Precision Medicine and Cardiovascular Therapeutics: An Individualized Approach Towards Optimizing Drug Selection and Use

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Purpose

Precision Medicine is the concept of utilizing multiple elements of a patient’s clinical presentation, family history and environment together with genetic profile and other sources of variability as a means to individualize prevention and treatment strategies to improve outcomes. This discipline requires a transdisciplinary framework integrating a variety of health, behavioral and social science experts along with economics, law, ethics and public policy expertise.

Pharmacogenomics is a central component of precision medicine and represents a domain that pharmacists are uniquely qualified and trained to understand, interpret and apply. Moving from discovery to implementation represents the next grand challenge in health care optimization that must occur if we are to realize the benefits of current and ongoing discoveries. Pharmacists can play a pivotal role in the provision of sound education, guideline development, interpretation and implementation of principles of precision medicine. Cardiovascular medicine represents a therapeutic area of profound opportunity for discovery and implementation of knowledge related to optimal drug selection based on pharmacogenomics. This talk will outline several examples of critical drug-gene pairs which represent opportunities for improved drug selection in the cardiovascular space based on pharmacogenomic information, provide an example of the process of discovery and discuss challenges and opportunities related to implementation.

Contents

Following a review of the promise of precision medicine and a discussion of barriers facing its broad implementation, several examples exploiting the potential role pharmacists may play in this field will be discussed. These may include examples related to drug metabolizing genes such as CYP2C19 important for antiplatelet agents and drug transporters which have potential relevance to statin toxicity, disposition and possible evolving relevance when treating hyperuricemia and gout in special populations.

Conclusions

To realize the benefits of precision medicine, pharmacists, among other health care professionals, must receive adequate training and ongoing training in order to remain contributory to process of optimizing drug selection and dosage for improved patient outcomes.

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