

THE ROLE OF BIOSTATISTICS IN PRECISION MEDICINE AND BIG DATA ERA

Hyonggin An^{1*}

¹ *Department of Biostatistics, Korea University, Korea*

hyonggin@gmail.com

Abstract

Precision medicine is an approach to maximization of health care by customizing the health-care process with medical decisions, treatments, or drugs being tailored to the individual patient. In precision medicine a tool such as diagnostic testing or imaging is used for choosing optimal therapies based on a patient's special characteristic. The potential optimal action could be the specific drug use, the dose selection, the timing of treatment, or other aspects of treatment or care. The role of biostatistics in precision medicine is somewhat different from classical medicine. In classical medicine, statistics is used for the inference based on population. However, in precision medicine, statistics focuses on estimation and testing for treatment regimes that maximize some cumulative clinical outcomes. In precision medicine, there are some statistical strategies in study design and data analysis such as biomarker, adaptive patients enrichment, patients subgroup, and multiplicity adjustment. In this talk, I provide a brief review of this area of research and discuss statistical challenges in precision medicine.

Keywords

Biostatistics, Precision Medicine, Big Data