

Pharmacogenetics and Personalized Medicines

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ABSTRACT

Personalized or precision medicine has been used to describe the right drug to the right person at the right dose at the right time. One important aspect of personalized medicines is the genetic makeup of the individual. Pharmacogenetics investigates the role of individual genes in drug disposition. The use of pharmacogenetics will increase drug efficacy with minimum side effects. Several tables have been published by the FDA that list the pharmacogenetic associations with certain drugs. These tables suggest that certain subgroups of patients with certain genetic variants are likely to have “altered drug metabolism, and in certain cases, differential therapeutic effects, including differences in risks of adverse events” (<https://www.fda.gov/medical-devices/precision-medicine/table-pharmacogenetic-associations#about>). These tables include: Section 1: Pharmacogenetic associations for which the data support therapeutic management recommendations such as celecoxib and CYP2C9 polymorphisms. Section 2: Pharmacogenetic associations for which the data indicate a potential impact on safety or response such as codeine in CYP2D6 poor metabolizers will result in a lower concentration of the active form morphine. Section 3: Pharmacogenetic associations for which the data demonstrate a potential impact on pharmacokinetic properties only. In this list, the implications of the genotypes have not been well established for example atorvastatin and SLCO1B1 phenotypes may result in a higher systemic concentration of the drug. In the US pharmacogenetic tests are available as direct-to-consumer (DTC) tests. With DTC tests, individuals can send in a saliva sample and get results directly at their homes (Drelles et al 2021). Although the evidence on the effects of such tests and pharmacogenetic counseling is available and mounting in many clinical practices all around the world but is still to be implemented in the clinical practice in Jordan.

References

Drelles et al: Impact of Previous Genetic Counseling and Objective Numeracy on Accurate Interpretation of a Pharmacogenetics Test Report. Public Health Genomics 2021;24:26-32. doi: <https://doi.org/10.1159/000512476>

