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3D Printing in Prosthetics and Orthotics Wiley

The need to promote academic activities in telehealth remains a high priority as the discipline expands into new areas of healthcare. Response during 2020 to the COVID-19 pandemic has provided an excellent example of the rapid diversification and impact attainable with telehealth, and may kindle a new momentum for accelerated service design and adoption processes in the future. This book, Telehealth Innovations in Remote Healthcare Services Delivery, is the tenth in the Global Telehealth series. Due to the prevailing COVID-19 pandemic and the restrictions placed on academic gatherings, the organizers issued a general call for contributions, with the intention of attracting a wide cross-section of contributions reflecting the breadth of different aspects of telehealth internationally. The resulting collection offers snapshots of research projects and studies of service experience from five continents, with an emphasis on delivering benefits in regional settings in keeping with the theme of the book's title. Articles range from descriptions of telehealth networks and clinical-service instances such as cardiac health, mental health and pathology, several in Pacific-rim settings, to more generic papers on the evolution of such services, as well as commentaries on innovative considerations for telehealth such as the emergence of the concept of virtual care, the suitability of health apps, and the status of eHealth readiness in the developing world. This book is a valuable contribution to the body of knowledge on current telehealth research interests and trends, and will be of interest to all those working in the field.

Energy Efficiency of Medical Devices and Healthcare Applications John Wiley & Sons

User inclusion in innovation is increasingly the target of policy rhetoric at both organizational and societal levels. And extensive research has demonstrated the potential contribution that users can make, both at the 'front end' of innovation with their ideas and insights and downstream, facilitating adoption and diffusion. However, translating this potential into practice remains problematic, not least because we need to understand more about how to hear user voices, amplify their insights, and provide practical channels for inclusion to ensure full co-creation of innovation. Our earlier book from 2019 ('Responsible Innovation in Digital Health', Edward Elgar) added to the growing body of knowledge around whether users can be involved, and this book opens up the 'how?' theme. Our work suggested a spectrum of user involvement ranging from those who can participate fully to those who are passive players in the innovation process, and we explore in this book different tools, techniques, and mechanisms for enabling such users to become more involved in the innovation process. We look at the concept of 'boundary innovation spaces' as environments in which co-creation can be enabled, drawing on experience across a wide international research network. We also explore the broader innovation environment - the specific networks of actors and their interactions which define the innovation ecosystem where user inclusion may be embedded. This book moves the discussion beyond the question of whether users can be more effectively included throughout the innovation process to explore the ways in which this might be enabled.

Registries for Evaluating Patient Outcomes CRC Press

Medical devices that are deemed to have a moderate risk to patients generally cannot go on the market until they are cleared through the FDA 510(k) process. In recent years, individuals and organizations have expressed concern that the 510(k) process is neither making safe and effective devices available to patients nor promoting innovation in the medical-device industry. Several high-profile mass-media reports and consumer-protection groups have profiled recognized or potential problems with medical devices cleared through the 510(k) clearance process. The medical-device industry and some patients have asserted that the process has become too burdensome and is delaying or stalling the entry of important new medical devices to the market. At the request of the FDA, the Institute of Medicine (IOM) examined the 510(k) process. Medical Devices and the Public's Health examines the current 510(k) clearance process and whether it optimally protects patients and promotes innovation in support of public health. It also identifies legislative, regulatory, or administrative changes that will achieve the goals of the 510(k) clearance process. Medical Devices and the Public's Health recommends that the U.S. Food and Drug Administration gather the information needed to develop a new regulatory framework to replace the 35-year-old 510(k) clearance process for medical devices. According to the report, the FDA's finite resources are best invested in developing an integrated premarket and postmarket regulatory framework.

Innovation and Invention in Medical Devices CRC Press

Assurance of Sterility for Sensitive Combination Products and Materials: New Paradigms for the Next Generation of Medical Devices and Pharmaceuticals discusses the medical device industry and existing challenges regarding the exciting new world of sensitive combination products (SCPs) and their terminal sterilization. This book reassesses the current assumptions to assure the patient's best interests are met in the development of increasingly rigorous sterilization methods used to counteract MRSA and other 'super-bugs'. In addition, the book discusses the special challenges faced with implantable medical devices, sterilization requirements and further methods needed for material selection and the design process. This book is unique in taking a holistic, end-to-end

approach to sterilization, with a particular focus on materials selection and product design. - Introduces sterilization principles at the material selection and design stages - Addresses the industry need for new sterilization processes for new medical devices and biomaterials - Provides guidance to select the appropriate sterilization technique for newly developed sensitive combination products - Examines forward thinking tactics for matching new developments in material compatibility with possible regulatory and QSR strategies

Monthly People Springer Nature

Recognize market opportunities, master the design process, and develop business acumen with this 'how-to' guide to medical technology innovation. Outlining a systematic, proven approach for innovation - identify, invent, implement - and integrating medical, engineering, and business challenges with real-world case studies, this book provides a practical guide for students and professionals.

Medical Innovation Frontiers Media SA

Healthcare systems have been in a state of flux for a number of years now due to increasing digitalization. Medicine itself is also facing new challenges, and how to maximize the possibilities of artificial intelligence, whether digitalization can help to strengthen patient orientation, and dealing with the issue of data quality and completeness are all issues which require attention, creativity and research. This book presents the proceedings of the 64th annual conference of the German Association for Medical Informatics, Biometry and Epidemiology (GMDS 2019), held in Dortmund, Germany, from 8 - 11 September 2019. The theme of this year's conference is Shaping Change – Creative Solutions for Innovative Medicine, and the papers presented here focus on active participation in shaping change while ensuring that good scientific practice, evidence and regulation are not lost as a result of innovation. The book is divided into 8 sections: biostatistics; healthcare IT; interoperability - standards, classification, terminology; knowledge engineering and decision support; medical bioinformatics and systems biology; patient centered care; research infrastructure; and sociotechnical systems / usability and evaluation of healthcare IT. The book will be of interest to all those facing the challenges posed by the ongoing revolution in medicine and healthcare.

Materials in Biology and Medicine OrangeBooks Publication

Connecting people to people, Connecting people and values. We see the future through people. We interview entrepreneurs, scientists, government officials, politicians, and others to see a better vision. We hope that you, the reader, will use us as a medium to create better opportunities. We hope that the stories of the people introduced through Monthly People will inspire you to have a better future and vision. We bring to life the stories of people who are responding to the issues of the day and making innovations in various fields through on-site interviews. Through our content, we aim to provide our readers with forward-thinking insights and inspire them to create their own lives and opportunities.

Asian pharmaceutical and medical device industry innovation - perspectives up to 2050 ??

Background papers 1 to 9 published as technical documents. Available in separate records from WHO/HSS/EHT/DIM/10.1 to WHO/HSS/EHT/DIM/10.9

Rare Diseases and Orphan Products National Academies Press

Exploring the practical, entrepreneurial, and historical aspects of medical device development, this second edition of The Medical Device R&D Handbook provides a how-to guide for medical device product development. The book offers knowledge of practical skills such as prototyping, plastics selection, and catheter construction, allowing designer

German Medical Data Sciences: Shaping Change - Creative Solutions for Innovative Medicine Springer Nature

This book introduces human factors engineering (HFE) principles, guidelines, and design methods for medical device design. It starts with an overview of physical, perceptual, and cognitive abilities and limitations, and their implications for design. This analysis produces a set of human factors principles that can be applied across many design challenges, which are then applied to guidelines for designing input controls, visual displays, auditory displays (alerts, alarms, warnings), and human-computer interaction. Specific challenges and solutions for various medical device domains, such as robotic surgery, laparoscopic surgery, artificial organs, wearables, continuous glucose monitors and insulin pumps, and reprocessing, are discussed. Human factors research and design methods are provided and integrated into a human factors design lifecycle, and a discussion of regulatory requirements and procedures is provided, including guidance on what human factors activities should be conducted when and how they should be documented. This hands-on professional reference is an essential introduction and resource for students and practitioners in HFE, biomedical engineering, industrial design, graphic design, user-experience design, quality engineering, product management, and regulatory affairs. Teaches readers to design medical devices that are safer, more effective, and less error prone; Explains the role and responsibilities of regulatory agencies in medical device design; Introduces analysis and research methods such as UFMEA, task analysis, heuristic evaluation, and usability testing.

Biodesign CRC Press

The Business of Healthcare Innovation is the first wide-ranging analysis of business trends in the manufacturing segment of the health care industry. In this leading edge volume, Professor Burns focuses on the key role of the 'producers' as the main source of innovation in health systems. Written by professors of the Wharton School and industry executives, this book provides a detailed overview of the pharmaceutical, biotechnology, genomics/proteomics, medical device and information technology sectors. It analyses the market structures of these sectors as well as the business models and corporate strategies of firms operating within them. Most importantly, the book describes the growing convergence between these sectors and the need for executives in one sector to increasingly draw upon trends in the others. It will be essential reading for students and researchers in the field of health management, and of great interest to strategy scholars, industry practitioners and management consultants.

The Medical Device R&D Handbook Routledge

Create breakthrough services, products, and business models Innovating in Healthcare offers effective approaches for designing, reworking, and implementing innovative healthcare services, products, and business models. It will help anyone working in healthcare service or product development, from hospitals to startups, to question the status quo in healthcare and implement new solutions that lower costs while increasing both quality and access. Globally, healthcare faces a threefold crisis of unsustainable economics, erratic quality, and unequal access. Just in the U.S., healthcare accounted for 18% of the 2017 GDP and will likely reach nearly 20% by 2025, while hospital-induced deaths have skyrocketed, and tens of millions of people remain uninsured. This book will focus on creating the innovations in healthcare that can meet these needs. Written by the world's leading authority on healthcare innovation Includes success stories in every segment of the health care sector Presents and applies the Six Factors in the environment that critically affect healthcare innovation Guides the reader through tailoring a business plan specifically for the new business Designed for healthcare executives, providers, and degree students, Innovating in Healthcare is a comprehensive guide for maximizing the viability of a new healthcare product, service, or business.

Medical Innovation National Academies Press

Energy Efficiency of Medical Devices and Healthcare Facilities provides comprehensive coverage of cutting-edge, interdisciplinary research, and commercial solutions in this field. The authors discuss energy-related challenges, such as energy-efficient design, including renewable energy, of different medical devices from a hardware and mechanical perspectives, as well as energy management solutions and techniques in healthcare networks and facilities. They also discuss energy-related trade-offs to maximize the medical devices availability, especially battery-operated ones, while providing immediate response and low latency communication in emergency situations, sustainability and robustness for chronic disease treatment, in addition to high protection against cyber-attacks that may threaten patients' lives. Finally, the book examines technologies and future trends of next generation healthcare from an energy efficiency and management point of view, such as personalized or smart health and the Internet of Medical Things — IoMT, where patients can participate in their own treatment through innovative medical devices and software applications and tools. The books applied approach makes it a useful resource for engineering researchers and practitioners of all levels involved in medical devices development, healthcare systems, and energy management of healthcare facilities. Graduate students in mechanical and electric engineering, and computer science students and professionals also benefit. - Provides in-depth knowledge and understanding of the benefits of energy efficiency in the design of medical devices and healthcare networks and facilities - Presents best practices and state-of-art techniques and commercial solutions in energy management of healthcare networks and systems - Explores key energy tradeoffs to provide scalable, robust, and effective healthcare systems and networks

Humanizing Healthcare – Human Factors for Medical Device Design Cambridge University Press

ADVANCES IN FUZZY-BASED INTERNET OF MEDICAL THINGS (IOMT) This book explores the latest trends, transitions, and advancements of the Internet of Medical Things whose integration through cloud-hosted software applications adds required intelligence from tools such as medical instruments, scanners, and appliances, enabling fuzzy logic to help medical professionals establish linguistic concepts in deciding diagnosis and prognosis. The main goal of the book is to strengthen medical professionals and caregivers by providing methods for achieving fuzzy logic-based health diagnosis and medication. The health condition and various physical parameters of humans, such as heartbeat rate, sugar level, blood pressure, temperature, and oxygen quality, are captured through a host of multifaceted sensors. Additionally, remote health monitoring, medication, and management are being facilitated through a host of ingestible sensors, 5G communication, networked embedded systems, AI models running on cloud servers and edge devices, etc. Furthermore, chronic disease management is another vital domain getting increased attention. The distinct advancements in the fuzzy logic field are useful in various advanced medical care functionalities and facilities. The readers will discover: new and innovative features of health care by using fuzzy logic that raises economic efficiency at macro and micro levels; expounds on fuzzy logic techniques used in medical science; describes the evolution of the fuzzy logic paradigm and how it helps physicians decide on diagnosis and prognosis; uncovers how trust management is dealt with between patients and medical officials to help advance the fuzzy logic field; provides case studies, various technology advancements, and practical aspects on the impacts and challenges of fuzzy-based Internet of Medical Things. Audience The book will be read and used by researchers in artificial intelligence, fuzzy logic, medical professionals, caregivers, health administrators, and policymakers.

Medical Devices IOS Press

This review highlights achievements of the Mexican Institute of Social Security (Instituto Mexicano del Seguro Social, IMSS) in a number of areas – human resources, technological capacities and relations with suppliers – previously identified by the OECD as pivotal for the successful reform of IMSS

Telehealth Innovations in Remote Healthcare Services Delivery Cambridge University Press

Medical Innovation: Concept to Commercialization is a practical, step-by-step approach on how to move a novel concept through development to realize a commercially successful product. Real-world experience cases and knowledgeable contributors provide lessons that cover the practices of diverse organizations and multiple products. This important reference will help improve success and avoid innovation failure for translational researchers, entrepreneurs, medical school educators, biomedical engineering students and faculty, and aspiring physicians. - Provides multiple considerations and comprehensive lessons from varied organizations, researchers and products - Designed to help address topics that improve success and avoid the high cost of innovation failure - Recommends the practical steps needed to move a novel, non-developed concept into a tangible, realistic and commercially successful product

Medical Instrument Design and Development Academic Press

This text provides a central resource for physicians, entrepreneurs, and the MBA students about how innovation occurs in medical device industry. The book uses the rise and fall of vaginal mesh kits to highlight the evolution of responses by the physicians, patients and the regulatory bodies. There are specific chapters reviewing the US regulatory issues and business practices that were consequential to withdrawal of most vaginal mesh kits from the US market. The book is meant to be concise, evidence-based, and practical for the first time readers to understand the innovation forces. Concise textual information from acknowledged experts is complemented by high-quality diagrams and images to provide a thorough update of this rapidly evolving medical device industry. The case study chapters fully elucidate the anatomical basis that led to conceptualization of vaginal mesh kits, their introduction into the market, medicolegal and business implications followed with innovation that occurred by the surgeons to utilize ultrasound for and innovative surgeries to overcome device complications. With a luxurious number of well-marked pictures, readers will gain a clear understanding of the medical device innovation and evolution. Innovation and Evolution of Medical Devices: The vaginal Mesh Kits provides a rich practical resource written in a simple a step-by- step approach for all readers in their approach to new medical devices and technologies.

Medical Device Design for Six Sigma Springer Nature

The Food and Drug Administration (FDA) is responsible for assuring that medical devices are safe and effective before they go on the market. As part of its assessment of FDA's premarket clearance process for medical devices, the IOM held a workshop June 14-15 to discuss how to best balance patient safety and technological innovation. This document summarizes the workshop.

Innovating in Healthcare MIT Press

This User’s Guide is intended to support the design, implementation, analysis, interpretation, and quality evaluation of registries created to increase understanding of patient outcomes. For the purposes of this guide, a patient registry is an organized system that uses observational study methods to collect uniform data (clinical and other) to evaluate specified outcomes for a population defined by a particular disease, condition, or exposure, and that serves one or more predetermined scientific, clinical, or policy purposes. A registry database is a file (or files) derived from the registry. Although

registries can serve many purposes, this guide focuses on registries created for one or more of the following purposes: to describe the natural history of disease, to determine clinical effectiveness or cost-effectiveness of health care products and services, to measure or monitor safety and harm, and/or to measure quality of care. Registries are classified according to how their populations are defined. For example, product registries include patients who have been exposed to biopharmaceutical products or medical devices. Health services registries consist of patients who have had a common procedure, clinical encounter, or hospitalization. Disease or condition registries are defined by patients having the same diagnosis, such as cystic fibrosis or heart failure. The User's Guide was created by researchers affiliated with AHRQ's Effective Health Care Program, particularly those who participated in AHRQ's DEcIDE (Developing Evidence to Inform Decisions About Effectiveness) program. Chapters were subject to multiple internal and external independent reviews.

A Hand Book on Medical Devices Lippincott Williams & Wilkins

As developed economies enter a period of slower growth, emerging economies such as India have become prime examples of how more can be achieved with less. Bringing together experience and expertise from across the healthcare industry, this book examines innovations that can bring about real advances in the healthcare industry. Innovations in H