

Integrating Bioinformatics Advances into Disease Management Systems to Improve Quality of Care

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Abstract

Although we have made progress in reducing mortality and morbidity rates in a number of human diseases through early detection and adjuvant therapy, the interventions inferred from conventional disease management and clinical care systems, such as those in cancers and neurological diseases, still lack discrimination and come at considerable emotional, physical, and financial cost. Complex diseases exhibit complex phenotypes, and proper diagnosis at the point-of-care requires that the analysis take into account the patient's history and exposure to environmental factors, as well as genotype and phenotype information.

The future of improving clinical care and disease management lies in targeting patients for current and emerging therapies and interventions based upon predictive factors obtained from multi-dimensional, cross-biological level patient data and better modeling of disease and aging processes. For this to happen, we must develop a new infrastructure that delivers information at the point of care to support key therapeutic decisions and preventive measures. In this talk, I would provide an overview on the quality of care issues of disease management. I then propose new integrative informatics approach advocated for a better understanding of a patient's medical relevant disease phenotype, with illustrative application examples taken from cancers and other diseases.