Preface

Health information systems play a vital role in improving the quality and efficiency of healthcare by ensuring access to and delivery of essential information. Developing secure, efficient information systems for the healthcare industry that address the needs of patients and clinicians in an increasingly complex environment is often a difficult task.

With the constant changes in the landscape of health information systems, it is a challenge for researchers, practitioners, clinicians, and experts to take in the volume of innovative advances and up-to-the-moment research in this diverse field. Medical Information Science Reference is pleased to offer a four-volume reference collection on this rapidly growing discipline, in order to empower students, researchers, academicians, and practitioners with a wide-ranging understanding of the most critical areas within this field of study. This collection provides the most comprehensive, in-depth, and recent coverage of all issues related to the development of cutting-edge health information systems, as well as a single reference source on all conceptual, methodological, technical and managerial issues, and the opportunities, future challenges and emerging trends related to the development, application, and implications of health information systems.

This collection entitled, “Health Information Systems: Concepts, Methodologies, Tools, and Applications” is organized in eight (8) distinct sections, providing the most wide-ranging coverage of topics such as: 1) Fundamental Concepts and Theories; 2) Development and Design Methodologies; 3) Tools and Technologies; 4) Utilization and Application; 5) Organizational and Social Implications; 6) Managerial Impact; 7) Critical Issues; and 8) Emerging Trends. The following provides a summary of what is covered in each section of this multi-volume reference collection:

Section 1, Fundamental Concepts and Theories, serves as a foundation for this extensive reference tool by addressing crucial theories essential to the understanding of health information systems. Chapters such as “Inventing the Future of E-Health” by José Aurelio Medina-Garrido and María José Crisóstomo-Acevedo and “Multi-Dimensional Criteria for the Evaluation of E-Health Services” by Alalwany Hamid and Alshawi Sarmad define essential concepts in e-health, such as electronic health records and telemedicine, and provide frameworks for their evaluation. “Quality of Health Information on the Internet,” by Kleopatra Alamantariotou and “Improving Data Quality in Health Care” by Karolyn Kerr and Tony Norris provide overviews of quality assessment of health information online and offer suggestions for both patients and clinicians. Later selections, including “Overview and Analysis of Electronic Health Record Standards” by Spyros Kitsiou, Vicky Manthou, and Maro Vlachopoulou and “Process Level Benefits of an Electronic Medical Records System” by Abirami Radhakrishnan, Dessa David, and Jigish Zaveri highlight the challenges and opportunities presented by the use of electronic health records in practice. These and several other foundational chapters provide a wealth of expert research on the elemental concepts and ideas which surround information in healthcare.
Section 2, Development and Design Methodologies, presents in-depth coverage of the conceptual design and architecture of a number of health systems, including e-health services, mobile healthcare, and pervasive healthcare applications. “Patient-Centered E-Health Design,” by Alejandro Mauro and Fernán González Bernaldo de Quirós begins this section with an overview of tools and techniques needed for the design of efficient patient-centered e-health services. “Planning Successful Telemedicine and E-Health Systems” by Michael Mackert, Pamela Whitten, and Emily Krol highlights key points to consider when planning for the implementation of new telemedicine or e-health systems. Similarly, “Shared Healthcare in a Regional E-Health Network” by Kari Harno and “Tele-Practice Technology: A Model for Healthcare Delivery to Underserved Populations” by Thomas W. Miller, Robert D. Morgan, and Jennifer A. Wood offer overviews of key considerations for healthcare delivery in regional contexts. With contributions from leading international researchers, this section offers copious developmental approaches and methodologies for the design and implementation of health information systems.

Section 3, Tools and Technologies, presents extensive coverage of the various tools and technologies used in the development and implementation of health information systems. This comprehensive section opens with the chapter “Capturing Data in Healthcare Using Patient-Centered Mobile Technology,” by Sarah Pajak, Lorraine H. De Souza, Justin Gore, and Christopher G. Williams, which describes how patient perspectives can be used to inform the development of new user-centered technology in healthcare. Mobile technology in healthcare is further explored in selections such as “Managing Mobile Healthcare Knowledge: Physicians’ Perceptions on Knowledge Creation and Reuse” by Teppo Räisänen, Harri Oinas-Kukkonen, Katja Leiviskä, Matti Seppänen, and Markku Kallio, “Personal Health Records Systems Go Mobile: Defining Evaluation Components” by Phillip Olla and Joseph Tan, and “Adoption of Mobile Technology by Public Healthcare Doctors: A Developing Country Perspective” by Nesaar Banderker and Jean-Paul Van Belle. Later selections such as “Collaborative Virtual Environments and Multimedia Communication Technologies in Healthcare” by Maria Andréia F. Rodrigues and Raimir Holanda Filho explain how technology can be used for training and learning in healthcare environments. In all, this section provides coverage of a variety of tools and technologies that inform and enhance modern healthcare environments.

Section 4, Utilization and Application, describes how health information systems have been utilized and offers insight on important lessons for their continued use and evolution. Including chapters such as “Best Practices for Implementing Electronic Health Records and Information Systems” by Beste Kucukyazici, Karim Keshavjee, John Bosomworth, John Copen, and James Lai and “Electronic Medical Records: TAM, UTAUT, and Culture” by Ken Trimmer, Leigh W. Cellucci, Carla Wiggins, and William Woodhouse, this section investigates the numerous methodologies that have been proposed and enacted as electronic health records have grown in popularity. As this section continues, a number of case studies in health information research are presented in selections such as “Providing Telemental Health Services after Disasters: A Case Based on the Post-Tsunami Experience” by Shashi Bhushan Gogia, “Planning and Control and the Use of Information Technology in Mental Healthcare Organizations” by I.J. Baars and G.G. Van Merode, and “Assessing Physician and Nurse Satisfaction with an Ambulatory Care EMR: One Facility’s Approach” by Karen A. Wager, James S. Zoller, David E. Soper, James B. Smith, John L. Waller, and Frank C. Clark. Contributions found in this section provide comprehensive coverage of the practicality and current use of health IT.

Section 5, Organizational and Social Implications, includes chapters discussing the importance of addressing organizational and social impact in the evaluation and design of any health information system. Chapters such as “Preparing Healthcare Organizations for New IT Systems Adoption: A Readiness Framework” by Robert Breas and Matthew Waritay Guah and “Managing ICT in Healthcare Organization: Culture, Challenges, and Issues of Technology Adoption and Implementation” by Nasria Zakaria,
Shafiz Affendi Mohd Yusof, and Norhayati Zakaria address specific issues and trends in organizational IT adoption among patients, clinicians, and IT professionals. This section continues with investigations of community health and public healthcare in chapters such as “Understanding Computerised Information Systems Usage in Community Health” by Farideh Yaghmaei and “Managing E-Procurement in Public Healthcare: A Knowledge Management Perspective” by Tommaso Federici and Andrea Resca, concluding with discussions on topics such as patient roles in recording health data and data systems for disaster preparedness. Overall, these chapters present a detailed investigation of the complex relationship between individuals, organizations and health records and technologies.

Section 6, Managerial Impact, presents focused coverage of health information systems as they relate to improvements and considerations in the workplace. “A Process Architecture Approach to Manage Health Process Reforms” by Christine Stephenson and Wasana Bandara highlights the importance of adopting a business process modeling approach to facilitate healthcare reform in the private and public sectors. “Investing Trust Relationships in a Healthcare Network” by Stefanie Kethers, Günter Gans, Dominik Schmitz, and David Sier presents a case study that explores the managerial implications of trust relationships between two separate wards in a hospital. In all, the chapters in this section offer specific perspectives on how managerial perspectives and developments in healthcare methodologies inform each other to create more meaningful user experiences.

Section 7, Critical Issues, addresses vital issues related to health information systems, which include patient privacy, healthcare ethics, and information quality and reliability. Chapters such as “Security-Aware Service Specification for Healthcare Information Systems” by Khaled M. Khan discuss the importance of developing security-aware healthcare software services and the current challenges associated with doing so. Later selections, such as “Privacy Management of Patient-Centered E-Health” by Olli P. Järvinen discuss informational privacy from a patient perspective, providing a framework that addresses key patient concerns and distinctions between different e-health interests. This section continues by asking unique questions about demographic inconsistencies in healthcare environments, models for e-health service evaluation, and trends in healthcare data quality.

The concluding section of this authoritative reference tool, Emerging Trends, highlights areas for future research within the field of health information systems, while exploring new avenues for the advancement of the discipline. Beginning this section is “Toward a Better Understanding of the Assimilation of Telehealth Systems” by Joachim Jean-Jules and Alain O. Villeneuve. This selection proposes a conceptual model of the determinants relevant for the assimilation of telehealth systems in healthcare organizations. Trends in the usability of health information systems are presented in “Emerging Approaches to Evaluating the Usability of Health Information Systems” by Andre W. Kushniruk, Elizabeth M. Borycki, Shige Kuwata, and Francis Ho with the aim of improving the adoption of health information systems in both hospitals and other healthcare organizations. These and several other emerging trends and suggestions for future research can be found within the final section of this exhaustive multi-volume set.

Although the primary organization of the contents in this multi-volume work is based on its eight sections, offering a progression of coverage of the important concepts, methodologies, technologies, applications, social issues, and emerging trends, the reader can also identify specific contents by utilizing the extensive indexing system listed at the end of each volume. Furthermore to ensure that the scholar, researcher and educator have access to the entire contents of this multi volume set as well as additional coverage that could not be included in the print version of this publication, the publisher will provide unlimited multi-user electronic access to the online aggregated database of this collection for the life of the edition, free of charge when a library purchases a print copy. This aggregated database provides far more contents than what can be included in the print version in addition to continual updates. This unlimited access, coupled with the continuous updates to the database ensures that the most current research is accessible to knowledge seekers.
As a comprehensive collection of research on the latest findings related to technologies and healthcare delivery, *Health Information Systems: Concepts, Methodologies, Tools, and Applications*, provides researchers, administrators and all audiences with a complete understanding of the development of applications and concepts in Clinical, Patient and Hospital Information Systems. Given the growing needs of populations around the world for care and delivery of services, as well as disease control, quality diagnostics and secure records, *Health Information Systems: Concepts, Methodologies, Tools, and Applications*, addresses the demand for a resource that encompasses the most pertinent research in health information systems, healthcare technologies and telemedicine.