Seminar 1

Pharmacogenomics: using genomics in precision medicine to optimise drug therapy

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Abstract

Pharmacogenomics is the study of how a person's genes affects their body's response to drugs. While current medical drug therapies tend to treat all patients as if they were the same, differences in one's genome can determine whether a treatment will be effective, ineffective, or even harmful. Yet despite the research supporting pharmacogenomics and its impact on human health, patient-tailored therapies are not yet widespread in clinical settings.

Pharmacogenomics has already made great contributions to improve drug therapies by making treatment more targeted and efficient, and it has the potential to improve them even further. Researchers have identified hundreds of known interactions between gene mutations and drug responses, and as genetic analysis technology and methods improve, the future holds more discoveries. Pharmacogenomics is also crucial to improving drug safety, as genetic analysis predicts whether a patient will experience ADRs (Adverse Drug Reactions) from a specific drug before prescribing the drug. However, in order for pharmacogenomics to be truly effective and accessible, it must address and overcome several challenges, such as cost, privacy concerns, and lack of education among doctors and the public. Fortunately, as technology for genetic analysis advances, the price of genetic sequencing and pharmacogenomics falls. Additionally, educating the doctors and the public on pharmacogenomics will be crucial in helping personalized medicine become more widespread. When people understand what pharmacogenomics is and how it can protect their own health, they will be more open to the use of personalized medicine in the clinical setting.

Keywords: Pharmacogenomics, drug therapy, precision medicine, genome.