

Conference article

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Genetic risk in insurance field

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Abstract: The risk-delimiting tools available to insurance companies are therefore substantial and it is also possible to argue that a margin of uncertainty is a natural component of the insurance contract.

Despite this, businesses look at the potential of predictive medicine, and in particular the growing understanding of genetic mechanisms that support many common diseases.

In particular, the rapid development of genetics has led many insurance companies to glimpse in the predictive diagnosis of disease by genetic testing the possibility of extending the calculation of the individual risk of developing a particular disease to appropriate premiums or even denying insurance coverage.

Keywords: Genetics; Insurance; Risk assessment

1 Introduction

For some years, in Europe and Italy, there has been a gradual increase in the number of individual citizens taking out supplementary insurance policies on top of the basic health care system [1]. This trend is partly supported by actuarial reasons such as cost reduction and guaran-

teed extension, but above all by a progressive reduction in the benefits provided by the public pension system. In particular the traditional forms of guarantee (accident, sickness, death, reimbursement of expenses) have been augmented with insurance policies such as “dread disease” and “long-term care”.

The first one provides a settlement of economic benefit for cases of serious illness pre-determined by the contract. Example pathologies are: myocardial infarction, cardiovascular surgery, malignant tumors, and organ transplants [2].

Long-term care policies provide economic settlement in the event of a loss of self-sufficiency according to pre-defined contractual criteria. Generally, an insurance contract rides on the insurer’s liability to pay a policy of compensation to the insured person if a pre-determined event occurs in a given time period, and by obtaining from the insured a sum of money (premium).

The amount of the premium for the individual insured is calculated by taking into account the sum insured and the probability that the insured event will occur during the term of the contract. To be sure of a certain risk certain conditions must be met: the size and likelihood of the claim (valuability) must be quantifiable; the injury must not be foreseeable and its occurrence cannot be influenced by the insured; the disease must be distributed over a large number of people who form the risk community; the insurer must be able to charge an appropriate risk premium (economy) [3]. Whether a risk is insurable or not is determined by the extent of the damage and its likelihood of occurrence and expenses incurred in the event of a claim. All insured persons form “a pool” of risks; the company’s aggregate the associated costs and risks of the “pool” and distribute them among the insured so that everyone pays the premium proportionally to their risk. Risk factors are evaluated through a classification selection process according to each insured person on the basis of different predefined parameters which corresponds to a given contribution represented by the insurance premium. Risk evaluation goes to the advantage of the individual.

Where the insured person has a high risk, the insurance company may choose between different circumstances: applying a premium; excluding the coverage of

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certain risks; limit the term of the contract; not providing insurance. In common practice, risks are classified into three different groups: standard, substandard and uninsurable.

The insured person has the obligation to declare a priori every important element for the appreciation of his risk and for its classification; the discovery by the insurer of omissions in the complaint may result in the invalidity of the contract. The insured person has the upper hand because he knows his risk exposure. The factors that contribute to determining the risk and then selecting it are general and individual.

The first types are epidemiological and statistic and they refer to the mortality tables of the population. Risk assessment and selection initially only depend on age but are subsequently extended to individual characteristics by analyzing statements about biological (occupational, environmental, environmental) circumstances. In some cases the health insurer will assess the insured person's claim to insurance by medical and instrumental examinations [3].

2 Insurance risk assessment through genetic testing

The risk-delimiting tools available to insurance companies are therefore substantial, and it is also possible to argue that a margin of uncertainty is a natural component of the insurance contract [4]. Despite this, businesses look at the potential of predictive medicine, and in particular the growing understanding of genetic mechanisms that support many common diseases.

In particular, the rapid development of genetics has led many insurance companies to use predictive diagnosis of disease by genetic testing in the calculation of the individual risk of developing a particular disease and applying appropriate premiums or even denying insurance coverage [5]. Indeed, companies use inferential genetic information by accessing indirect genetic data through anamnestic and clinical indices that reflect predisposition factors or disease risk.

In the event that they consider the data provided to them insufficient, they may require the contractor to provide genetic test results already carried out or to undergo genetic testing.

These two options have different legal validity since the insured person may oppose the performance of the genetic test, but it is not possible to hide one's genetic data [3]. This is in accordance with Article 1892 of the Italian

Civil Code, which states that the incorrect declarations and the reticence of the contractor (concerning circumstances in which the insured did not give their consent or did not give it under the same conditions) are the cause of cancellation of the contract when the Contractor acted with gross negligence [3,5]. The most immediate end-to-end applications of genetically-engineered tests relate firstly to the possibility of diagnosing late-onset diseases by DNA analysis, the clinical manifestation of which will be realized in the future [6].

The purpose of insurers is to exclude insured persons from those who present a greater risk of health problems or to apply technical corrections of an economic nature such as higher risk groups.

Extending the selection could, however, bring fewer benefits to the insurance company by limiting the degree of coverage actually disbursed and modifying the overall distribution of costs associated with the operation of the insurance [7,8]. In the insurance system the company has a duty to operate according to a risk selection and standardization criterion and at the same time to limit the contribution paid by the user.

The positive trend of access to additional insurance products and the basic social security system should allow the insurer to refer to the "statistical remedy" by means of a logic that provides for an increase in the number of insured persons and hence an increase in the number of premiums that need selection.

Insurers, however, make the possibility of using genetic predictive tests of greater general equity due to the ability to customize insurance premiums more precisely on the basis of individual risk.

Predictive genetic tests can be performed during pregnancy [9] also for abortive purposes [10].

Actually classifying with the traditional parameters attributed to the same risk category subject with different probabilities of illness, favours those who are less predisposed to diseases that are given higher insurance rates.

To this is added the insurers' concern about a disruption of the economic equilibrium of the insurance system as a result of information asymmetry. These situations occur when parties who intend to conclude a contract withhold relevant information.

Those who pose a high risk or hold unjustifiably high insurance coverage at moderate premiums do so at the expense of the collectivity of insured people [3,5,7,8]. In the case of information provided by the genetic test and kept hidden by the insured some situations may arise: the insured might postpone the opening of the policy until an age that according to the genetic test is near the occurrence of a disease; the insured person may provide

information to the insurer that allows access to numerous high coverage policies with payment of an undervalued premium.

The insurance company is unable to establish informational symmetry without access to the forbidden genetic information.

There is also the risk of an increase in health insurance premiums against genetic conditions; this may lead to a progressive improvement in genetic tests where the DNA data cannot be misused, for example increasing the insurance premiums in relation to genetic susceptibility to illness.

Regardless of the economic implications of genetic testing, the possibility of recourse to these texts in the field of insurance also inspires reflections on aspects of a deontological nature that must be consistent with the work of the healthcare facility involved in the process of acquisition of the genetic data [3].

Today ethical instances have essentially contained the issue of a subordinated insurance cover also for the execution of predictive genetic testing. However, from a strictly technical point of view, based on the principle that the very nature of private insurance legitimizes discrimination, but above all that it is a matter governed by private law rules, it is also possible to assume that in the near future genetic diagnosis will be relevant for the purpose of eligibility or not for an insurance policy, without which there may be substantial legal and legal medical problems.

As for the use of genetic information in the field of insurance, the orientation of a large part of European insurers (Comité Européen des Assurance) is contrary to the requirement for predictive genetic testing prior to the conclusion of the contract but is conducive to the insured person revealing the genetic information already known [5]. The European Parliament had already expressed its opinions on this point in 1989 by establishing that an insurance company has no right to ask before and after the stipulation of the insurance contract to carry out genetic analysis nor to communicate the results of genetic analysis already carried out or setting genetic analysis as a preliminary condition for the conclusion of a contract.

Similarly, the 1997 European Recommendation stated that a candidate for employment, insurance contract, or other services should not be forced to undergo an analysis unless expressly provided for by law and the analysis is necessary for the protection of the individual, data or a third party.

In 2004, a working document on genetic data [11] was adopted in Brussels by the Working Group on the Protection of Individuals with regard to the Processing

of Personal Data. According to this document, genetic data is undoubtedly sensitive data, and this implies the need to respect some of the key principles: the principle of proportionality (assessing the risks to the fundamental rights and freedoms associated with the processing of these data); the principle of relevance and no excess (avoid using genetic data if not absolutely necessary); the purpose principle (avoiding uses incompatible with those for which the data is collected).

It is also stated in the same document that it is forbidden to collect genetic data for employment reasons and in the insurance sector except in very exceptional circumstances and taking into account the treatment ban already in place in some of the Member States. In particular, it is not possible to discriminate workers on the basis of information that in most cases cannot be regarded as definitive from a productive point of view. This is due to their probabilistic nature and because the effects of genetic data depend on the combination with other factors such as environmental ones [12,13].

The National Bioethics Committee's document "Bioethical Guidance for Genetic Testing" expressed its views on these points. It was recommended that companies abstain from considering genetic information, especially relating to polyphagous polygenic diseases, both for incomplete knowledge of the molecular mechanisms that are in place at their outset and for the difficulty of developing life expectancy calculating systems and mortality that take into account this information. The estimation of the risk attributable to the predisposition of polygenic diseases should be formulated individually on a case-by-case basis [3]. On the same subject, UNESCO's Universal Declaration on the Human Genome and Human Rights in 1997 and the Charter of Fundamental Rights of the European Union in 2000 prohibit any form of discrimination based on genetic features [14,15]. Finally, Article 12 of the Explanatory Memorandum to the Strasbourg Convention states that in the case of private or employment recruitment contracts and insurance companies, insofar as predictive tests do not aim at a health objective, they represent a strong attack on the rights of the individual's private life [3]. In 2016 the Council of Europe asks - for the first time in a 'legal' text approved today in the form of a recommendation by the Committee of Ministers - to ensure the protection of the rights of insured persons, in particular as regards to the use of their health data: prohibiting insurance companies from using and requesting genetic testing to determine whether to issue an insurance policy or not as well as the insurance premium and compensation.

The Committee of Ministers' recommendation suggests the best way to protect people's rights in a global

insurance market. Governments are obliged to ensure that no one is discriminated against on the basis of this data, in particular on the basis of genetic characteristics.

To set the benchmarks on the use of predictive genetic tests, which should only serve medical research, is Article 12 of the Council of Europe Convention on Human Rights and Biomedicine, the Oviedo Convention. On the basis of this legally binding text that came into force in 1999 - but only 26 States of the Council of Europe out of 47 that have ratified it, and 6 others, including Italy, only signed it - the Committee of Ministers has decided to endorse the recommendation that, in addition to prohibiting the use of genetic testing in insurance, also requires insurance companies to justify the use and treatment of data relating to their clients' health and to obtain their consent to do it. The recommendation also prohibits insurers from using the data on the health of the insured person's family members, as well as personal data of the public domain insured, such as published on the internet or collected during clinical trials. The text also imposes on insurers rules for the storage of health data, which must be adequately protected. Lastly, the recommendation, recognizing the social importance of insurance coverage for certain risks related to health, physical integrity, age and death, requires the Member States to facilitate cheap access to insurance policies [3,5,12,13].

The text, approved in 2016 by the Committee of Ministers, although not binding on the States, could still open the way, as has happened in the past for other controversial issues, to the submission of complaints by individual citizens or associations to the European Court of Human Rights against the behaviour of individual Member State authorities [3].

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