Health systems are challenged by advances in diagnostics and therapy

somewhat different

Advances in medicine

As population and life expectancy continue to increase in most parts of the world, we can foresee a steady increase in demand for medical services and products as one of the global megatrends. Substantial progress could be observed in most areas of medicine over the last decades. Previous research focused on the development of new, but "traditional" drugs and medical devices. This has changed substantially over time. Nowadays scientists look for "intelligent" drugs and devices, AI supported computer systems, and a personalised therapy. New opportunities of "Health 4.0" grab the headlines.

Human life expectancy has increased steadily over several centuries and is still rising slightly in many countries. For the 21st century, it´s still too early to make any sound predictions. On the one hand, there are factors that may further enhance life expectancy. Next to medical progress, this might be improved individual behaviour (e.g. smoking cessation, healthier nutrition) or better education. On the other hand, several environmental parameters will probably challenge any progress made. Most important factors are climate change (heatwaves, storms, flooding), pollution (air, soil, water) and infectious diseases (epidemics, pandemics).

Healthcare expenditures have risen steadily over the past decades. There are several contributing factors for this development. The main drivers are:
- Increase in people with chronic diseases
  - cardiovascular diseases (myocardial infarction, stroke)
  - pulmonary diseases (COPD, asthma)
  - neurological diseases (Alzheimer's disease, Parkinson's disease)
  - psychiatric diseases (depression, psychosis)
  - immunological diseases (rheumatoid arthritis, M. Crohn)
  - metabolic syndrome (hypertension, overweight, diabetes)
- Longevity, with associated need for long-term care
- Costs for healthcare staff
- Development of new drugs and medical devices
- Implementation of the concept of "personalised medicine"
- New approaches in genetic medicine.

In particular recent progress in genetic therapy (e.g. CAR T-cell therapy) is a challenge for healthcare systems worldwide, as in the future therapies may be available that could cost more than USD 1million per patient. Here, the question of the financial feasibility independent of the organisational and insurance form of the respective health system arises directly.

Overall, a continuous increase in healthcare costs can be expected. Both, claims frequency and claims severity will be affected. In some areas there may be a certain cost relief, but these savings will probably not be able to compensate the additional expenses elsewhere. Public and private insurers will therefore face an increase in claims costs in the short term. Their financial stability may be endangered in the end, as they may not be able to adjust their premiums arbitrarily when they are under state regulation and supervision.

Recent developments in genetic testing show that asymmetry is flipping. Since the inception of life and health insurance, it used to be the case that insurers could estimate health and mortality risks, based on medical risk profiling. However, going forward, based on results of genetic tests, individuals may be able to understand their expected morbidity and mortality better than insurers, who are not allowed to take this into account in many countries.

Even if we take into consideration the limited significance and value of genetic tests, the anti-selection risk is prone. It´s likely that those individuals with specific risks will buy L&H policies according to their individual needs (e.g. critical illness cover in case of predicted higher cancer risks). If, on the basis of such tests, the customer knows significantly more about his risks than the insurer, then this is a serious threat to collective thinking and thus to the basic principle of insurance. This can call into question insurability in some areas.

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