Discovering Precision Health: Predict, Prevent, and Cure to Advance Health and Well-Being. By Lloyd Minor, MD and Matthew Rees. 2020. John Wiley & Sons Ltd: Hoboken, New Jersey. ISBN (Hardcover): 978-1119672692. US $39.15. 257 p.

Discovering Precision Health: Predict, Prevent, and Cure to Advance Health and Well-Being offers readers a detailed vision of a healthcare system where patient-specific factors are leveraged to prevent, treat, and cure disease. The concept of Precision Health is based on the recently established field of Precision Medicine with a shifted focus from treatment to prevention. Together, Dr. Lloyd Minor, Dean of the School of Medicine at Stanford University, and Matthew Rees, founder of Geonomica, outline the need for patient-specific healthcare, its role in predicting and preventing disease, and the scientific and technological breakthroughs that make it a plausible vision for the near future.

One of Minor’s fundamental principles is that effective patient-based care should be precise yet comprehensive. In recent years, medical professionals have widened their perspectives regarding factors that influence health outcomes. Instead of relying solely on common clinical metrics, Minor highlights the value of utilizing a variety of unique patient factors – including genomics, metabolomics, and microbiomics – in developing a complete understanding of an individual’s physiology. Minor also emphasizes the importance of environmental, financial, and social circumstances, as well as lifestyle choices and daily habits, specifically given the stark health disparities in the United States.

Discovering Precision Health describes how shifting the “one-size-fits-all” model of healthcare to a more personalized approach can promote health and mitigate symptoms at various points in the trajectory of disease. Notably, Minor describes how continuous health monitoring allows physicians to obtain baseline clinical values for each patient, which may be more effective than using those derived from antiquated studies lacking in diversity. Using this personalized information, clinicians can diagnose earlier and intervene faster, or even take measures to prevent disease onset entirely. Furthermore, continuous monitoring increases patient engagement and encourages a more active role in maintaining health and wellness. Continuous monitoring based on personalized metrics can also help patients with chronic diseases prevent acute exacerbations, dramatically improving health outcomes.

Throughout the text, Minor draws on major advances in biomedical research and healthcare technology, as well as private sector collaborations, to depict how Precision Health can become a reality in the near future. He describes how genome sequencing, and recent research on the functions and interactions of specific genes, can be utilized to identify the most effective treatment and dosing strategies for patients, circumventing the timely and costly trial-and-error process all too common in modern healthcare. The genetic revolution has also resulted in genome editing and individualized stem cell therapeutics and tissue regeneration. Furthermore, technological advances in digital health devices facilitate the implementation of easy and effective continuous monitoring.

By identifying the shortcomings of the US healthcare system and the innovations that can alleviate them, Minor and Rees offer readers a new perspective on the future of healthcare.

Miriam Katz, MPH
Yale/YNHH Center for Outcomes Research and Evaluation

Digital Health in Focus of Predictive, Preventive and Personalised Medicine. Edited by Lotfi Chaari, PhD. 2020. Springer Nature: Switzerland. ISBN (eBook): 978-3030498153. US $109. 164 p.

Together, modern innovations in the interconnected fields of precision medicine, machine learning, bioinformatics, information technology, and artificial intelligence offer an array of applications for tailoring the delivery of quality patient-centered care, advancing biomedical research, and streamlining the routine operations of entire health systems. In Digital Health in Focus of Predictive, Preventive and Personalised Medicine, Lotfi Chaari presents a collection of 18 original research contributions that were presented at the second annual International Conference on Digital Health Technologies (ICDHT 2019). For readers actively engaged in these technological domains along with those hoping to gain early insight, these articles highlight the contemporary paradigm shift in which big data meets preventive medicine.

This quantitative-driven volume of the full book series, Advances in Predictive, Preventive and Per-
sonalised Medicine by Olga Golubnitschaja, explores recent advances in digital health applications designed to effectively collect, process, and analyze large sums of data as health systems around the world are faced with an ever-growing body of information relevant to patients’ health status and well-being. Based on current challenges, one of the included studies, for instance, employed machine learning methods to identify relevant medical documents and then visualize relationships between extrapolated themes. Another study summarized the role of big data in healthcare with a particular focus on the information collected and stored on wearable devices and their utility in promoting health, preventing disease, and enabling proactive conversations between patients and their physicians.

Alongside the rise in patient-level data accessible for the development of personalized diagnostic strategies and therapeutic options, is the transition away from a one-size-fits-all approach to addressing the growing burden of chronic diseases across aging populations. Accordingly, Chaari includes articles specifically examining deep learning approaches to predict lung cancer risk, digital modelling methods to diagnose heart disease, and strategies for supporting older individuals affected by Alzheimer’s disease while also alleviating the burden placed on their caregivers. Studies addressing the latter ranged from the development of a more inclusive, multilingual memory-aid for elderly adults experiencing memory loss to the conceptualization of a system of home-based sensors that continuously monitor adults’ level of activity and ultimately guide whether professional assistance and caregiving are necessary.

As a collection of studies describing innovative approaches to integrating digital health technologies into the provision of precision medicine, these articles implicitly underscore the contemporary and future burden placed on global health systems along with the seemingly infinite volume of data generated through biomedical imaging scans, electronic health records, and other diagnostic and screening modalities. Future work in this space may benefit further from a more cohesive grouping of rigorous, evidence-based research that captures the practical applications of technology in precision medicine. Furthermore, this selection of studies – when combined with external evidence highlighting data privacy, security, ethics, and clinical considerations – offers readers a thought-provoking glimpse into how innovations in technology foster advances in health.

Reed Mszar, MPH
Yale/YNHH Center for Outcomes Research and Evaluation

Primary Care of the Solid Organ Transplant Recipient. Edited by Christopher J. Wong. 2020. Springer: Cham, Switzerland. ISBN (Hardcover): 978-3030506292. US $140.89. 340 p.

Primary Care of the Solid Organ Transplant Recipient edited by Christopher Wong serves as a practical guide for primary care providers (PCPs) caring for solid organ recipients. The stated audience includes PCPs, medical trainees, and anyone involved in the care of solid organ transplant recipients. Though the reader may not initially associate transplant recipient care and its complex postoperative concerns of organ rejection and immunosuppression, within the purview of primary care, Wong cogently establishes the importance of primary care in the post-transplant journey. (1) Patients may live far from transplant centers and require more local routine care. (2) PCPs often have a pre-existing relationship and may already be involved in their care, and (3) the number of patients receiving transplants continues to increase each year, and the population of transplant recipients and their chronic care may soon eclipse the resources at highly-specialized transplant centers. Undoubtedly, this book is a testament to the growth and establishment of the transplantation efforts in the United States and the importance of primary care as the backbone of patient health management.

Primary Care begins with an overview of solid organ transplantation and post-transplant anti-rejection medications. The book remains faithful to its stated goal as a handbook, with many of the following chapters functioning well as stand-alone resources in their given topic. The next section focuses on different organ transplants separated into distinct chapters (i.e., kidney, liver, heart, and lung). These chapters are parallel in organization, with helpful sections on transplant-related patient history-taking, clinical pearls, and graft function evaluation. The authors for each chapter take different approaches to describing the transplant processes, with some chapters including much more detail on the modalities for treating organ rejection, surgical approaches, and screening methods. For non-experts, it is unclear if this difference in detail reflects a difference in standards of care or in the individual authors’ discussion of new developments in their field. However, when the authors make clear that they are speaking specifically about non-standard care advances, it can be exciting and valuable for trainees to see how the field is developing.

The book concludes with a section featuring concepts common to all transplants such as infections, preventative health, and palliative care. Because the chapters are written in a way that they can be referenced individually, by necessity, some information may be repetitive when the book is read cover-to-cover, especially in this section where presenting concerns and screening guidelines may