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Commentary

Preparation of Personalized Medicine by Combining Genomics:Big Data Analytics and Health Care

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ABOUT THE STUDY

Precision medicine, also known as personalized medicine, combines genomics, big data analytics, and population health to create a new frontier in healthcare. Personalized medicine is a rapidly developing area in which doctors utilize diagnostic tests to identify which medical treatments are appropriate for each patient and then employ medical interventions to change molecular pathways that affect health. Personalized medicine refers to the customizing of medical treatment to each patient's unique traits. Personalized Medicine (PM) allows creating medicines that are specifically designed for patient who does not respond to treatments as expected and for whom traditional health systems have failed.

The use of data particularly genomic is to make decisions regarding specific treatment courses that may be more or less effective for the individual at hand is known as "precision medicine." Personalized medicine can be thought of as a more precise version of traditional ways to understanding and treating disease. In terms of medication research and regulatory decision-making, the CDER (Center for Drug Evaluation and Research) has been aggressive in considering customized medicine. The strategy is based on scientific advances in our understanding of how a person's particular molecular and genetic makeup renders them vulnerable to certain diseases. To be on the cutting edge of personalized medicine initiatives, CDER has been establishing infrastructure programmers and review capacity. Personalized medicine is usually made up of two parts the first is the therapeutic intervention (drug, biologic, or other), and the second is the diagnostic test. With more precise tools, clinicians can choose a therapy or treatment regimen based on a patient's molecular profile, which may not only reduce severe side effects but also ensure a better outcome.When compared to a "trial-and error" approach to disease treatment, a successful outcome can also help reduce expenses. In case of breast cancer: Trastuzumab was one of the first and most well-known examples of individualized therapy. About 30% of breast cancer patients have a type that overexpresses a protein called HER2, which is resistant to normal treatment. Trastuzumab when used in combination with chemotherapy, it reduced recurrence by 52 percent. BRAF is the human gene that produces the B-Raf protein, which is essential in delivering signals inside cells to drive cell proliferation and has been proven to be mutated in malignancies. Vemurafenib, a B-Raf protein inhibitor, and the companion BRAF V600E Mutation Test for the treatment of late stage melanoma were approved in 2011.Vemurafenib is exclusively effective in the treatment of cancer patients who have the V600E BRAF mutation. Around 60% of melanoma patients have a BRAF mutation, with the BRAF V600E variant accounting for 90% of the cases. Prior to the introduction of a gene expression profiling test to determine a heart transplant recipient's likelihood of rejecting a transplanted organ, the invasive technique of endomyocardial biopsy a heart biopsy -was the primary way for controlling heart transplant rejection. A genetic diagnostic test is now conducted on a blood sample, enabling a non-invasive test to aid in the post-transplant management of patients. According to new research, continuing testing can help with long term patient management by predicting rejection risk and guiding more personalized immunosuppressive treatment regimens. Former President Barack Obama announced the Precision Medicine Initiative (PMI) in 2015, making it a significant year for precision medicine. The majority of medicine has been reactive. Because it is based on each patient's unique genetic composition, personalized medicine is beginning to transcend standard medicine's limits. Genomic data is a relatively new addition to the physician's toolkit; Genetic testing is becoming faster and less expensive, allowing collecting larger amounts of data from a wider range of patients. The providers can observe patterns in the effectiveness of particular treatments and identify genetic variations that may be correlated with success or failure by combining this data with clinical, pharmaceutical, and socioeconomic information, and then applying analytics to these integrated datasets. These theories can then be tested and validated through clinical studies. If the findings meet stringent scientific criteria, they might be used to inform future best practices or clinical guidelines for the treatment of certain illnesses, which could be incorporated into advanced clinical decision support systems. Precision medicine includes

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pharmacogenomics. Pharmacogenomics is the study of how genes influence a person's pharmacological reaction. This relatively new area combines pharmacology (the science of pharmaceuticals) and genomics (the study of genes and their functions) to create effective, safe medications and doses that are customized to a person's genetic differences, have only scratched the surface of what revolutionary insights are likely hidden in the human genetic code. Personalized medicine can be thought of as an extension of existing techniques to disease diagnosis and treatment.

CONCLUSION

Health care practitioners can construct customized treatment and prevention programmes with their patients by combining data from diagnostic tests with their medical history, circumstances, and values. Personalized medicine offers a tremendous chance to transform a "one-size-fits-all" approach to diagnostics, pharmacological therapy, and prevention into a personalized and strategy.