Genomic Biomarkers and Genetic risks

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The introduction of molecular genetics into medicine has made it clear that the maxim that a single disease has a single treatment no longer holds true. This is particularly true for muscular disorders, which usually originate by mutation of one gene, but involve many biological processes (metabolism, cell communication, tissue regeneration and remodelling) and molecules. The tissue target of genetic diseases can be affected with important functional consequences that necessitate an integral and systematic approach. In addition, genetic diseases also differ between patients according their individual 'genometype'. All of this variability must be taken into account when designing treatments for inherited disorders. Therefore it is necessary to take the characteristics of the patient into account, to predict the responses to treatment. This approach is commonly referred to as 'personalised' or 'stratified' medicine. Personalised medicine, is based on the use of information from genomes and their derivatives (RNA, proteins, and metabolites) to guide medical decision about diagnosis, prognosis and therapy. This goal can be reached only using a good biomarker that should explains either the disease at the molecular level or the response to treatment. The presence or absence of a biomarker can be used to guide treatment choices and to identify targets for drug development. There is a huge demand for the development of new drugs to improve treatment. This demand has arisen due to the gradual change in the nature of therapy in recent years with the introduction of orphan drugs. As biomarkers begins to embrace genomic tools, the fundamentals of personalized medicine will require the development, standardization, and integration of several important tools into health systems and clinical workflows. These tools include health risk assessment, family health history, and clinical decision support for complex risk and predictive information.