

Implementation strategies of Systems Medicine in clinical research and home care for cardiovascular disease patients

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Abstract

Insights from the “-omics” science have recently emphasized the need to implement an overall strategy in medical research. Here, the development of Systems Medicine has been indicated as a potential tool for clinical translation of basic research discoveries. Systems Medicine also gives the opportunity of improving different steps in medical practice, from diagnosis to healthcare management, including clinical research. The development of Systems Medicine is still hampered however by several challenges, the main one being the development of computational tools adequate to record, analyze and share a large amount of disparate data. In addition, available informatics tools appear not yet fully suitable for the challenge because they are not standardized, not universally available, or with ethical/legal concerns. Cardiovascular diseases (CVD) are a very promising area for translating Systems Medicine into clinical practice. By developing clinically applied technologies, the collection and analysis of data may improve CV risk stratification and prediction. Standardized models for data recording and analysis can also greatly broaden data exchange, thus promoting a uniform management of CVD patients also useful for clinical research. This advance however requires a great organizational effort by both physicians and health institutions, as well as the overcoming of ethical problems. This narrative review aims at providing an update on the state-of-art knowledge in the area of Systems Medicine as applied to CVD, focusing on current critical issues, providing a road map for its practical implementation.

Keywords

Cardiovascular research, Clinical trials, Home-care, Systems Medicine