

An Overview on Genetics in Medicine

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DESCRIPTION

Genetics is the studies of involvement of individual genes or groups of genes in health and disease. Knowledge about genetic factors and genetic disorders plays important role in diagnosis, treatment and prevention of a lot of disease. Genetic changes increase risk of having a child with a birth defect or developing diseases such as cancer or heart disease. Genetics also can help to understand the causes of some medical conditions. Genetic techniques are mainly used to diagnose and treat human genetic disorders. Proper genetics knowledge of family history may predict the tendency to develop these disorders in future generation before or after pregnancy. Like cells from embryonic tissues reveal certain genetic abnormalities may be present in newborn babies. This early prediction helps to provide proper treatment. In some cases a blood test of newborn babies requires to determine the presence of any abnormalities such as absence of an enzyme necessary to convert an amino acid, phenylalanine, into simpler products this life threatening disease is known as Phenylketonuria (PKU) which can cause permanent brain damage if not treated soon after birth. Some different types of human genetic diseases can be detected in embryo stage. In this procedure small amount of fluid removed and tested from around the embryo age 12 weeks or young, this process is called amniocentesis. In some other testing process some tissue from the placenta are collected and tested, this process is known as chorionic villus sampling.

There are more than 5000 genetic conditions most of them are hereditary. Modern genetics research is focused to learn more about the genetic basis of different conditions in search of better and effective treatment. To achieve this accomplishment, there is an overall push for big data in genomic medication, where a great many reference groupings, individualized patient variables, and phenotypic articulation are gathered and blended into a multifactorial data set and calculation where separately sequenced genomes can measure up.

Genetic testing such as prenatal screening tests can help patients

to determine risk and the likelihood of passing on or inheriting of any genetics disease or disorders. Prenatal screening test is one of the most widely offered genetic tests. In this test a fragments of placental DNA drawn from mother blood and then sequenced to find genetic abnormalities.

Estimation said that near about 3%-7% of the general population will be diagnosed with some kind of genetic disorder. All diseases or medical conditions include common disorders such as cancer, diabetes, heart disease, and psychiatric disorders except trauma have a genetic component.

The optimization of drug response in relation to genetics known as pharmacogenomics is another promising field emerging as an important component of current genetic medicine.

How genes affect a person's response to drugs is the study topic in pharmacogenomics. This is a combine Study of pharmacology and genomics to develop effective, safe medications which can be prescribed as the genetic makeup of a person. CYP2D6 a liver enzyme plays an important role in drug kinetics of near about a quarter of all prescription oral drugs. This enzyme converts codeine the painkiller into active form morphine. There are near about 160 versions of this CYP2D6 gene. Some of which vary by only a single difference in their DNA sequence and some have larger changes. Most of these variants don't affect the way to respond to the drug.

The advancement of genomic instruments and informational indexes has changed the idea of clinical disclosure, empowering researchers to attempt extensive and strong investigations as opposed to being bound to testing theories zeroed in on up-and-comer pathways. With the fulfillment of the primary reference grouping of the human genome, consideration moved from looking for qualities to finding their capacities. Orderly hereditary planning in families and populaces assisted researchers with pinpointing the hereditary variations that add to human infection. In spite of an extensive experience in the field of the treatment of rare single gene disorders some issues regarding consolidation and improvement is continue to be raised.

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CONCLUSION

From the standpoint of the coordination of services this issues are more delicate to handle. In order to improve the condition in the field of genetics medicine the concepts of sharing and the free circulation of information among health care professionals

need to be explored more deeply. Proper vigilance policies are also having an important role to the success of development in genetics medicine. And more research should be focused to the clinical and functional integration of genetic and genomic medicine in order to improve and secure lives.