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Trends in medical data recording
and their potential impact
on insurance and reinsurance

Background

More and more individuals use – be it on purpose or unknowingly – devices that track medical and behavioural data, and the cost of such devices is steadily falling, contributing further to their integration into daily life. Mobile applications devoted to health are available by the tens of thousands and are becoming ever more popular, with some exploring the trend of "gamification", whereby users are rewarded to reach certain targets, like number of daily steps taken.

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In a few years it might be common to provide personal health and lifestyle data collected by connected objects to purchase insurance, much in the same way as a medical questionnaire is answered today. The methods of collection, transmission and analysis of this data will be standardised, and lifestyle data will be used by life and health insurers in combination with medical data to improve the understanding of the insured risks and to optimise the medical underwriting and pricing.

The basic problem is how to use this new information to evaluate risks. In the context of insurance there will be two fundamentally different approaches: retrospective and prospective use of data, i.e. only relying on data available at the time of the applications vs. continuous use of new data throughout the duration of the policy.

Impact on life and health insurance underwriting

Nowadays, insurers evaluate risk by a snapshot approach; in the future, they will assess proposals using a "film" of the data.

Underwriting will be quicker: medical information obtained by connected objects is already in digital format, and algorithms can analyse the data in a few seconds to produce an assessment. Underwriting will be cheaper as the process will be largely automated.

What remains to be seen, is how the two sources of information – traditional medical questionnaires and new digital information – will be weighted and how reliable this new method of selection can be. Devices could be transferred to other users, be tampered with or malfunction. Also, due to being relatively new, less well tested, limited by size, and possibly intentionally less reliable (commercial reasons), the output of such devices may not always be comparable to scientifically measured information. Furthermore, it is unclear how legal and data privacy issues will influence this development. There could be differences in the approaches of different countries and with respect to different age bands. Societal appreciation of the value and need to protect personal sensitive medical data will evolve with the spread of such devices and the corresponding social dialogue.

New insurance products

If personal medical and life style data becomes available for the use of insurers, client selection and accuracy of medical underwriting and pricing will improve. Innovative covers will become possible, such as:

- Personalized insurance premium. This might lead to a fragmentation of the insured collective, and also bears the risk of losing "good" risks, i.e. people who understand from self-tracking that they have a lower than average chance to claim benefits.

DATA COLLECTED INCLUDE

- Heart rate
- Blood pressure
- ECG
- Cardiac output, stroke volume
- Blood Oxygen
- Respiratory rate
- Sleep Rhythm
- Temperature
- Weight
- Serology (HIV, Syphilis…)
- Blood and tear sugar level,
- Physical activity (number of steps, distance walked…)

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- Insurance with a variable premium based on the health status of the insured, i.e., for diabetes, it could become standard to store data measurements on glucose levels in serum or lachrymal fluid to provide a "film" of the diabetic control over time to the insurer.

- Insurance with rewards for persons who show that they are making efforts to improve their health and lifestyle.

Connected devices may turn out to be a huge opportunity for marketing and commercial innovation. For instance, they might be integrated into insurance products with support from a dedicated helpline, or a linked website, including services that offer coaching designed to manage and take care of one's health.

Role of Reinsurance

The role of reinsurance is to support and promote these innovations, and monitor their implementation in order to understand the global impact on the product landscape, on medical underwriting and on insurance statistics, thus allowing to reap the benefits of these emerging opportunities.

Where insurers seek to exploit the emerging trend of personal medical data recording via connected objects, SCOR's clients can draw on the expertise and experience of SCOR's medical experts, dedicated research centres and emerging risks team, all of whom work together to provide them tailor-made support.

CONNECTED DEVICES WILL BE WHERE LEAST EXPECTED

SCOR sponsors the Hello-Tomorrow Challenge, www.hello-tomorrow.org giving an opportunity for its experts in all major fields of reinsurance to meet and exchange views with several hundred start-ups from 98 different countries.

Start-up Instent develops a remote monitoring technology that can turn implantable medical devices into connected healthcare devices. Implementation of this technology with stents will provide doctors with a simple tool to anticipate stent-related complications and tailor the follow-up treatment to the needs of the individual patient.

In the case of myocardial infarction, gold standard treatment is the placement of a stent in the narrowed coronary artery that will send an alert when it is about to get clogged. Connected devices will become so tiny that it will be possible to use them for a "live" monitoring of coronary stents.
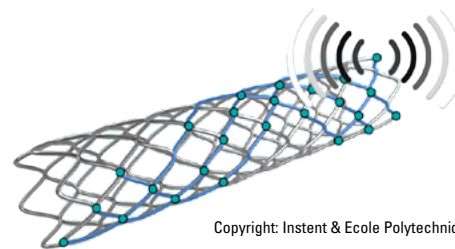
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OPEN QUESTIONS

> Do people who record their medical data with connected objects take better care overall of their health or not?

> Will mortality and morbidity be statistically significantly improved in populations which record their medical data with connected objects?

> Will life insurance selection, partly or entirely assessed based on medical data from connected objects, be reliable for predicting the risk of e.g. death or disability?

> Will a focus on inexpensive and quick underwriting lead to overlooking the "real risk"? In other words, why analyse the heart rate of an insured person over the last 5 years if you ignore the neoplasm that was already there?

> Will the long-term consequences of using these new methods be the creation of two insured populations, one selected based on medical information from connected objects and big data, and one conventionally selected?

> What will be the implications of data protection on the use of medical data from connected objects by insurers?

> What is the risk of fraud? How can insurers detect and handle cases where false medical data is sent, e.g. from "hacked" connected objects or from another person?

> Could potential clients reject the use of medical data from connected objects by insurers, causing reputational problems for insurers?