FAMILY HEALTH HISTORY

March 2017

Tip of the Month

Based on something called the 'degree of relatedness', we can estimate what percentage of our genes we have in common with another biological relative. Our closest relatives are our parents and siblings, known as first-degree relatives. We share 50% genetic identity (meaning 50% of our genes is the same) with first degree-relatives. Second-degree relatives include our grand-parents and aunts/ uncles – we share 25% of our genetic material with them. In some societies, it may be acceptable to marry within families. However, couples that are biologically related will have an increased chance of having children affected with rare inherited disorders. This occurs because each parent is more likely to carry a rare variant that is shared among family members. A single version of the variant will not likely cause any symptoms, but having two versions of the variant will result in development of a disease (recall that we have two copies of each gene).

What Happens When You Don't Know Much About Your Family Health History?

More than 100,000 children are adopted each year in the U.S and thousands more are conceived via egg or sperm donors. As strange as it may seem, these individuals have something in common – they don't have a complete family health history. While seemingly innocuous this information is a critical clue to maintaining health, and lack of knowledge can lead to anxiety – for example when asked about their family's history at their doctor's office. Yet, all is not lost, even a little knowledge about one's biological relatives can provide real insight into one's health when combined with environmental and lifestyle information related to their adopted family.

Diseases or conditions that appear to run in families or households may be due to genetic or environmental factors, or a combination thereof. For example, (cigarette) smoke filled homes or multiple family members with similar (high risk) occupations can cause multiple relatives to be affected with the same condition due to exposure to the same unhealthy environment. In this case, the development of the disease in several family members likely has little to do with genetics. Shared environment and physical spaces, and shared culture such as lifestyle, physical activity and food choices all have an effect on our health. Poor choices or unintentional exposures to toxins can increase risk for diseases and therefore, give the appearance that a particular disease runs in a family.

In some cases, adoptees or individuals conceived with donor sperm or egg may have knowledge about their biological parents or siblings obtained at conception (e.g., from the application of the sperm or egg donor) or at birth about their biological relatives (e.g., learned during the adoption process). However, when sharing such information with a healthcare provider, make sure to let them know when that information was obtained, as healthy information is constantly changing and outdated information may be missing more recent and critical pieces of information. This is particularly important, since many of those placing their children up for adoption are young enough that they likely have not yet developed those diseases for which they are at high risk.

Some patients with limited knowledge about their family history may consider undergoing genetic testing in order to learn more about their personal health risks. Several research studies have found that genome sequencing is being considered as a surrogate for assessing disease risk. Test results, combined with the environmental information gleaned from the family with whom they are raised, can fill in the knowledge gaps and help some individuals make important choices for maintaining their health. However, there are important limitations to consider. There is still much we don't know about the information stored in our DNA (human genome) and we are still learning about what it is trying to tell us about ourselves. Based on our current understanding, it is probable that we will miss important markers that would have been identified if a more complete family health history was available; but in absence of other knowledge, it is one potential source of additional risk information.