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Use of Biomarkers in Personalized Medicine and Disease Progression

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DESCRIPTION

Biomarkers in medicine have received a great deal of scientific and clinical interest in recent years. Some of the characteristics of ideal biomarkers are that they are safe, easy to measure, acceptable cost, and that there is scientific evidence that biomarker use/change affects disease progression. In addition, there is a need to elucidate the variation in biomarker values by gender and ethnicity, and for biomarkers to exhibit 'favourable performance characteristics' at death. Three commonly used methods to test whether biomarkers complement traditional risk prediction models are model identification, model calibration, and risk reclassification. 'Multimarket' strategies serve to integrate information from multiple biomarkers into risk prediction but may be limited by the presence of highly correlated biomarkers, economic costs and selection bias of biomarker candidates in a particular study sample. In the future, integration of biomarkers identified using emerging technologies from the 'omics fields may be useful for the 'personalization' of treatment/disease prevention. 'Multimarket' strategies serve to integrate information from multiple biomarkers into risk prediction but may be limited by the presence of highly correlated biomarkers, economic costs and selection bias of biomarker candidates in a particular study sample. In the future, the integration of biomarkers identified using new technologies in the 'omics' field may help 'personalize' treatment and disease prevention. Biomarkers in medicine have received a great deal of scientific and clinical interest in recent years. Characteristics of an ideal biomarker include safety, ease of measurement, reasonable cost (including follow-up testing), and biomarker use/change impacts disease progression There is scientific evidence to suggest that Furthermore, there is a need to elucidate the variation in biomarker values by gender and ethnicity, and the biomarkers are "good performers" (i.e., sensitivity, specificity, positive and negative predictive value, and positive and negative odds ratios). A risk prediction score can combine information from several different biomarkers to estimate an individual's risk of developing an outcome such as illness or death. Biomarkers are biological molecules or physiological phenomena in body fluids and tissues such as blood, urine and fat. The presence or varying concentrations of these inherently occurring substances may be indicative of healthy or abnormal processes, medical conditions, or diseases. Similarly, trends in biomarker levels in body fluids or tissues can determine how well the human body responds to treatment. Recently, there have been several revolutionary advances in biomarker technology. Enables nucleic acid-based genetic mutation studies and quantitative gene expression analysis or cancer biomarker staging to monitor clinical response to intervention. Personalized medicine, also known as precision medicine, is a medical model in which people are divided into groups and medical decisions, practises, interventions, and products are tailored to the individual patient based on their predicted response or risk of disease. To describe this concept, the terms personalised medicine, precision medicine, stratified medicine, and P4 medicine are used interchangeably, though some authors and organisations use these expressions separately to indicate specific nuances. The use of genetic information has played a significant role in certain aspects of personalised medicine (e.g., pharmacogenomics), and the term was coined in the context of genetics, though it has since broadened to encompass all sorts of personalization measures, including the use of proteomics, imaging analysis, and nanoparticle-based theranostics among others.

CONCLUSION

In fact, biomarkers have many advantages, such as accuracy of measurement. It is more reliable in establishing validity and may be less biased than traditional questionnaires. The use of disease biomarkers typically reflects the mechanism of investigation and thus the homogeneity of risk or disease.

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CONFLICT OF INTEREST

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