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Section I. Fundamental Concepts and Theories

This section serves as the groundwork for this comprehensive reference book by addressing central theories essential to the understanding of clinical technologies. Chapters found within these pages provide a tremendous framework in which to position clinical technologies within the field of information science and technology. Insight regarding the critical integration of global measures into clinical technologies is addressed, while crucial stumbling blocks of this field are explored. In the chapters comprising this introductory section, the reader can learn and choose from a compendium of expert research on the elemental theories underscoring the clinical technologies discipline.

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PETE GREGORY, COVENTRY UNIVERSITY, UK
Section VI. Managerial Impact

This section presents contemporary coverage of the social implications of clinical technologies, more specifically related to the corporate and managerial utilization of information sharing technologies and applications, and how these technologies can be facilitated within organizations. Section 6 is especially helpful as an addition to the organizational and behavioral studies of section 5, with diverse and novel developments in the managerial and human resources areas of clinical technologies. Typically, though the fields of industry and education are not always considered co-dependent, section 6 provides looks into how clinical technologies and the business workplace help each other. The interrelationship of such issues as operationalizing, supervision, and diagnosis management are discussed. In all, the chapters in this section offer specific perspectives on how managerial perspectives and developments in clinical technologies inform each other to create more meaningful user experiences.

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Jerry B. Lefkowitz, Weill Cornell College of Medicine, USA
Section VII. Critical Issues

Section 7 details some of the most crucial developments in the critical issues surrounding clinical technologies. Importantly, this refers to critical thinking or critical theory surrounding the topic, rather than vital affairs or new trends that may be found in section 8. Instead, the section discusses some of the latest developments in ethics, law, and social implications in clinical technology development. Within the chapters, the reader is presented with an in-depth analysis of the most current and relevant issues within this growing field of study.

Chapter 7.1. eHealth and Ethics: Theory, Teaching, and Practice ........................................................ 1831
   Diane Whitehouse, The Castlegate Consultancy, Malton, UK
   Penny Duquenoy, Middlesex University, London, UK

Chapter 7.2. Standards and Guidelines Development in the American Telemedicine Association .................................................................................................................. 1843
   Elizabeth A. Krupinski, University of Arizona, USA
   Nina Antoniotti, Marshfield Clinic Telehealth Network, USA
   Anne Burdick, University of Miami Miller School of Medicine, USA

Chapter 7.3. The Regulation of Genetic Testing and the Protection of Genetic and Medical Information in Singapore .................................................................................................................. 1853
   Terry Kaan, National University of Singapore, Singapore

Chapter 7.4. A Bio-Psycho-Social Review of Usability Methods and their Applications in Healthcare .................................................................................................................. 1874
   Morgan Price, University of Victoria, Canada, & University of British Columbia, Canada

Chapter 7.5. The Gap between What is Knowable and What We Do in Clinical Practice ................. 1900
   Maartje H.J. Swennen, University Medical Centre Utrecht, The Netherlands

Chapter 7.6. Trust and Clinical Information Systems ............................................................................. 1922
   Rania Shibl, University of the Sunshine Coast, Australia
   Kay Fielden, UNITEC New Zealand, New Zealand
   Andy Bissett, Sheffield Hallam University, UK
   Den Pain, Massey University, New Zealand

Chapter 7.7. Data Security in Electronic Health Records ........................................................................ 1934
   Stefane M. Kabene, Ecole des Hautes Etudes en Sante Publique (EHESP), France
   Raymond W. Leduc, University of Western Ontario, Canada
   Candace J Gibson, University of Western Ontario, Canada

Chapter 7.8. Legal Issues in Health Information and Electronic Health Records .............................. 1948
   Nola M. Ries, University of Alberta, Canada, & University of Victoria, Canada
Section VIII. Emerging Trends

The final section explores the latest trends and developments, and suggests future research potential within the field of clinical technologies while exploring uncharted areas of study for the advancement of the discipline. The section advances through medical imaging techniques, diagnostics, virtual reality, and more new technologies by means of describing some of the latest trends in clinical research and development. These and several other emerging trends and suggestions for future research can be found within the final section of this exhaustive multi-volume set.

Chapter 8.1. New Technologies in Hospital Information Systems .................................................. 2029
Dimitra Petroudi, National and Kapodistrian University of Athens, Greece
Nikolaos Giannakakis, National and Kapodistrian University of Athens, Greece

Chapter 8.2. IT-Based Virtual Medical Centres and Structures ........................................................ 2035
Bettina Staudinger, University for Health Sciences, Medical Informatics and Technology, Austria
Herwig Ostermann, University for Health Sciences, Medical Informatics and Technology, Austria
Roland Staudinger, University for Health Sciences, Medical Informatics and Technology, Austria

Chapter 8.3. Emerging Technologies for Aging in Place................................................................. 2047
Shirley Ann Becker, Florida Institute of Technology, USA
Frank Webbe, Florida Institute of Technology, USA

Chapter 8.4. The Development and Implementation of Patient Safety Information Systems (PSIS) .................................................................................................................. 2054
Jeongeun Kim, Seoul National University, Korea
Chapter 8.5. The Use of Virtual Reality in Clinical Psychology Research: Focusing on Approach and Avoidance Behaviors

Patrice Renaud, University of Quebec in Outaouais / Institut Philippe-Pinel de Montréal, Canada
Sylvain Chartier, University of Ottawa, Canada
Paul Fedoroff, University of Ottawa, Canada
John Bradford, University of Ottawa, Canada
Joanne L. Rouleau, University of Montreal, Canada
Jean Proulx, University of Montreal, Canada
Stéphane Bouchard, University of Quebec in Outaouais, Canada

Chapter 8.6. Novel Data Interface for Evaluating Cardiovascular Outcomes in Women

Amparo C. Villablanca, University of California, Davis, USA
Hassan Baxi, University of California, Davis, USA
Kent Anderson, University of California, Davis, USA

Chapter 8.7. New Developments in Intracoronary Ultrasound Processing

Christos V. Bourantas, Michailideion Cardiology Center, Greece & University of Hull, UK
Katerina K. Naka, Michailideion Cardiology Center, Greece
Dimitrios I. Fotiadis, Michailideion Cardiology Center, Greece
Lampros K. Michalis, Michailideion Cardiology Center, Greece

Chapter 8.8. Pulse!!: Designing Medical Learning in Virtual Reality

Claudia L. McDonald, Texas A&M University-Corpus Christi, USA
Jan Cannon-Bowers, University of Central Florida, Orlando, USA
Clint Bowers, University of Central Florida, Orlando, USA

Chapter 8.9. Visualization and Modelling in Dental Implantology

Ferenc Pongracz, Albadent Inc., Hungary

Chapter 8.10. Patient Journey Record Systems (PaJR) for Preventing Ambulatory Care Sensitive Conditions: A Developmental Framework

Carmel M. Martin, Trinity College Dublin, Ireland
Rakesh Biswas, People’s College of Medical Sciences, India
Joachim Sturmberg, Monash University and The University of Newcastle, Australia
David Topps, Northern Ontario School of Medicine, Canada
Rachel Ellaway, Northern Ontario School of Medicine, Canada
Kevin Smith, National Digital Research Centre, Ireland

Chapter 8.11. Picture Archiving and Communication System for Public Healthcare

Carrison K. S. Tong, Pamela Youde Nethersole Eastern Hospital, Hong Kong, China
Eric T. T. Wong, The Hong Kong Polytechnic University, Hong Kong, China
Chapter 8.12. Imaging Advances of the Cardiopulmonary System

Holly Llobet, Cabrini Medical Center, USA
Paul Llobet, Cabrini Medical Center, USA
Michelle LaBrunda, Cabrini Medical Center, USA

Chapter 8.13. The Study of Transesophageal Oxygen Saturation Monitoring

Zhiqiang Zhang, Sichuan University, China
Bo Gao, Sichuan University, China
Guojie Liao, Sichuan University, China
Ling Mu, West China Hospital, China
Wei Wei, West China Hospital, China