Ethnicity and Medicine

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By nature, men are nearly alike. By practice, however, they get to be wide apart. Racial differences predict variations in health status, and differentials are continuing to increase over time. Ethnic differences exist in both pharmacodynamics and pharmacokinetics of many drugs that were documented by our previous comparison studies between Chinese and White normal subjects. The molecular mechanisms responsible for ethnic differences in drug metabolism and response are partly clarified because of the advances in molecular biology in recent years. Gene dosage determines the activities of a drug biomarker and it has been demonstrated in numerous drug metabolizing enzymes, transporters and drug targets. Genotype analysis indicated a different frequency for the mutant alleles in different ethnic populations and resulted in variations in the frequency of subjects who are homozygous for the mutant allele or wilt type allele in different ethnic populations. Interethnic differences in drug metabolism and response may result from interethnic differences in distribution of a polymorphic trait and mutations which code for enzymes with abnormal activity which occur with altered frequency in different ethnic groups. The potential consequences of polymorphic biomarkers related to drug response resulting in ethnic difference in drug response include extended pharmacological effect, adverse drug reactions and drug toxicity, lack of prodrug activation, alteration of effective dose, metabolism by alternative pathways as well as drug-drug interactions.