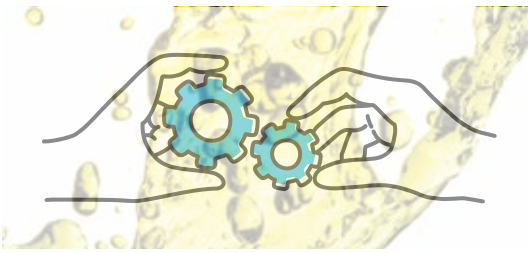

A New Disease – Underwriting Without Evidence

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Requirements for evidence-based underwriting

Underwriting guidelines today follow the principles of evidence-based underwriting. By adhering to those principles, insurance companies make sure that all risk decisions made by underwriters have a substantial statistical basis. Most importantly, that is true for such decisions that classify the applicant as a substandard risk and therefore result in an additional premium, an exclusion of parts of the risk or even the declinature of the application.

Evidence-based risk assessment in underwriting is crucial for the following (at least) two reasons:

- Firstly, it ensures that the underwriting decision adequately compensates the risk the insurer takes on by granting cover to the applicant.
- Secondly, and most importantly, acting on the basis of suitable and sufficient evidence is a legal obligation. Only by doing so insurers can meet the requirements of current anti-discrimination legislation.

Where the experience based on a company's own insurance portfolio is insufficient, the risk assessment for medical risks is based in particular on clinical studies and statistics. These are carefully selected according to well-proven criteria for their quality and relevance to the risk to be assessed. The decision whether or not a clinical study is considered suitable to be used in the underwriting context, depends on a large number of parameters. Among the most important parameters are:

1. Length of the follow-up period: Only studies with a sufficiently long observation period can support making a long-term prognosis as required in Life insurance.
2. Participants of the study: The study has to fulfil requirements concerning the size of the group as well as study subjects being either representative of a collective to be insured or that findings can be transferred to such a collective, albeit with some adjustments.

Transferring findings from clinical studies to the insurance context is the task of multi-disciplinary teams of experts who will consider all relevant medical, actuarial and legal requirements. Many years of clinical and underwriting experience of medical doctors and underwriters are involved in the development of guidelines. This experience complements the scientific findings to allow the development

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of risk-adequate guidelines that are technically correct and applicable in practice at the same time.

With the requirements of evidence-based underwriting in mind, the emergence of a new disease at first glance seems to be an insurmountable challenge: Naturally, neither comprehensive clinical nor underwriting experience exists. And even though some early clinical studies may emerge, case numbers will be small and observation periods short. Does this mean the requirements of risk-adequate and evidence-based underwriting cannot be met in such instances?

Underwriting with little evidence

The discovery of a new virus, such as SARS-CoV-2, is an uncommon event. Even more uncommon is that the virus is of immediate global significance. This is everything but daily business from an underwriting perspective.

When the first cases of the new coronavirus emerged in early 2020, little did we know what would happen. Thus, it was our utmost priority in the early days to follow the developments closely and assess the relevance for the insurance industry.

As the number of cases grew, we focused on learning everything possible about the new virus and making – albeit preliminary – assumptions regarding the risks associated with it. Not surprisingly, more questions than answers arose. To come up with guidance on how to address the issue from an underwriting perspective, we nevertheless gathered what little established evidence there seemed to be and made best-estimate assumptions based on unfamiliar and unpleasantly uncertain grounds. This challenge was one of a kind for us.

However, having to make underwriting decisions on the basis of very little, incomplete or only partially suited evidence is by no means uncommon. The underwriter faces a similar problem for rare diseases. Rare diseases are diseases with only very few, sometimes a few hundred people affected globally. Deriving underwriting decisions for such a group of patients can be a challenge for the following reasons:

- A disease with only a few affected patients often generates very little research. Hence, only few or even no clinical studies might have been published. Those that exist may be of good quality, but they could also be outdated or biased. With no alternative evidence available, they will still have to be used to derive underwriting decisions.
- If the course and outcome of the disease vary significantly among those affected, it is hardly possible for the underwriter to make a reliable prognosis regarding the outcome for the average affected person. Individual outcomes therefore determine the assumptions regarding the risk of the group much more heavily than in more common types of disease.
- The treatment of rare diseases often generates significant costs. If that is the case, accessibility and affordability of treatment can be decisive factors for the survival and potential recovery of the patient. Underwriters will struggle to predict whether an individual applicant will receive optimal treatment for as long as it is required.
- It is highly unlikely that in their own clinical practice insurance doctors have previously seen patients with the respective disease.
- Insurers also can't learn from past cases in their portfolio because these cases are unlikely to exist, let alone in sufficient quantity.

How can fair and adequate decisions nevertheless be made for such cases?

How to make decisions in uncertainty

Developing underwriting guidelines with limited evidence will always be a highly complex and individual process. However, certain steps of the process will always be the same.

Having established processes helps especially when – such as in the early days of COVID-19 – many things are still unclear. In these situations, it is more important than ever to concentrate on the facts at hand and apply well-proven routines.

To start off the process, the following questions should be asked:

- What is known about the disease?
- Do we see similarities to other, previously known diseases?
- Which sources of information can be used for the evaluation?
- When do we change our assumptions?
- What do we not know?

What is known about the disease?

Instead of focusing too much on what is not known, it is important to concentrate first on what is known about a disease. Even with a new disease like COVID-19, quite substantial information will always exist, e. g. information of the following kind:

- What causes the disease?
- In case of a viral infection, is the virus that is causing the respective disease already known or is it a newly detected virus?
- In case of communicable disease, how is it transmitted?
- What symptoms have been observed in patients during the course of the disease?
- Can a typical course of the disease be described?
- How does it compare to the typical course observed in related diseases?
- Which organs are affected by the disease and in what way are they affected?
- How does the disease respond to different therapeutic measures?
- What complications have been experienced?
- Have significant differences in outcome been observed in different groups of patients, e. g. males vs. females, old vs. young, patients with pre-existing conditions vs. otherwise healthy etc.?

This information can provide some initial, but already very valuable insights into the risk.

Do we see similarities to other, previously known diseases?

Every disease shows significant overlaps to other diseases in symptoms and effects. Identifying and understanding such similarities can be extremely helpful when deriving the risk profile of a new disease for underwriting purposes.

Specifically for the virus SARS-CoV-2 and the resulting disease COVID-19, here are some parallels:

- SARS-CoV-2 is a coronavirus, and there have been previously known coronaviruses. Two of these, SARS-CoV-1 and MERS-CoV, have themselves caused epidemics. Extensive research exists for those two diseases and their respective outbreaks that give valuable insight into basic mechanisms of coronaviruses.
- None of the symptoms of the disease COVID-19 – ranging from classic symptoms of cold or flu, such as cough and rhinitis to respiratory distress, fever and neurological deficits – are unique to COVID-19, i. e. are being observed regularly in other diseases. Consequently, the immediate effects they will have on the well-being of patients are well-described.
- Some of the more serious complications, e. g. pneumonia, pulmonary embolism, stroke or even the failure of organs – such as the kidneys or lungs – can also be triggered by other severe diseases. Using the experience from those diseases enables better prediction of long-term outcomes.
- In the most severe cases of COVID-19, treatment in an intensive care unit and the use of mechanical ventilation may become necessary. This treatment can have long-term health implications for survivors – such as respiratory, neurological, but also mental impairments – further aggravating the effects of the underlying disease itself. These implications are not unique to the treatment of COVID-19 ; their evaluation can therefore draw on well-established clinical experience.
- Among the most important questions regarding COVID-19 has been "Who is most at risk of suffering a severe course of the disease?" Very early on in the pandemic, various health care institutions published guidelines as to who they considered to be among the high-risk group. They did so using what was known at the time about COVID-19, but also using years of experience with similar diseases. These guidelines have proven to be very accurate and have only been marginally refined and extended over time.

Which sources of information can be used for the evaluation?

As mentioned above, the selection of appropriate evidence is one of the most important steps in the derivation of evidence-based risk assessment guidelines. With little evidence available, this choice becomes easy, but the output may not always be satisfactory.

In the case of COVID-19, it is not the lack of evidence as such, but the lack of long-term evidence that is a challenge. In contrast to this, the quantity of available short-term evidence is and has been record-breaking.

This included numerous clinical studies. Since the beginning of the pandemic, new ones have been published seemingly almost every minute. While the quality of the studies may be good, they often look at small case counts only. In many instances, they were published in a preliminary stage to speed up the process of understanding the new disease. While this is reasonable to drive the scientific process, the level of certainty needed for decisions requires long-term evidence.

In addition to clinical studies, we have seen a flood of other, often more spontaneous pieces of information, such as:

- Statements from numerous – actual or self-proclaimed – experts
- Reports from hospitals or medical doctors involved in the treatment of COVID-19 patients, often with very specific observations
- Very personal "eyewitness accounts" of survivors of the disease or family members of the deceased
- Millions of newspaper articles of vastly varying quality and informative value

In light of these information sources, the real challenge is not only going through a significant amount of it, but also deciding on which ones to rely. The following criteria will help in that decision process:

- Who is the author of the information?
- What was the reason for publishing the information?
- Is the author qualified to talk about the subject in question?
- When was the information published?
- Has the information been quality-checked and/or peer-reviewed?
- Are we looking at the original source of information or just a reproduction of it?

When do we change our assumptions?

Both very little data (as in the case of rare diseases) and currently evolving data (as in the case of newly detected diseases) mean that every new piece of information can fundamentally change what we know about a disease. Both situations therefore require a regular and very diligent monitoring of new findings.

Reacting to every new piece of information is just as inappropriate as ignoring evolving evidence. A clear decision process is needed as to when new evidence is considered substantial enough to result in changes to the overall strategy.

What do we not know?

Eventually, while assessing the risk of a new disease, it is important to reflect on what is not (yet) known and what may as well be impossible to know. These factors must be kept in mind as they can change the rules of the game literally overnight and as such may make it necessary to modify the underwriting strategy at very short notice.

Risk assessment for COVID-19

In the process of developing underwriting guidelines especially for medical risks, it is paramount to also look beyond the disease in question. In many cases, other factors will have to be considered that may play a vital role in determining the risk. In the case of COVID-19 specifically, there are a number of such aspects.

The political factor

Governmental measures to curb the spread of the virus have had a major impact on the course of the pandemic. Regional differences in case count but also death rates are to a significant degree only explained by the measures adopted. They range from limited restrictions of social contact to strict curfews, from wearing masks being compulsory to closing down borders. Modifying the political strategy has also resulted in huge differences in outcomes in a first and second wave of the pandemic in some regions.

This will inevitably influence not only the overall course of the pandemic but also individual risk. It will determine to a significant degree the possible exposure to the virus of potential clients but also the availability of health care services once they contract the disease.

The human factor

People across the globe are confronted with a once-in-a-lifetime event. And this is true not just for those people that have fallen ill or experienced illness in friends or family. It is true for literally everyone because everyone is at risk of contracting the disease and is likewise affected by the mitigating measures imposed by their respective governments.

Under these circumstances, human behaviour plays a vital role in determining individual risk. How well will an individual comply with the suggested safety measures? And how easy will it be to avoid risk given the individual's living conditions, e.g. housing, occupation, family? While we won't try and make assumptions about individuals' behavior and thus will refrain from basing our underwriting decisions on that behaviour,

it is important to be aware of these factors while creating a general underwriting strategy around COVID-19.

Medical factors

On the medical side, three possible developments of a very different nature have the potential to significantly influence the risk associated with the disease:

- New treatment options could significantly improve outcomes of the disease.
- The availability of effective vaccines may help many people to avoid becoming ill.
- Mutations to the virus could significantly change the risks associated with it – for better or worse.

All of these could have a significant impact on the individual risk.

Conclusion

The COVID-19 pandemic has plunged the world into tremendous uncertainty. As such it has also been and remains an unprecedented challenge for the insurance industry.

As insurers, however, dealing with uncertainty is our daily business. We therefore have well-established processes and procedures to go about our business even under difficult circumstances.

For underwriting in the Life and Health space, this means first and foremost identifying experience we can build on while at the same time being prepared to modify our procedures to newly established knowledge. In doing so, we can make underwriting decisions that will meet our requirements of being risk-adequate and evidence-based to the extent possible under such extraordinary circumstances.

About the author

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