

Healthcare Infrastructure

Health Systems for Individuals and Populations

The first systematic survey of Healthcare Infrastructure, this book describes the inevitable future of health systems. It gives a concrete plan for improved quality at diminished cost, via merger of personal medicine and public health. It discusses general aspects of infrastructure engineering and specific aspects of healthcare systems. It discusses current and future technologies for health measurement and management. This book outlines how the health of populations will be measured at the level of individuals, combining engineering and medicine to support viable health systems for the first time. This book is unique, in combining a systematic survey of health determinants with a research monograph on health technologies. Readers will gain a broad context and a deep knowledge of future information technology applied to health systems.

Healthcare is an information problem needing an information solution using modern information technology. The traditional medical record does not suffice, but the new technologies of internet services do. Existing technologies can be combined for new methods of gathering and analyzing health information, via monitors using sensors and clusters using supercomputers. There is a way of utilizing both the electronic medical record of the past and the personalized genomic medicine of the future. It gathers information from all the sources affecting personal health: from the bodies of individuals to the societies of populations. Healthcare Infrastructure: Health Systems for Individuals and Populations describes the new healthcare infrastructure that will gather these personal health records from every individual and correlate each longitudinal record across whole populations. This book explains the problems of personal medicine and public health, then the solutions possible with information technology. Health determinants for individuals and populations are examined at length, along with present and future technologies to measure these. Computer analysis will produce clusters of persons with similar measurements of health status. The analysis discovers which persons have which outcomes and the management uses this knowledge to provide efficient healthcare. The new healthcare infrastructure will provide information for decision makers to effectively manage provider care and manage patient expectations. Thus, this book will be a key reference for all professionals working within the management of health, from informatician to healthcare executive, health information technologist to computer scientist, and physician to patient.



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