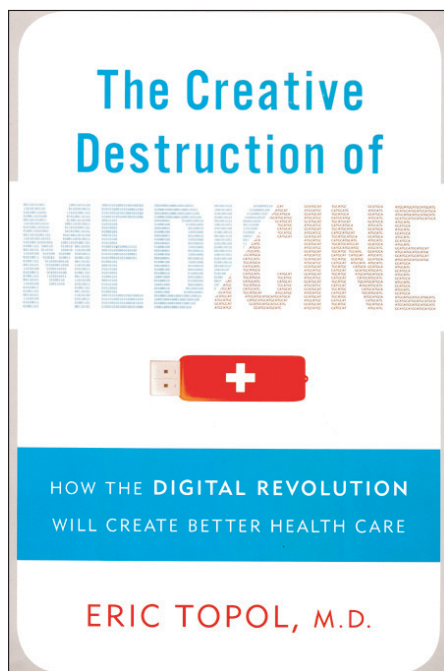


The creative destruction of medicine: how the digital revolution will create better healthcare

Yun Hwan Kim

Department of Obstetrics and Gynecology, Ewha Womans University School of Medicine, Seoul, Korea
medok74@gmail.com



By Eric Topol

New York: Basic Books; 2012

ISBN: 0465025501

Hard cover, 303 pages

Until my mentor recommended this book, I did not imagine the future of medicine, 'digitalized and individualized', seriously. Our world is rapidly digitalized and connected with each other. However, it seems that the medical field wants to be the last land to be changed. Have you ever imagined how the medicine will change when the super-convergence of smart phones combines with wearable biosensors as well as the knowledge of individual genome information?

Eric Topol suggests that now, it is time to replace a stethoscope by a portable echocardiogram! Eric Topol is one of influential cardiologists and geneticist in the world, and the director of the Scripps Translational Science Institute. In this book, he argues that the digital revolution as well as individual genomic sequencing will fundamentally change the way of medicine and health care system.

Paradigm is rapidly shifting from big group to each individual. Until now, modern medicine has been established on the basis of group data. Numerous clinical trials are population based, and median result is always recommended to most patients irrespective of individual differences. Individual variance can be explained mostly by genetics. Recently, the price of full genome sequencing is continuously getting lower, and the last remaining problem is how to interpret these large data usefully. As one example, pharmacogenomics will enable to tailor treatments to each individual. Topol suggested that genomic sequencing will come to be popular soon, and clinicians can predict the effects of a certain drug before using it. Physicians can modify the dose of a drug or change to other drugs on the basis of pharmacogenomics. In oncologic field, it will be very useful to choose the optimal cytotoxic drugs or targeting agents for specific patient in advance.

Another way of individualized medicine begins by virtue of the development of diverse biosensors. Topol suggested that in the near future, personalized biosensors combined with

wireless devices will send fully updated information of each patient to their doctors continuously. These wearable biosensors can make patient monitoring outside the clinic, and facilitate rapid growth of telemedicine. New diverse digital devices, nano-biosensors and applications can be applied to any imaginable medical settings. Blood sugar monitoring for diabetes patients, and vital monitoring for patients with cardiac disease by using biosensors are already commercialized. In the future, I hope implanted nano-sensors can detect the elevation of serum tumor marker or catch the circulating cancer cells, send a warning signal to personal smart phone, and let the patient to

go clinic before cancer progression.

Topol expects that digital revolution and a critical mass of consumers will eventually transform the medicine and health care systems. Actually, the term, "creative destruction" was first introduced in economics to denote transformation that accompanies radical innovation. After reading this book, I totally agree that the "creative destruction" is needed and unavoidable in medical field also. I really recommend this book to both patients and doctors, especially medical students and health organizers who will encounter this new world soon.