Ending Medicine's Chronic Dysfunction: Tools and Standards for Medical Decision Making

Synthesis Lectures on Assistive, Rehabilitative, and Health-Preserving Technologies

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Ronald M. Baecker, *University of Toronto*

Andrew Sixsmith, *Simon Fraser University and AGE-WELL NCE*

This series provides state-of-the-art overview lectures on assistive technologies. We take a broad view of this expanding field, defining it as information and communications technologies used in diagnosis and treatment, prosthetics that compensate for impaired capabilities, methods for rehabilitating or restoring function, and protective interventions that enable individuals to stay healthy for longer periods of time.

Each overview introduces the medical context in which technology is used, presents and explains the technology; reviews problems and opportunities, successes and failures in the development and use of technology; and synthesizes promising opportunities for future progress. Authors include significant material based on their own work, while surveying the broad landscape of an area's research, development, and deployment progress and success.

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ISBN: 978-3-031-00479-7 print
ISBN: 978-3-031-01607-3 ebook
ISBN: 978-3-031-00041-6 hardcover

DOI 10.1007/978-3-031-01607-3

A Publication in the Springer series
SYNTHESIS LECTURES ON ASSISTIVE, REHABILITATIVE, AND HEALTH-PRESERVING TECHNOLOGIES
Lecture #16

Series Editors: Ron Baecker, University of Toronto and Andrew Sixsmith, Simon Fraser University and AGE-WELL NCE

Series ISSN 2162-7258 Print 2162-7266 Electronic

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ABSTRACT

This book describes an overlooked solution to a long-standing problem in health care. The problem is an informational supply chain that is unnecessarily dependent on the minds of doctors for assembling patient data and medical knowledge in clinical decision making. That supply chain function is more than the human mind can deliver. Yet, dependence on the mind is built into the traditional role of doctors, who are educated and licensed to rely heavily on personal knowledge and judgment. The culture of medicine has long been in denial of this problem, even now that health information technology is increasingly used, and even as artificial intelligence (AI) tools are emerging. AI will play an important role, but it is not a solution. The solution instead begins with traditional software techniques designed to integrate novel functionality for clinical decision support and electronic health record (EHR) tools. That functionality implements high standards of care for managing health information. This book describes that functionality in some detail. This description is intended in part to be a starting point for developers in the open source software community, who have an opportunity to begin developing an integrated, cloud-based version of the tools described, working with interested clinicians, patients, and others. The tools grew out of work beginning more than six decades ago, when this book's lead author (deceased) originated problem lists and structured notes in medical records. The electronic tools he later developed led him to reconceive education and licensure for doctors and other health professionals, which are also part of the solution this book describes.

KEYWORDS

problem-oriented, electronic health records, clinical decision support systems, artificial intelligence, clinician role, licensure

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