Genetics and Genomics February Strand

Cardiovascular disease is the leading cause of death in the world and genetics plays a role in a number of cardiovascular conditions.

Familial hypercholostermia is a genetic disorder that is associated with increased risk of premature heart attacks. In this condition, high levels of "bad" cholesterol (LDL cholesterol) begin to accumulate at birth. One out of 500 people in the United States may inherit this condition. Early detection of this disorder can help reduce the burden of heart disease in the person with hypercholesterolemia as well as in his or her family.

Family medical history offers important information for identifying cardiovascular disease risk in individuals. Such histories can capture the effects and interactions of shared genetic and environmental factors that lead to disease in a family.

Pharmacogenetics and Cardiovascular Disease

Multiple drugs such as Coumadin®, Plavix® and statins can be affected by a person's genetic make-up. For example, 30 to 40 percent of patients have a genetic mutation in the gene that controls response to Wafarin, one reason why patients respond differently to different doses. In other cases, genetic variations cause patients to either be non-responsive to certain drug therapies or have adverse effects such as muscle aches.

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Key Points to Remember

- Genomics can be used in cardiovascular disease prediction, such as familial hypercholesterolemia, which in turn will permit earlier initiation of preventative therapy.
- Key health history questions include:
  - Has anyone in the family been diagnosed with heart disease or cancer under the age of 50?
  - Has anyone in the family died suddenly or had a baby die (i.e. from SIDS or birth defect)?
  - Is there any condition in the family that affects 3 or more people?
- Genetic variation impacts response to drug therapy and pharmacogenomics will allow for more informed use of these drugs in individual patients.

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For questions or patient referrals to the Cadence Genetics Program, call 630.933.6249. TTY for the hearing impaired 630.933.4833.

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