Towards an era of precision medicine

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Precision Medicine (PM) is an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment and lifestyle for each person according to NIH (National Institute of Health). Although genomic technologies including Next Generation Sequencing (NGS) analyses are contributing to realizing PM application, improving accuracies and shortening turnaround time of genetic analyses is still challenging. And interpreting variant(s) is another issue. Variants of Unknown Significance (VUS) are problematic especially in case of treating breast cancer with PARP inhibitor. Reducing reporting rate of VUS needs more elaborate clinical database, improved biochemical methods, in silico prediction tools and larger population databases. Predicting disease susceptibility and treatment outcome with genetic test is a main target of TM and can contribute to reduce the health care cost. Delivery of the right genetic information with the right time to the patient(s) under the situation of exploding genetic information needs to rethink genetic counseling. Privacy is another issue for entering PM. PM itself needs to incorporate more detailed personal information to improving PM knowledge and it can cause the tension between scientific advancement and ethical concerns about the personal privacy. Precision Medicine will reshape the current medical practices despite the all the issues to be solved.