

Nutrition & Weight

Genetic Testing for Obesity Risk

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Obesity is a serious concern because it is associated with leading causes of death and increased overall mortality.¹⁻³ We have all been told that fat in the diet is a major cause of heart disease and stroke.^{1,4} Science just hasn't shown that to be true. Study after study has shown that by eating more fat in the diet, you actually lose weight.⁵

The carbohydrates in food are digested into glucose or a sugar that is easily converted to glucose. Eating a potato is like eating three or four teaspoons of sugar. If glucose remains beyond what the liver can hold, it can be turned into fat for long-term storage, so that none is wasted. According to Westman's 1921 book⁵ on the principles and practices of medicine, the treatment for diabetes before the discovery of insulin was a high-fat diet. That's why a patient with low high-density lipoprotein (HDL) cholesterol should eat more fat—it tends to raise HDL. And a patient with a high triglyceride level should eating a high-fat diet because it lowers triglycerides.⁶

Genetic Testing for Obesity

According to O'Rahilly and Farooqi,⁷ while considerable attention is paid to food intake and physical activity in relation to obesity, compelling evidence that individual susceptibility to obesity has "strong genetic determinants" should not be ignored. There is widespread acceptance that hereditary factors might predispose a person to obesity by influencing metabolic rate or the selective partitioning of excess calories into fat. Genetic factors play a key role in regulating energy balance, and numerous studies have estimated the heritability of BMI at between 40% and 70%.⁸

Genes have been implicated in the processes that control appetite, form fat tissues, control body temperature and regulate insulin levels. Mutations of these genes could be blamed for certain kinds of obesity.⁹ Experiments in animals show that a faulty version of one of these genes causes energy from food to be stored as fat rather than burned. Genetic alterations in mice and on human cells in the laboratory suggest this can be reversed, possibly leading to a drug or other treatment development to do the same in people.¹⁰

Researchers recently reported that a faulty version of an FTO gene causes food to be stored as fat instead of burned as energy. Now that they know the "how," they may be able to tweak the DNA to reverse the obesity effect.¹¹

What Benefit?

What benefit is offered by knowing that a patient is genetically predisposed to obesity? To know that body processes cause a patient to store fat more readily than those without a genetic predisposition can guide eating. If, through genetics, intake is more readily converted to fat, bypassing storage as glycogen, it only becomes more imperative that people with genetic predisposition to obesity limit their carbohydrate intake. Some people can handle more sugar and

starch than others; appropriate intake is highly individualized. People who are insulin resistant and obese are sensitive to carbohydrates. So even the potato chip might be too much potato!⁵

Genetic testing for obesity risk does not discourage people from trying to lose weight. Instead, it may help reduce how much they blame themselves for their weight problems,¹² thus bolstering their commitment to losing weight. This testing is available from a growing number of companies who sell personalized kits to be used in the home.

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