BOOK REVIEW

McNeill, D. (2015). Using Person-Centered Health Analytics to Live Longer. New Jersey: Pearson Education Inc. ISBN 978-0-13-388997-0

Robert J. McGrath PhD

Everett B. Sacket Associate Professor, Department of Health Management and Policy & Director of Graduate Programs in Analytics, University of New Hampshire, Durham, NH, USA

Correspondence address
Dr. Robert J. McGrath, Department of Health Management and Policy & Director of Graduate Programs in Analytics, University of New Hampshire, 337 Hewitt Hall, Durham, NH 03824, USA. E-mail:Robert.McGrath@unh.edu

Introduction

One of the perennial challenges to the improvement of population health, especially in the United States of America, is in effecting lasting and positive health behavior change at the level of the individual. This is a complex ask within advanced democracies where individuals are free to make the choice to be healthy or not. Thus the dilemma, but concomitant opportunity, to identify ways to promote and affect positive health behaviors over negative ones. Dr. Dwight McNeil, in his well-designed text, provides the context for that discussion, but more importantly outlines a set of tools for all health stakeholders to begin the movement toward a more person-centered approach to health and wellness. He further provides a roadmap for individuals to utilize to improve their own health.

The premise of Dr. McNeil's book focuses on the foundations of person-centered health (PCH); primarily that we are all different. We are different in our make-up, in our position in societies, in our geographic location, in our jobs and income, in our experience with providers and policies, in our access and comfortability with using data and in our own motivations for being healthy. But it is the advocacy of the use of data as a tool that is this text's primary strength. For so long, health systems have treated health data as an afterthought at best. Our methods for knowledge discovery have historically been crude and our use of data for decision-making and best practices worse. Our translation of those data into actionable information has been non-existent except in rare instances. What Dr. McNeil points out is that we are on the verge of a tremendous opportunity to harness what he terms High Definition Health Data (HD) into action. His argument is that data are the raw materials to information about health; if they are in the incorrect form, incorrect place, unintelligible to the user, or of poor quality, the end product will be flawed at best. But as in the manufacturing process, there are multiple inputs, throughputs and outputs, each with their own unique attributes. He nicely discusses the roles of policy, insurers, providers, payers and the technology sectors themselves in improving PCH and how analytic methods can help inform the process.

Contents of the Book

In the introductory section of the text, Dr. McNeil lays out the fundamental driving issue; that the U.S. healthcare system is ailing and as a result so is the population. The reason for this is a complex combination of reimbursement policies and personal behaviors. He aptly points out that despite spending far more than any other country on healthcare, the U.S. ranks among the worst on health outcomes. The fee-for-service reimbursement model classically incentivizes doing more over doing what is needed, thus opening the door for duplicative tests and services that may be less effective and less cost efficient than other alternatives. Coupled with a system with high malpractice threats and thus insurance costs, any incentives to use analytics becomes circumvented. He points out that health reforms have begun to be directed at quality and performance based measures - the triple aim of enhancing the experience of the patient, reducing unnecessary utilization and lowering costs. However, he also points out that the proverbial 'elephant in the room' in achieving these outcomes is in the data and analytics needed to measure them. It is the time old adage that 'you can't manage what you don't measure'.

Chapter 2 begins with an outline of where health costs are actually accruing. Not surprisingly, they are highly behavior driven. In fact, it has historically been true that 5% of people account for over 50% of all healthcare costs [1]. He further notes that 20% of the people with those at-risk behaviors account for 80% of the costs of those behaviors. Taken together, it is a small group of

individuals that, if only marginally engaged toward healthier behaviors and health monitoring, could make a tremendous impact on healthcare costs. Policymakers in the U.S. have known this for some time and so the real challenge is in activating these patients to make better choices in a society that places high value on individualism and personal freedom.

Chapters 3 and 4 begin to dissect the notion of engagement from a variety of perspectives. One is the traditional roles patients and providers have often shared; one of parent and child rather than partners in health. Parental roles naturally lead patients to view their health as someone else's responsibility and they thus can become less engaged. Other factors McNeill lists to becoming active in one's health include the burden of sickness, the presence - or lack of - supports, any lack of information and the notion that being sick and thus getting well, for example, "the sick role" is the burden of the individual and so recognizing illness is something often ignored or guilt inflicted. These factors are then reflected in and by the health system that promotes them. Patients are faced by fragmented and uncoordinated care systems that promote the special knowledge of providers (unintelligible lab results, short visits, or having no itemized billing for cost transparency to name a few). Dr. McNeil then takes each of these shortcomings in turn discussing how they could be made to work better and in support of the patient. For example, he suggests how the Patient Activation Measurement (PAM) and Health Improvement Capability Score (HICS) could assist providers in process change. He then examines the need to place the use of health data in a democratic context, much as in the case of freedom of information laws, so that public bodies promote the individual's personal health data management and thus health.

In Chapters 5 and 6, Dr. McNeil methodically outlines the data that are currently available to begin measuring health and those that are still needed, discussing how those data need to be contextualized to enable change to occur. We live in an era where the data produced through sensors have now outpaced that produced from people, totaling some 4 zettabytes in 2014 and expected to grow to 44 zettabyes by 2018, representing a 10-fold growth in just four years. In this context, tremendous opportunities exist through the linking of these data using thoughtful analytics. And while many of these sensors are healthcare-related (Proteus markers, smart hospital beds and wearable health sensors), many are only peripherally so, such as water flow sensors, automobile sensors and smart city sensor initiative sensors. Yet all have an impact on health and can help inform the predictive models of the future. Nevertheless, McNeil rightfully cautions that these data currently exist largely in isolation. Hospital EMRs, health insurance claims and population-driven data are, as of yet, not interconnected and efforts therefore need to be made to achieve such integration in order for real learning to be able to occur.

The second half of McNeil's book is devoted to building and using the person-centered health analytics (pchA) toolkit. McNeil first reflects on what he believes are the five goals and shifts that need to be successful in

such an effort: Knowing, Engaging, Understanding, Equipping and Partnering. He then lays out five areas within which the files, folders and tools for success reside. He continues by presenting as an actionable roadmap where he leads the reader through the five stages of change in a simple and manageable feedback loop, much like familiar planning processes. Where is the individual currently? (Location), where do they want to go? (Destination), how will they get there? (Action / Navigation) and how will they know when they are there (Recalibration). Chapter 9, for example, begins the "journey" by laying out the tools for individuals to understand their current state of health, stressing the importance of being a self-advocate within a system that is woefully under-coordinated. These tools include conducting health risk assessments, wellbeing assessments and, if feasible, genomic screenings. While he notes that the latter is an emerging function of "High-Definition Health Data, it is still expensive but becoming more affordable each year. Finally, he notes the role of understanding the individuals' likelihood for adoption and activation. These scores, taken together, can form the foundation for setting a plan for moving forward with one's own health and wellness and how best to engage with providers in doing so. The chapter ends with some basic competencies around health literacy in a digital information world.

Chapter 10 lays out the difficult work of supporting and motivating individuals during their health promotion. McNeil correctly notes that it is here where both individuals and the health system encounter the most difficulty. He notes the potential for personal health devices and applications to contribute to the ongoing measurement and management of health and health conditions. But he correctly cautions that measuring is not enough. As these devices mature and sensors become more ubiquitous, devices could move from being simply descriptive to more predictive and also supportive. For example, individuals can receive reminders and references as their measured data becomes indicative of future health events and outcomes. Applications will also be "smart" enough to offer suggestions given activity use, food logs and other data.

Chapter 11 discusses how to manage illness for those with current diagnoses. Chronic disease management is one of the largest drivers of cost in any health system and having tools available for both self-monitoring and shared and coordinated care delivery are important for achieving efficiencies in cost and in outcomes. McNeil again stresses the importance of personal health applications and virtual support communities as important tools for disease management.

The book concludes with the notion that no matter how empowered individuals become in promoting their own health, the environments and systems around them must be equally supportive of those efforts. In Chapters 13 through 15 he discusses five primary health stakeholder groups: Payers, Health Care Providers, Other "Health" Providers, Government and the Technology sector and how each can be incentivized to support pcha. He outlines some of the barriers to doing so, such as alignment of

incentives, promoting adoption, workflow disruption given technology integration, changing care models through use of evidence-based practice and understanding that markets produce what people want over what they need and that applications will need to be highly dynamic to engage individuals over the long term.

Conclusion

Taken as a whole, this is a highly useful text for many audiences. The difficulty in affecting personal behavior change is that so many models of health behavior and ways to affect and measure it have pervaded the literature across many fields. What McNeil skillfully does is to cull and synthesize models from the motivational literature, from theories and measures of wellbeing, from those related to change and technology adoption, patient activation, readiness for change, risk assessment and more into a succinct and usable discussion and tool for action. Part of the emerging field of analytics and data science is to take the massive volume, velocity and variety of data and translate it into the fourth "v" of value. McNeil, in this writing, alludes to the fact that the data currently being produced and that soon to be produced *via* sensors combined with our current analytic methods and future machine learning, can lead us on a path of knowledge discovery hereto unseen. He then provides us with perhaps the most important contribution of all, an outline with what to do with that information in a way that is simple, usable, reinforcing and effectual in a person-centric context.

This book is a valuable read for anyone who wishes to improve their personal health and who is already utilizing some of the many health related data tools available. It is also a very good tool for providers and employers wishing to have a similar positive impact on patients and employees. Employers are continually attempting to reduce healthcare costs for their highest risk employees, many of whom suffer from diseases that are sensitive to intervention. Providers would also see value as improving the health of their attributed patient populations is an incentivized goal under the Affordable Care Act (USA). This is also a highly valuable read for students of healthcare, public health and analytics alike.

Conflicts of Interest

The author declares no conflicts of interest.

References

[1] The Concentration of Health Care Spending. 2012. NIHCM Foundation Data Brief. Available at: http://www.nihcm.org/pdf/DataBrief3%20Final.pdf. Accessed Dec. 04, 2015.