

## **Dietetics Nutrigenomics Q&A**

### **Updated April 23, 2024**

#### **Q1: What is nutrigenomics?**

Nutrigenomics is an area of nutrition science studying how genome-diet interactions influence individuals' and populations' response to food, disease susceptibility, and population health. Though the term technically refers to the influence nutrients have on genome expression, it may also refer to how a person's genome affects the way their body reacts to certain foods when consumed.<sup>1,2,3</sup>

1. Camp, KM and Trujillo, E. [Position of the Academy of Nutrition and Dietetics: Nutritional Genomics](#). Journal of the Academy of Nutrition and Dietetics. 2014; 114(2): 299-312; accessed November 16, 2020.
2. Dietitians of Canada. Learning on Demand. [Nutrigenomics: Genetic Testing for Personalized Nutrition](#); accessed November 16, 2020.
3. Ordre Professionnel des Diététistes du Québec (OPDQ). [L'utilisation de la nutriginomique et de ses tests par les professionnels de la santé \[French\]](#). 2016; accessed November 16, 2020.

#### **Q2: Are Dietitians allowed to offer nutrigenomic testing?**

Nutrigenomics falls within the scope of practice of a dietitian as it involves the collection of information on how individual genetic variations may affect a person's response to food and examining how the interaction between genes and food can positively influence health outcomes. Nutrigenomics may be part of the assessment of the dietitian and impact the design of the individual care plan. As for any new or emerging practice, Dietitians should refer to the [Decision Tool for New Aspects of Dietetic Practice](#) and decide if nutritional genetic testing is relevant to their practice and clinically useful for their client.

#### **Q3: What do I need to know before offering nutrigenomic testing to my clients?**

Dietitians are expected to:

- interpret scientific evidence for nutrition genetic testing and select current, objective, randomized controlled trials that are replicated by different researchers. Examples of nutritional genetic tests that may inform dietary counselling: phenylketonuria, lactose intolerance, caffeine tolerance and gluten allergy.
- assess the quality and reliability of the test used and understand the scope, meaning and utility of the results.
- use relevant and up-to-date guidelines, position papers and policies to support their practice in nutrigenomics.
- ensure they have appropriate knowledge, skills, and judgment to justify the use of nutrigenomics in practice and to explain nutritional genetic testing to their clients and answer their questions, interpret results for various nutrition-related markers and formulate a nutritional plan.
- understand that nutrigenomic testing is informative of relative risk, not diagnostic
- understand that providing a diagnosis is not part of dietetic scope and dietitians refer the client to a physician for diagnostic information sharing
- weigh the benefit of interpreting the results for the client versus letting the client interpret the results themselves

- refer the client to the appropriate health care provider (e.g., genetic counselor, ethicist, pharmacist, etc.) if the interpretation of the results or the recommendations lead to questions outside of scope of practice.

#### **Q4: What are important aspects of client consent specific to nutrigenomics?**

Dietitians should consider reviewing information and be ready to answer questions on:

- the process for obtaining DNA from a saliva sample and the analysis process for genetic markers related to specific nutrients
- the fact that genetic test results may lead to nutritional recommendations that may be offset by environmental factors such as physical activity and stress
- cost of nutrigenomic testing and counselling may not benefit the client compared to following an individualized care plan or generic healthy eating guidelines
- the fact that not all markers tested are supported by sufficient scientific evidence to justify their use
- genetic testing practices for storing and sharing the client's test results, with consideration to cross-jurisdictional data sharing
- who the genetic test results will be shared with, client access to the results, who will interpret the results, who keeps the DNA sample and the test results, and how the results will be stored for safekeeping<sup>1</sup>
- any other ethical issues and risks with the client, prior to recommending the test (e.g., interference with sociocultural meanings of food and relation to nutrition)

Dietitians are expected to obtain and record consent to nutritional genetic testing in accordance with [Dietetic Consent to Treat Guidelines](#) and [Standards for Record Keeping](#).

1. Government of Canada. Justice Laws. [Genetic Non-Discrimination Act](#); accessed November 17, 2020.

#### **Q5: What else should I be mindful of before recommending nutrigenomics to my clients?**

Dietitians have a professional obligation to recommend nutrigenomic testing based on client need, rather than financial motive. Dietitians address and manage any perceived or real conflict of interest, in accordance with the [Dietetic Patient Relations Program called Where's the Line?](#) and Chapter 4 of the [Jurisprudence Guide](#) for Dietitians in BC. This can be achieved by<sup>1</sup>:

- Disclosure: disclosing the cost of the testing to the client and any financial benefit for the Dietitian
- Options: Dietitians indicate all options the client has for testing, the alternative to testing and the right to refuse
- Reassurance: reassure clients that care will not be compromised by their choice to accept or decline the testing
- Modifications: implement other modifications that would help relieve any conflict of interest in relation to testing (e.g., refusing to accept a commission for interpreting nutrigenomic test results with the client, separate retail/sale of the tests from the counselling)

1. College of Dietitians of Ontario. [Keeping Pace with Innovations in Care](#). Résumé. 2014; accessed November 16, 2020.

## Q6: Additional Resources

1. College of Dietitians of Alberta. [Nutrigenomics in Dietetic Practice: College of Dietitians of Alberta Position Statement](#). 2015; accessed November 16, 2020.
2. College of Dietitians of BC. CDBC Bylaws. Standards of Practice, Indicators and Outcomes.
3. Dietitians of Canada. Practice-based Evidence in Nutrition (PEN). [Knowledge Pathway on Nutrigenomics](#); accessed November 16, 2020.
4. Hurlimann T et al. [Risks of nutrigenomics and nutrigenetics? What the scientists say](#). Genes & Nutrition. 2014. 9(1): 370; accessed November 16, 2020.
5. Nutrigenomix®. [Education for Health Professionals](#); accessed November 17, 2020.
6. Ontario Public Health Association. Nutrition Resource Centre. NRC Grand Rounds Webinar Series. [The Nutrient-Gene Connection. Implications for Dietetic Practice and Healthy Eating Promotion](#). 2014; accessed November 17, 2020.
7. International Society of Nutrigenetics/Nutrigenomics. <http://www.nutritionandgenetics.org/>; accessed November 17, 2020.
8. Catalogue of Published Genome-Wide Association Studies (GWAS). <https://www.genome.gov/catalog-of-published-genomewide-association-studies>; accessed November 17, 2020.