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Personalized medicine: The future of clinical practice - Will it lead to better patient care?

Personalized Medicine (PM) is a model that proposes the customization of healthcare - with medical decisions, practices, and/or products being tailored to the individual patient. Use of genomic information plays a major role in certain aspects of PM. The term was first coined in the context of genetics (though it has since broadened to encompass all sorts of personalization measures). To distinguish from the context in which medicine has always been inherently "personal" to each patient, PM commonly denotes the use of technology or discovery enabling a level of personalization not previously feasible or practical. Advances in medical and human genetics have enabled a more detailed understanding of the impact of genetics in diagnosis, treatment and prognosis of human disease. Large collaborative research projects such as the human genome project have laid the groundwork for the understanding the role of genes in normal human development including physiology revealing Single Nucleotide Polymorphisms (SNPs) account for the genetic variability between individuals. This information has made possible the use of genome association studies (GWAS) to examine genetic variation and thus understand the risk for many common diseases. A number of topics have emerged that have targeted personalized medicine they are: pharmacogenomics, proteomics and metabolomics. For example, the management of cancer identified the presence of genes associated with the induction of a number of human cancers. This list has grown in significance amplified recently with the actions made in personal health by the actress Angelina Jolie. PM also has identified a number of notable concerns and opportunities. One such concern is the individual cost of PM for those individuals who do not have personalized health care insurance. Legislation in the form of the Genomics and Personalized Medicine Act has been introduced in the Congress of the United States to address issues involving scientific barriers, adverse market pressures and regulatory obstacles. Importantly, the passing of the Affordable Care Act and its affirmation by the Supreme Court of the United States will allow the utility of PM to continue in the US. Finally, in order to educate future physicians the advent of PM is influencing medical education with the development of sub- specialties in PM by a growing number of medical schools in the United States. The transition to PM is proceeding even as experts continue to debate whether does this new information actually improve health care?

Biography

Vincent S Gallicchio is Professor of Biological Sciences, Public Health and Microbiology at Clemson University. He is the Vice President of the Trace Element Research Centers operating under UNESCO and the immediate Past-President of the International Federation of Biomedical Laboratory Science. He has authored more than 200 peer-reviewed scientific articles, book chapters and textbooks. He is the Inventor on eleven US and one international patent focused on drug delivery. He has received more than \$22 million in research funding. In 2003 he was presented to her majesty Queen Elizabeth of England for his efforts promoting higher education opportunities for British students.

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