GENETIC DATA IN INSURANCE UNDERWRITING: CONSIDERATIONS IN THE THAI CONTEXT[*]

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Abstract

Whole-genome sequences contribute significantly to our understanding of human development and functions. Various abnormalities can result in diseases or reduce individuals' life expectancy. Utilizing genetic data for predicting an individual's health status is a consideration in insurance underwriting assessments. However, there is an ongoing debate about the appropriateness of using this information, given its unchangeable nature since birth. Discussions often center around the principles of the insurance premium setting and underwriting, which vary based on the applicant's health status and risk assessment.

There are two potential approaches. The first option is enacting laws. This would ensure that individuals are not discriminated against based on their genetic data. One consequence of this approach might be a significant increase in premium pricing for the overall portfolio. This could be due to the increased uncertainty for insurers when they cannot use genetic data to assess risks. Another option is discussion and agreement among concerned parties. This approach involves engaging in open discussions and reaching agreements among the relevant stakeholders. It allows for a more flexible and adaptable approach, where policies can be revised based on outcomes and experiences, especially if adverse events occur during a trial period.

Both options have their advantages and disadvantages. The best choice for Thailand will depend on what is considered most important and what aligns best with the country's specific circumstances and priorities. It's crucial to carefully weigh the implications and make a decision that serves the interests of all stakeholders involved.

Keywords: Genetic Data, Genome, Genetic Discrimination, Underwriting, Life Insurance

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1. Introduction

Genetic data holds significant importance as a type of personal information, particularly concerning health-related matters. The volume of such data has seen a remarkable increase following the completion of the international research known as the Human Genome Project (HGP) in April 2003.[1] The adoption of this technology is advancing swiftly due to the decreasing cost of sequencing a single human genome. Following the launch of second-generation sequencing platforms in January 2008, the cost has significantly decreased. The analysis of a single human genome can now be achieved for less than $600, rendering it an economical option for both medical applications and scientific investigations.[2]

Genetic testing has been used in clinical medicine for a while. Chromosome abnormality and specific gene mutation are used to predict the risk of developing diseases and select the appropriate choice of treatment. Before the genomics era, healthcare providers used family history to calculate relative risks such as cancer, cardiovascular disease, etc. With the knowledge of the human genome, genetic data can provide more precise predictive information. When doctors suspect genetic-related diseases on the patient's condition and family history, they can request the test in the same way as other special laboratory tests. The test can analyze only interesting genes, many genes at one time, or test the whole sequence.[3] As the price of genetic testing decreases and the advancement of technology, the trend is to shift to more extensive testing than single-gene tests, which can provide more extensive information and greater predictive power of individual future health status.[4]

Unlike other health information records that reveal the past or current health status, genetic data can predict the future and share some family members' characteristics. Personal genetic data can be exposed by using other family members' data, or the result of other family members can predict other people's conditions.[5] The disclosure of such data also reveals the family's data at the same time. Genetic traits can be shared among individuals of the same ethnic or ancestral background. There is concern that such information could be utilized as a tool for discrimination against certain ethnic groups. While genetic data offers valuable insights

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[1] National Human Genome Research Institute, ‘What Is the Human Genome Project?’ (28 October 2018).

[2] Kris A. Wetterstrand, ‘DNA Sequencing Costs: Data’ (1 November 2021).

[3] Susan M Domchek, J Larry Jameson and Susan Miesfeldt, ‘The Practice of Genetics in Clinical Medicine’ in J Larry Jameson and others (eds), *Harrison’s Principles of Internal Medicine, 20e* (McGraw-Hill Education 2018).

[4] ibid.

[5] GA Bilkey and others, ‘Genomic Testing for Human Health and Disease Across the Life Cycle: Applications and Ethical, Legal, and Social Challenges’ (2019) 7 Front Public Health 40.

into individual health and ancestry, it also raises ethical considerations regarding privacy, consent, and potential misuse for discriminatory purposes.[6]

2. Insurance underwriting and risk assessment

The life insurance application is the standard form that a company uses for clients to declare their information. The documents needed for the underwriting process include personal identification documents, application forms, reports from agents, medical documents, financial documents, and others as indicated. Underwriters verify the information of the submitted documents and check for the company rules. In case the applicant does not have any problems, and is classified as standard risk, the insurance policy will be approved and sent to the customer; otherwise, in case of incomplete information, the underwriter will request more information, such as a medical examination, medical documents, or financial documents to assess the risk of the applicant. If the insurer can accept the risk but classifies it as a substandard risk or needs to exclude some conditions, the company will send a counteroffer to the customer. In case the customer accepts the higher premium or exclusion in the counteroffer, the counteroffer needs to be signed by the applicant and sent back to the insurer. Nevertheless, some customers have uninsurable risks (e.g., serious health problems). The insurer will return the premium with a notification document to the applicant.[7]

Non-medical risk information used in underwriting includes:

- Financial risk factors e.g., insurable interest, occupation, and income.
- Personal risk factors e.g., environment and residency, occupation and occupational hazard, sport and hobby, lifestyle and moral hazard.[8]

Medical risks are associated with the current and future health conditions and life expectancy of each person. The information used to assess medical risk includes but is not limited to:

- Age
- Sex
- Weight and Height
- Personal health history
- Family health history
- Abnormal development and disability
- Smoking and drug use

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[6] Y Joly, I Ngueng Feze and J Simard, 'Genetic Discrimination and Life Insurance: A Systematic Review of the Evidence' (2013) 11 BMC Med 25.

[7] The Office of the Official Information Commission (OIC), Insurance Agent Handbook, Vol 1 <https://www.oic.or.th/sites/default/files/content/85943/rwmelm-tch-1.pdf>.

[8] ibid.

- Etc.[9]

Attending Physician's Statement: APS or Medical records play an important role in the underwriting assessment process to assess the medical risk of the applicant. The underwriter will collect all information from health records, reports, questionnaires, and information from application documents, family history available in the application form, or medical records received.

During the underwriting process, underwriters carefully classify customers into risk classes. The equal-risk customers will rate up to the same premium class fairly and equally.[10]

2.1 Duty of disclosure and principle of utmost good faith

In the contract formation, each party must enter into the contract with good faith. However, in the insurance contract, the information about the financial and health status of the applicant is known only by the applicant. He or she has more information about him/herself than the insurer and the insurers have better information about their contract better than the customer, which can create an information asymmetry between the contract parties.[11]

Utmost good faith is the minimum standard, and parties entering a contract must act honestly. It is the fundamental doctrine in insurance law.[12] The insured and applicant have the duty of disclosure of all significant information; otherwise, the insurance contract can be null or voidable. The insureds and applicants have to disclose all the facts and information to the insurer for the underwriting decision process so that the insurer can decide to accept, deny, or accept with conditions.

2.2 Pricing premiums

The process of pricing premiums for insurance policies is complicated. There are many factors and assumptions in the calculation models. Actuaries determine the premium rate by using sound assumptions from statistics and experience data. The insurance premium needs to cover all costs of benefit payments, such as death benefits and additional riders' benefits, operational costs including administrative costs, agent commission, and reasonable profit of the insurance companies.[13] Many factors influence the premium pricing process. The company needs adequate premiums for operational cost and benefit payments, but not excessive premiums when compared to their competitors.

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[9] The Office of the Official Information Commission (OIC) (n 7).

[10] ibid.

[11] The Office of the Official Information Commission (OIC), Insurance Agent Handbook, Vol 2 <https://www.oic.or.th/sites/default/files/content/85944/rwmelm-tch-2.pdf> accessed 14 August 2023.

[12] Daniel Liberto, 'Doctrine of Utmost Good Faith' (3 February 2021).

[13] Meagan Baxter, Brian Felt and Ethan Skemp, *Risk Management and Product Development for Life Insurance Companies* (LOMA (Life Office Management Association) 2021).

2.3 Anti-selection risk or adverse selection risk

The anti-selection risk, also known as adverse selection risk, refers to the likelihood that individuals who perceive themselves to have a higher-than-average risk will seek out more insurance coverage than the general population. To mitigate this risk, insurance companies employ a thorough underwriting process as part of their management strategy to control or minimize the impact of adverse selection. This process helps assess and price policies accurately based on the individual's risk profile.[14]

In the life insurance industry, the people who want to buy insurance coverage need to declare their health status. The utmost good faith is the minimum standard and parties entering a contract must act honestly and such is fundamental in insurance law.[15] The applicant who has a genetic disease needs to disclose their known information before entering into the contract. Family data and genetic data can predict the mortality rate, life expectancy, and future health status of the applicants that underwriters want to use to assess the case in the underwriting process. Nevertheless, the use of genetic data in the insurance industry raises concerns about discrimination among people. The prohibition of the use of genetic data is also a concern point of the insurance business because of the adverse selection problem which happens when the applicant uses information that the insurer did not know or cannot use to decide on an insurance application. People with positive results may apply for coverage without disclosing their true information. They may apply for the higher sum assured and more coverage than normal situations. The consequence of prohibiting insurers from using genetic data can lead to increased premiums in advance for coverage they would otherwise tolerate. Some may offer a waiting period or include an option to increase the premium in the policy.[16]

3. The Genetic Information Nondiscrimination Act (GINA)

The Genetic Information Nondiscrimination Act (GINA) (2008) is the federal law of the United States that was enacted to prevent discrimination based on genetic data and prohibits employers and health insurers from using an individual's genetic data to make decisions about hiring, firing, job placement, or insurance coverage.[17]

GINA also protects people from being forced or pushed into getting genetic tests, and forbids sharing a person's genetic details without their agreement. This law aims to make sure that people don't face disadvantages in their jobs or health insurance because of their genetic composition.

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[14] ibid.

[15] Liberto (n 12).

[16] Béatrice Godard and others, ‘Genetic Information and Testing in Insurance and Employment: Technical, Social and Ethical Issues’ (2003) 11 European Journal of Human Genetics S123.

[17] ‘The Genetic Information Nondiscrimination Act (GINA)’ (2008).

Under Title 1, which focuses on preventing genetic discrimination in health insurance, the act forbids group health plans and health insurance companies from changing the cost of premiums or contributions for those covered by such plans due to genetic data. GINA also prevents health insurers from utilizing genetic data for:

- Group health plans - cannot use individual genetic data to adjust a group plan's premiums.
- Individual plans – cannot deny coverage, adjust premiums, or impose a preexisting condition exclusion.
- For underwriting purposes – the insurers cannot request or require individuals, or their family members, a genetic test and genetic data.[18]

Unintentional collection might not be seen as a breach if genetic data is collected in a limited way. Insurers can ask for it to determine what's suitable for medical payment purposes.

GINA is limited to health insurance. Other types of policies, like life insurance, long-term care insurance, or disability insurance, are not safeguarded by this rule. However, it's important to note that while GINA is a federal law, within the legal framework of the United States, numerous states have established their own laws on this matter.[19]

4. Code on Genetic Testing and Insurance

Instead of enacting a law, the Association of British Insurers (ABI) and the United Kingdom government made a voluntary agreement called the Code on Genetic Testing and Insurance, published in 2018. It aimed to regulate the use of genetic data in insurance underwriting. This agreement was designed to provide protection for individuals undergoing genetic testing while seeking insurance coverage.[20]

This code is an open-ended agreement and should be reviewed every three years. The last review was in 2022. Genetic tests in this code are divided into two types:

Diagnostic genetic tests confirm or rule out a diagnosis based on existing symptoms, signs or abnormal non-genetic test results, which indicate that the condition in question may be present.

Predictive genetic tests predict a future risk of disease in individuals without symptoms of a genetic disorder."[21]

Diagnostic genetic tests are used to rule out or confirm a diagnosis the same as the diagnosis investigation, such as blood tests and diagnostic imaging (Ultrasound, MRI, CT scan,

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[18] 'The Genetic Information Nondiscrimination Act (GINA)' (2008).

[19] Amanda K Sarata and Jody Feder, 'The Genetic Information Nondiscrimination Act of 2008 (GINA)'.

[20] 'Code on Genetic Testing and Insurance' [2018] GOV.UK.

[21] ibid.

etc.). The results of diagnostic genetic tests are part of relevant medical information when making an insurance application. In contrast, predictive genetic tests are used to predict future conditions that might not be present at the time of insurance application.

The commitments of the Association of British Insurers on behalf of its members will not require or request genetic tests in order to obtain insurance. They will not treat the applicant differently if the applicant has a predictive genetic result except for relevant specific conditions approved under this code. As of now, insurers can only ask for disclosure of results for one specific test, which is a predictive genetic screening for Huntington's disease when applied to life insurance applications exceeding the financial limit of £500,000 (cover for 96% of total life insurance policies)[22]. Moreover, results from genetic testing conducted as part of research participation do not need to be shared with insurers.

Table 1: Code on Genetic Testing and Insurance

Type of Insurance	**Financial limits above which predictive genetic tests may become relevant**	**Medical conditions for which insurers may ask for and take account of predictive test results, for policies above the financial limits**
Life Insurance	500,000 Euros (per person)	Huntington's disease
Critical Illness Insurance	300,000 Euros (per person)	None
Income Protection Insurance	30,000 Euros per annum (per person)	None
All other types of insurance	Predictive genetic test results will not be asked for, or taken into account, whatever the level of cover.	

Source: 'Code on Genetic Testing and Insurance' [2018] GOV.UK[23]

For accidentally or voluntarily receiving a predictive genetic test result, the Insurer may take it into account only for the applicant's benefit. If the result is abnormal, the Insurer will ignore the result except for the conditions stated in this code. Member insurers will report the number of complaints to the ABI and confirm to continue to comply with the code.

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[22] 'Code on Genetic Testing and Insurance' (n 20).

[23] ibid.

5. Using genetic data in underwriting process in Thailand

In the process of deciding on insurance, the person in charge looks at both the financial situation and any health issues of the applicants. Using genetic data helps in making accurate predictions for the insurer. However, this could be unfair to certain groups, since it is based on a person's background, something they cannot change. Genetic data might be used to keep certain groups from getting insurance. This depends on whether someone has genetic traits that make them more likely to get certain diseases.

Thailand differs from the United States and the United Kingdom, where specific laws or commitments are in place to restrict the use of genetic data in underwriting, allowing its use only under certain conditions. Currently, in Thailand, the underwriting process does not have such restrictions on the use of genetic data and family medical history in decision-making. Each insurer sets its own internal guidelines or uses standard international reinsurer guidelines for evaluating these factors. For example, a female applicant with a significant family history of breast cancer, who has received medical advice regarding genetic mutations in her family, might face additional charges. Alternatively, breast cancer might be excluded from her policy contract and riders, even if she hasn't shown any symptoms prior to applying for insurance.

Prior to the OIC order No.2/2565 and PDPA, which allowed insurers to ask about family health history[24], if applicants indicated that they had two or more first-degree relatives with early-onset breast cancer, they might be suspected of having a genetic mutation within their family.[25] Consequently, the insurer could potentially raise the premium or exclude certain coverage based on this information provided by the applicant. Insurers also had the capability to refer to internal databases that stored details from prior insurance declarations and histories of the applicants, which they could factor into their rating process[26]. Following the revision of the application questions in compliance with the OIC order No.2/2565,[27] which now only asks about the disease without specifying who is affected and at what age, there may be a

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[24] The Office of the Official Information Commission (OIC) (n 7).

[25] J Balmaña and others, 'BRCA in Breast Cancer: ESMO Clinical Practice Guidelines' (2011) 22 Annals of Oncology vi31.

[26] James Timmins, 'A Primer on Insurance Policies and Genetics' <https://www.soa.org/globalassets/assets/files/resources/research-report/2021/primer-ins-policies-genetics-report.pdf> accessed 1 July 2024.

[27] The Office of the Official Information Commission (OIC) order number 2/2565 (2022): The criteria for approving the application form and the statement of the policyholder for ordinary or industrial life insurance, and the standard form. (คำสั่งนายทะเบียน ที่2/2565 เรื่อง หลักเกณฑ์การให้ความเห็นชอบแบบและข้อความใบคำขอเอาประกันชีวิต ประเภทสามัญหรืออุตสาหกรรม และใบแถลงของผู้ชำระเบี้ยประกันภัย แบบมาตรฐาน.)

reduction in the influence of family health history on insurance ratings. However, it's important to note that certain concerns and challenges may still remain.

5.1 Genetic data and family history from medical records or previous application

In the event that the insured party does not disclose their family's health status, but this information is recorded in the medical documents sent to the insurer for unrelated reasons, such as a previous claim for a different health issue, the insurer in some countries cannot use this data for charging or exclusion purposes because of a memorandum or prohibition of law.

In Thailand, where the use of genetic data and family medical history is not restricted, if the insured party does not disclose their family's health status, but the information is present in medical documents sent to the insurer for unrelated reasons, like a previous claim for a different health issue, the insurer is within their rights to employ this data for charging or exclusion decisions. This is because the regulations of Thailand do not prohibit the utilization of such information in underwriting assessments. This difference in regulatory framework is an important factor to consider in the underwriting process.

5.2 Genetic mutation of family history found during the contestable period

The need to answer about the family history of genetic mutation is different between two versions of applications and it remains a crucial factor. Before B.E. 2565, this information was requested from the customer and factored into the assessment. However, after the introduction of the new standard questions, insurers no longer ask for this information.[28] Consequently, insurers may face challenges in voiding a contract based solely on family history in such cases.

If the insured party does not disclose their family's health status, but the insurer discovers this information during a contestable period, the insurer has the option to potentially void the policy. This is because the law does not specify the conditions under which the contract becomes voidable. The validity of the contract is determined by whether the concealed information could have led to higher pricing or denial of the contract. This information prompts the assessor to exercise more caution, potentially requesting additional health information before accepting the risks.[29]

However, if the law permits insurers to consider family and genetic history in the underwriting process, these factors can carry substantial weight in determining premiums. Consequently, failing to disclose this information could potentially lead to a voidable policy. Therefore, the decision to void a contract should be approached with caution, and it requires a careful interpretation of the relevant regulations. This emphasizes the importance of

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[28] The Office of the Official Information Commission (OIC) order number 2/2565 (n 27).

[29] The Office of the Official Information Commission (OIC) (n 7).

transparency and accuracy in providing all necessary information during the underwriting process.

5.3 Health history or genetic data of family members in the system

The existing data in the insurance system is a crucial ethical and legal consideration in insurance underwriting. If insurers have access to the family medical history of an applicant through their system, sourced from the claim data of another customer who is a family member of the applicant, they must be cautious in using this information to assess the applicant's risk. The medical data of another individual is protected by laws, and utilizing it may potentially breach the personal data rights of that person.[30]

On the other hand, if the insurer chooses not to use this information, there could be implications when a claim and related information arise. It could be argued that the insurer should have known or taken reasonable care to know this information, which could affect the validity of the contract. This consideration is aligned with Civil and Commercial Code section 866,[31] which plays a crucial role in determining the validity of contracts.

Balancing the need for accurate risk assessment with privacy and data protection laws is a complex challenge for insurers. It underscores the importance of clear and comprehensive policies regarding data usage and disclosure in the underwriting process.

Compared to the United States and the United Kingdom, Thailand lacks specific laws or statements regarding the use of genetic data in the life insurance industry. This gap leads to confusion and ambiguity in cases involving such information. It would be beneficial if the Office of the Insurance Commission (OIC) could leverage its authority to establish a clear agreement on how Thailand should approach the use of genetic data. This decision, whether to allow or restrict its use, carries consequences that will impact the pricing of insurance products. However, it will also contribute to a more standardized and transparent process across businesses.

6. Summary

Genetic data holds significant predictive power regarding a person's future health condition, potentially leading to an anti-selection risk or adverse selection risk. This risk pertains to the likelihood of individuals with an above-average risk perception seeking more coverage than the general population. Implementing a meticulous underwriting process is a key aspect of insurance management aimed at controlling and mitigating this risk. The

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[30] 'The Personal Data Protection Act, B.E. 2562' (Office of the Council of State of Thailand 2019).

[31] Civil and Commercial Code of Thailand. ; พระราชกฤษฎีกาให้ใช้บทบัญญัติแห่งประมวลกฎหมายแพ่งและพาณิชย์ บรรพ 3 ที่ได้ตรวจชำระใหม่ พ.ศ. 2471.

inhibition of using genetic data to classify the risk of applicants might lead to a change in the overall risk of the life insurance portfolio.

In Thailand, there are no specific laws inhibiting the use of genetic data in life insurance. There are, however, two potential approaches to dealing with genetic data in insurance underwriting. The first option is enacting laws that explicitly prohibit the use of genetic data for underwriting specific insurance products, following the GINA law of the United States. This would ensure that individuals are not discriminated against based on their genetic data. One consequence of this approach might be a significant increase in premium pricing for the overall portfolio. This could be due to the increased uncertainty for insurers when they cannot use genetic data to assess risks. To help people afford insurance, the government might need to provide subsidies or use tax exemptions as a means of indirect promotion.

Another option is discussion and agreement among concerned parties, following the code on genetic testing and insurance of the United Kingdom. This approach involves engaging in open discussions and reaching agreements among the relevant stakeholders. It allows for a more flexible and adaptable approach, where policies can be revised based on outcomes and experiences, especially if adverse events occur during a trial period. Both options have their advantages and disadvantages. The best choice for Thailand will depend on what is considered most important and what aligns best with the country's specific circumstances and priorities. It is important to carefully weigh the implications and make a decision that serves the interests of all stakeholders involved. The option of agreement might be better since it is a voluntary agreement, as is the United Kingdom approach. It can be frequently reviewed if any change in terms of a significant increase in loss ratio or special events happen.

There is no one-size-fits-all solution. Each country must assess and define an approach that suits its circumstances best. In Thailand, a formal discussion to establish a clear direction for practices, and address potential future issues related to this matter, is required.