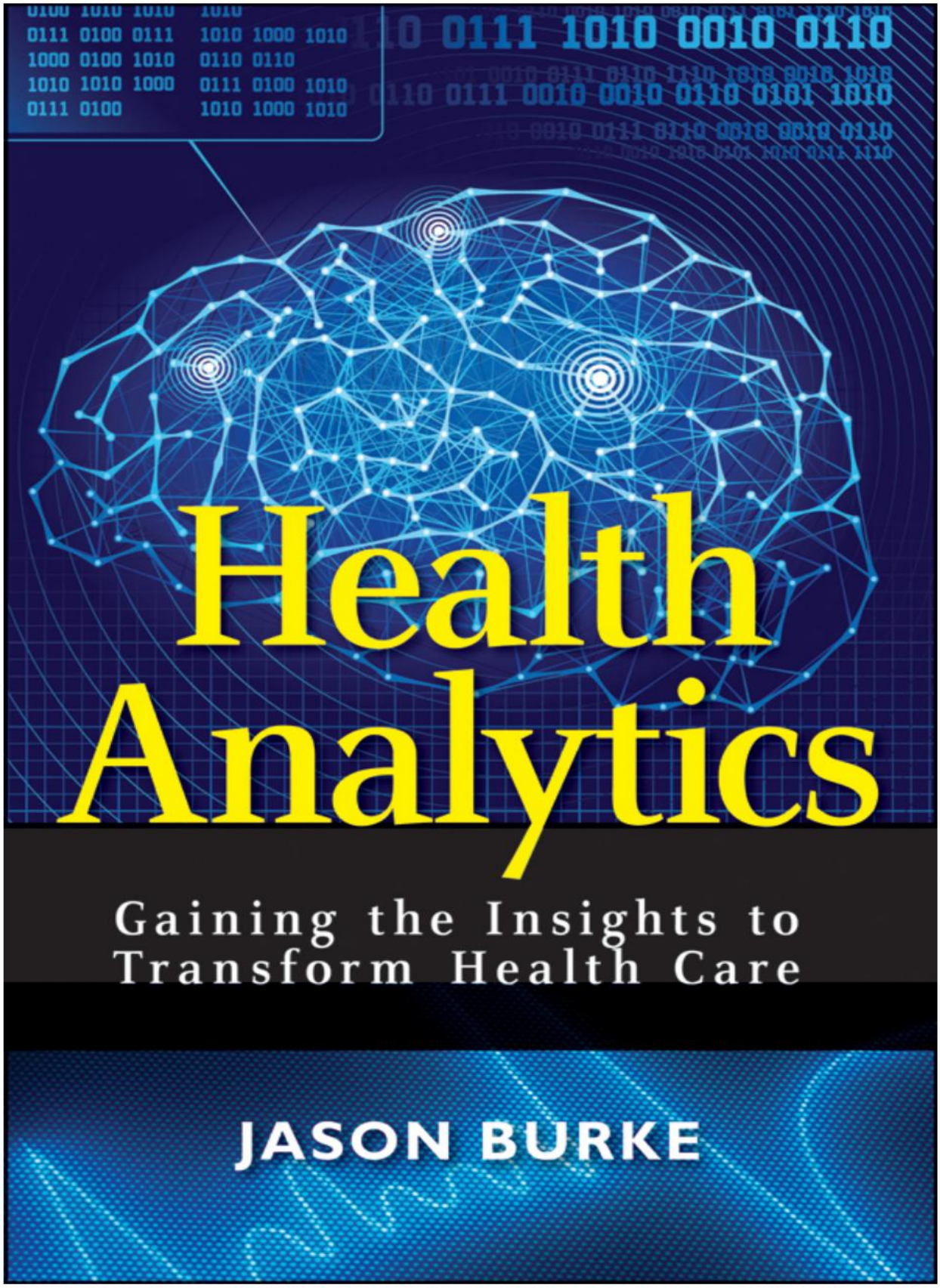
0111 0100 0111 1010 1000 1010
1000 0100 1010 0110 0110
1010 1010 1000 0111 0100 1010
0111 0100 1010 1000 1010
0111 1010 0010 0110
Health
Analytics
Gaining the Insights to
Transform Health Care
JASON BURKE

Contents

Wiley & SAS Business Series

The Wiley & SAS Business Series presents books that help senior-level managers with their critical management decisions.

Titles in the Wiley & SAS Business Series include:

Activity-Based Management for Financial Institutions: Driving Bottom-Line Results by Brent Bahnub

Big Data Analytics: Turning Big Data into Big Money by Frank Ohlhorst

Branded! How Retailers Engage Consumers with Social Media and Mobility by Bernie Brennan and Lori Schafer

Business Analytics for Customer Intelligence by Gert Laursen

Business Analytics for Managers: Taking Business Intelligence beyond Reporting by Gert Laursen and Jesper Thorlund

The Business Forecasting Deal: Exposing Bad Practices and Providing Practical Solutions by Michael Gilliland

Business Intelligence Success Factors: Tools for Aligning Your Business in the Global Economy by Olivia Parr Rud

CIO Best Practices: Enabling Strategic Value with Information Technology, Second Edition by Joe Stenzel

Connecting Organizational Silos: Taking Knowledge Flow Management to the Next Level with Social Media by Frank Leistner

Credit Risk Assessment: The New Lending System for Borrowers, Lenders, and Investors by Clark Abrahams and Mingyuan Zhang

Credit Risk Scorecards: Developing and Implementing Intelligent Credit Scoring by Naeem Siddiqi

The Data Asset: How Smart Companies Govern Their Data for Business Success by Tony Fisher

Delivering Business Analytics: Practical Guidelines for Best Practice by Evan Stubbs

Demand-Driven Forecasting: A Structured Approach to Forecasting by Charles Chase

The Executive's Guide to Enterprise Social Media Strategy: How Social Networks Are Radically Transforming Your Business by David Thomas and Mike Barlow

Executive's Guide to Solvency II by David Buckham, Jason Wahl, and Stuart Rose

Fair Lending Compliance: Intelligence and Implications for Credit Risk Management by Clark R. Abrahams and Mingyuan Zhang

Foreign Currency Financial Reporting from Euros to Yen to Yuan: A Guide to Fundamental Concepts and Practical Applications by Robert Rowan

Human Capital Analytics: How to Harness the Potential of Your Organization's Greatest Asset by Gene Pease, Boyce Byerly, and Jac Fitz-enz

Information Revolution: Using the Information Evolution Model to Grow Your Business by Jim Davis, Gloria J. Miller, and Allan Russell

Manufacturing Best Practices: Optimizing Productivity and Product Quality by Bobby Hull

Marketing Automation: Practical Steps to More Effective Direct Marketing by Jeff LeSueur

Mastering Organizational Knowledge Flow: How to Make Knowledge Sharing Work by Frank Leistner

The New Know: Innovation Powered by Analytics by Thornton May

Performance Management: Integrating Strategy Execution, Methodologies, Risk, and Analytics by Gary

Cokins

Retail Analytics: The Secret Weapon by Emmett Cox

Social Network Analysis in Telecommunications by Carlos Andre Reis Pinheiro

Statistical Thinking: Improving Business Performance, Second Edition by Roger W. Hoerl and Ronald D. Snee

Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics by Bill Franks

Too Big to Ignore: The Business Case for Big Data by Phil Simon

The Value of Business Analytics: Identifying the Path to Profitability by Evan Stubbs

Visual Six Sigma: Making Data Analysis Lean by Ian Cox, Marie A. Gaudard, Philip J. Ramsey, Mia L. Stephens, and Leo Wright

Win with Advanced Business Analytics: Creating Business Value from Your Data by Jean Paul Isson and Jesse Harriott

For more information on any of the above titles, please visit www.wiley.com.

Health Analytics

Gaining the Insights to Transform Health Care

Jason Burke

WILEY

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Published simultaneously in Canada.

Library of Congress Cataloging-in-Publication Data:

Burke, Jason, 1969-

Health analytics: gaining the insights to transform health care / Jason Burke.

pages cm. — (Wiley and SAS business series; 60)

Includes index.

ISBN 978-1-118-38304-9 (hardback) — ISBN 978-1-118-73427-8 (ePDF) —ISBN 978-1-118-73395-0 (ePub)

1. Health services administration—Decision making—Mathematical models.

2. Health facilities—Business management. 3. Medical care–Information technology—Management. 4. Medical informatics—Management. I. Title.

RA971.B87 2013

362.1068–dc23

2013015634

Foreword

Medieval cartographers, whenever they attempted to map areas of the globe that they didn't understand well, marked “Here be dragons” or “Here are lions” on entire continents. Their intent was to suggest to travelers that they weren't sure just what perils might be encountered in these unexplored regions. Anyone venturing to Asia or Africa was thereby warned to look out for dangerous beasts of various types.

When we travel in the world of contemporary health care today, there are unexplored dangers at every turn. We spend far more money than our outcomes justify. We get lost among the fragmented silos of providers, payers, and life sciences manufacturers. New science and care protocols emerge daily, leading to more complexity than most practitioners can comprehend. Every dramatic new development, from personalized genetic medicine to robotics and telemedicine, opens up new frontiers, but confuses patients and their caregivers.

One of the most powerful new developments in health care is the use of analytics to help make decisions. This new tool has the potential to shed considerable light on the entire terrain of health care. When executed well, analytics can tell us who is likely to acquire particular diseases, which treatments work for which patients, and how much a treatment protocol should—and does—cost. Data and statistics can shed light on which provider organizations—and even which individual providers—are doing a good job. They can even begin to bridge the large gaps between industry sub-segments, providing a much more comprehensive perspective on patient care processes, spending, and outcomes. In short, health care is poised on

the edge of an analytics-driven transformation. Should we jump? After you've read this book, your answer will be “Yes.”

We will need guides and maps for this transformative journey, and Jason Burke is our experienced cartographer for this relatively unexplored territory. He's well suited to play this role, having founded and led a research center for health analytics at SAS, which is the leading provider of analytics software. I worked with Jason at the International Institute for Analytics, where he was one of the faculty members, and I found his thinking and writing to be consistently clear and thoughtful.

I use the cartographic analogy for a reason. At the center of this book is a map of the health analytics territory—a taxonomy of the things a health care organization can do with analytics. When I saw the first version of this map a few years ago in one of Jason's blog posts, I was immediately struck by its usefulness. I remember thinking to myself at the time that the taxonomy would provide a great structure for a book. While it's not by any means the only framework Burke employs in the book, it does underpin several of the early chapters.

There are many different questions that the map can help to address. When I work with companies—regardless of industry—on analytics, one of the key issues is always where to start and how to evolve. As Burke makes clear, there are many different areas of health care to which one can apply analytics. Do you want to improve clinical practice? Understand and improve financial results? Provide greater operational efficiencies? You might want to do all of these things with analytics, but you can't do them all at once. The map lays out all the options for health care organizations to decide among. Just like tourists traveling in Europe, who need to prioritize what cities and countries to visit, health care executives need to prioritize their

analytical initiatives, and Burke's map will be an invaluable guide.

Burke realizes that analytics can be a scary subject for many readers, so he has avoided jargon and technical terms. I'm a big fan, not only of the map, but also the four capabilities he lists that health care organizations need if they're going to be successful with analytics. One of the four—high-performance computing—ventures into the fashionable but poorly understood world of big data. Burke treats this topic like all the rest—in a calm, sober fashion. He knows that big data in health care will simply be added onto a variety of other technologies and issues, and that there is no value in treating it as a separate subject.

Like it or not, health analytics is a long-term journey for any organization wishing to undertake it. But like other long trips, it will be accomplished through a series of smaller steps. By breaking down and illuminating the territory of health analytics, Jason Burke makes it possible for any organization to understand the options, make a plan, and demonstrate progress. Analytics will bring a revolution to health care, but there will be many evolutionary advances to get us there.

Thomas Davenport

Distinguished Professor, Babson College

July, 2013

Preface

When it comes to writing a book about health care, it is a lot harder these days to decide on the topic. Do you talk about the crippling impact of ever-rising health care costs? Or perhaps the implications of U.S. health reform legislation on national and international health care markets and business models? Another approach might be to focus on the need for performance-based incentive structures in driving health delivery transformation. Or how medical tourism and the rise of the informed health consumer are driving changes in behaviors for both businesses and consumers. You could even spend a few pages talking about the effect of doubling the health IT market size through federal subsidies and incentives. The list of potential topics is pretty long, and the picture is evolving at an unprecedented rate. The only absolute certainly is this: the future practice of medicine will look considerably different than the model prevalent in the 20th century.

This book is about painting a tangible picture of a different future for health care—one where the business of health care is more closely connected to the evolving science of medicine and the evolving role of individual health care consumers (i.e., patients). It builds the case for a fairly singular idea; namely, that using health-related information in new and creative ways can dramatically lower costs, enhance profitability, improve patient outcomes, grow customer intimacy, and drive medical innovation. We call this opportunity “health analytics.”

Why do we believe health analytics offers such an opportunity? Well, for starters, other industries take advantage of advanced analytics every day. These industries have already made major shifts in becoming information-based businesses. Though the journey is never

over, the world of proven possibilities is extensive. And we believe it is the responsibility of every health leader today to identify and learn from those experiences in other markets.

Another reason we believe in the opportunity for health analytics is that consensus is emerging within the health and life sciences markets about what a modernized health enterprise will look like—and it looks highly information driven: collaborative, cost-aware, and outcomes-oriented.

Collaborative. Whereas the historical view of health communication involved one-on-one exchanges between two or three practitioners, health care delivery will become truly collaborative. Multiple practitioners across institutions will work together to develop and monitor treatment programs for their patients. Providers, researchers and payers will learn how to maximize health outcomes at the individual patient level. And patients themselves will be active collaborators and contributors to their own therapies and wellness efforts.

Cost-aware. Without question, the single largest driver of health transformation is cost. In a climate dominated by unsustainable expenditures and expensive inefficiencies, no one has benefited: patients unable to pay skyrocketing premiums and prices, payers unable to financially manage risk, and providers unable to profitably maintain the practice of medicine. All constituents in the modernized health system must become more fully cost-conscious in terms of efficiencies, incentives, discretionary spending, risk management and quality.

Outcomes-oriented. The top care providers have always sought the best health outcomes for their patients. But a modern view of health outcomes is multidimensional. Efficacy, sustainability, prevention, quality, safety, and cost all represent important facets of

health outcomes. So while the betterment of patient lives is always a primary concern, a more comprehensive view of health outcomes will be required to support the care delivery model.

In short, creating a collaborative, cost-aware, outcomes-oriented health care system requires embracing an ability and priority of information-based decisions.

Embracing Health Analytics

The term we use to describe this opportunity for transformation is “health analytics.” But we use this term with some trepidation.

By any objective measure, the term “analytics” is loaded. It is an over-used term that has been associated with an unbelievably broad set of concepts. In the minds of many executives, analytics can mean one of two less-than-comfortable things: either a set of simple reports that have yet to be a useful catalyst for fundamental change, and/or a mathematical discipline requiring highly specialized people that are certainly in small numbers if found on their employee rosters at all.

This book seeks to disentangle the concept of analytics—especially advanced analytics—in the context of health care. We will not be discussing complex mathematical models, sharing any software code, showing you a better way to construct a Web report, or describing a set of unattainable business capabilities. This book is not about setting the stage for big consulting projects or explaining why the massive technology infrastructure you already have is insufficient.

Our goals are simple. First, we want to more fully define, in terms relevant to nontechnical business leaders, a new health care ecosystem powered by information. Second, we want to establish the core capabilities that enterprises will

need in order to operate successfully in that new health ecosystem. Third, we want to provide sufficient examples of these concepts actually being applied to prove that what we are describing is actually attainable and not science fiction. And lastly, we want to outline a road map—one that any enterprise can follow to assess their current ability to participate in this new health ecosystem, and plan how to grow those capabilities over time.

A Future In Insights

The applications of analytics to improving health outcomes and costs are limited only by the imaginations and motivations of the people enabling change. And the opportunity for innovation is astounding. More importantly, though, the journey to fully utilizing health analytics to drive health transformation is just beginning. In addition to dealing with the practical aspects—data integration, quality management, computing capacity, governance—institutions must also face up to the changes in organizational capability and culture that accompany any evolution of this type. It is a tall order, but through the ideas captured here, you will see that this is not some far-off future. Organizations are successfully making the transitions today and reaping the benefits of a more fully empowered, efficient, and even profitable health enterprise.

Acknowledgements

It is impossible to list all of the people who have helped, encouraged, and supported me in my quest to raise the quality of questions we are asking of our health data. But there are a few I wanted to make sure I mentioned.

In 2011, SAS launched an initiative called the Center for Health Analytics and Insights (CHAI). The goal of this ambitious effort was to assemble a group of industry professionals to research and prove how existing advanced analytical capabilities could be applied to solve health and life sciences problems in new and creative ways. The initiative was supported by a wide variety of executives at SAS, including Dr. Jim Goodnight, Carl Farrell, Kecia Serwin, Dan Cain, and Michael Hower among many others. Without their support, I would not have had the opportunity to build, lead, and collaborate with many of the talented people I acknowledge in the following paragraphs.

As part of building CHAI, I was fortunate enough to meet and hire Dr. Graham Hughes as our Chief Medical Officer. Beyond his obvious contribution to this book (he wrote Chapter 5), Graham has been a wonderful friend and colleague who has consistently supported and shared my beliefs in the opportunity for analytical innovation. I'm grateful for his spirit, intellect, collaboration, and friendship.

Innovation projects notwithstanding, the best part of CHAI is the people. My colleagues in CHAI have included (in alphabetical order) Bassel Abu-Hajj, Cindy Berry, Walter Boyle, Carol Dorn Sanders, David Handelsman, Gary Kohan, Dr. Jiacong Luo, Dipti Patel-Misra, Sarah Rittman, Chris Scheib, Brad Sitler, Alice Swearingen, and Anne Wiles. I am grateful for their creativity, energy, and commitment to

moving our industry toward more data-based decision making.

I'm also very grateful to Tom Davenport for his pioneering work in raising the awareness of how analytics can and should be driving better business results across all industries, including health care. His books on analytics should be required reading for every 21st century health executive, and his work with the International Institute for Analytics has provided one of the few forums for the exchange of business experiences and ideas related to analytics. And I'm especially grateful for his contribution of the Foreword to this book.

The publishing teams at Wiley and SAS provided great support to me on this project. I am especially grateful to Stacey Hamilton for her oversight and management of this project, and for Shelley Sessoms for getting the ball rolling.

This book has been a labor of love for me, but it took my time and attention frequently away from home. I am sincerely grateful to my wife Christina and daughter Hadley for their love, support, and many sacrifices that gave me the opportunity to do this work.

Throughout this book, I've incorporated specific industry examples that illustrate some of the topics being discussed. People who have never had the experience of working in software or consulting companies may not appreciate how difficult it is to get organizations to agree to share their stories; fear, risk avoidance, and lack of openness to industry collaboration usually win the day. Yet as an industry, we need to learn collectively. So although I have intentionally obscured the identities of any organizational example I've cited, I'd like to thank those organizations that have been willing to share their challenges and solutions. It takes leadership, and we all benefit from it.

For any one I may have missed, please know I am nonetheless grateful.

Chapter 1

A Changing Business for a Changing Science

The Gathering

It was actually a really great idea at the time: let's collect what we know.

Around 300 B.C., the ancient library of Alexandria was created. The largest library in existence at the time, it contained the accumulated knowledge of hundreds of thousands of papyrus scrolls. Being located at the port city of Alexandria, the library benefited immensely from the international trade moving through the city's ports as ships, traders, and merchants from around the world conducted their business and travel. Historians today believe that in many cases travelers through Alexandria's port were actually required to surrender any books in their possession for a period of time so that the librarians at Alexandria could copy the literature and add it to their growing mecca of human knowledge. It is said that there was so much papyrus being consumed in support of the library that parchment became a growing medium for documents and books due to papyrus shortages.

Imagine for a moment being a researcher visiting that library for the first time. Sitting in dusty library stacks looking around at maybe 300,000 scrolls and parchments, the thought of how to find what you were looking for must have been a little overwhelming. There was no computerized index of content here (though the

Alexandrians are said to have developed some form of coding system), no guarantee that what you were looking for would be found in the stacks at all, that it would be in a language you spoke, or that you would find all of what you sought as opposed to just a portion of the knowledge. My guess is if you knew exactly what single document you were looking for, an Alexandrian librarian could have probably helped you find it. But if you were trying to gather previously disparate information together to gain insights or make a decision, those dusty stacks must have looked tall indeed.

Over 2,000 years later, the story has not changed much in the practice of medical science. We managed to upgrade from papyrus to parchment, and through federal subsidies we have incentivized people to make their parchments electronic. But most of our stacks are still tall and intimidating. Medical information isn't stored in a centralized library—it is spread out all over the world, some locations known, others hidden and locked away, unpublished, or even unknown. We don't share a common language. And we don't require people to share their knowledge—some do voluntarily, some do under extreme duress, and others simply decline. Like the researcher standing at the Alexandrian library help desk, if we know a document exists, we might be able to find someone to help us locate it. But there are no guarantees that it exists, where it might be, what condition it might be in, or how useful it might be to our purpose.

As a visitor to Alexandria, if you aren't able to read that latest sidesplitting play by Sophocles, no one experiences physical harm. If you aren't able to discover and explore the common themes in Platonic writings, entire segments of the population do not suffer. But in a world where our ability to aggregate and consume medical information has not

advanced considerably over reading papyrus, lives are damaged. People suffer. Patients even die.

The good news is that other aspects of Alexandrian society—financial trade, communications, and retail—all grew up over the past twenty centuries. We now send and receive orders, remit payments, participate in individual and group dialogues, and countless other advances by structuring and standardizing data through information technology (IT). Beyond simply conducting business, we can actually analyze and improve business—our information and technology allow us to ask new questions and derive new insights about people, products, markets, behaviors, and processes. Can health care evolve to become such an insight-driven ecosystem?

How Can Medicine Become Smarter?

This book is about health analytics. It is about helping organizational leaders understand how advanced analytics can be used to improve medical outcomes, increase financial performance, deepen relationships with customers and patients, and drive new medical innovations. Beyond the theoretical, we endeavor to create a road map—a framework for how industry executives and leaders can construct an actionable plan for evolving health and life sciences through the more intelligent application of information.

Let's be honest: analytics scares some people. It sounds like you need an advanced math degree to even have a conversation about it. It can make professionals who are otherwise world-class experts in their fields a little uncomfortable. It sounds technical. And, perhaps worst of all, can you really trust statistics?

The answer, of course, is no, you absolutely cannot trust statistics...at least not in isolation. You cannot trust a single blood test or electrocardiogram (EKG) reading to fully diagnose and treat a patient, either. But those tests and readings provide critical information to experienced professionals who can then take actions to develop hypotheses, execute additional tests, and combine empirical and experiential data to make decisions. Analytics are no different—they combine data to offer a new source of information. And just as most physicians do not need to know how to build an EKG machine in order to use EKG readings, our goal in this book is to provide enough information about health analytics to empower nontechnical, nonmathematical industry professionals to take advantage of the tremendous promise inherent in health analytics.

Before we can talk about the opportunities, though, we need to begin to baseline where our patient—the health ecosystem—is today.

Complexity Exceeding Cognition

The human brain remains the most sophisticated computing device known to humankind. With a theoretical storage capacity measured in petabytes, fully autonomous hierarchical functioning, and near-instantaneous latency to inputs, the brain is one of nature's truly greatest marvels.

And yet, this incredible device has a number of well-documented shortcomings:

1. The human mind cannot simultaneously consider more than about four pieces of information at one time. For example, consider the myriad of tradeoffs associated with buying a car: new versus used, buy versus lease, standard versus premium features, brand prestige, acquisition costs, maintenance costs, safety profile,

insurance, vehicle performance, dealer incentives, customer service, fuel economy, depreciation... even with the power of the human brain at the ready (and accepting that people value each factor differently), is it easy for you to pick your next car? More than likely, you do what most people do to help you make this decision. They decide on a small subset of factors that are most important to them, reducing the factor count closer to four. They look to their own prior experience with cars to infer what might be best. They ask friends for recommendations, zeroing in on a single factor—consumer sentiment. And they look at periodicals like *Consumer Reports*, which reduce the complexities to "editor's choice" and ranked lists. Do physicians make decisions using a similar approach? Do executives? You bet.

2. The human mind uses undisciplined principles in weighing the importance of information. For example, the human mind places greater emphasis on the first information it receives about a topic (the primacy effect), and the most recent information it has received about a topic (called the recency effect). These principles operate regardless of whether the information is actually valuable or even accurate. Other examples of undisciplined mental principles include biases due to expectations (e.g., selective perception, confirmation bias, contrast effect, expectation bias), inaccurate perceptions of probabilities (e.g., availability heuristic, base rate fallacy, illusory correlation, neglect of probability), the nature of the information itself (e.g., negativity bias, valence effect, bizarreness effect), and skewed perceptions of risk versus reward (pseudocertainty effect, risk compensation, loss aversion).

3. The human mind cannot easily detect its own biases. For example, people tend to read more about topics that match their interests and experiences. They also tend to associate with people who are like them. Though intuitively each one of us would agree that such biases only make sense, we are often unable to discern the degree to which these natural biases influence our ability to gather information and make decisions that might run counter to our own perspectives. If you think of everyone as viewing the world through their own particular lens, we can never fully appreciate the imperfections that might exist in our own.

These effects, among others, illustrate some of our human biological and cognitive barriers that do not preclude practicing smarter medicine, but call us to bring more discipline to the practice. In a world where decisions are made on a limited set of data and experience—when decisions are easy—it really isn't a problem. But unfortunately, the world of medicine is not such a world.

The storage and processing capacity of an individual's mind is fixed; modern analytical computing infrastructure, however, is virtually infinitely scalable. Did your research question just get twice as hard to answer? Did you just find three times the volume of information to analyze? No problem—we can just add more computers to work on the problem and still get you an answer quickly. In contrast to the limits of the human mind, there are no problems in medicine today that exceed our technology's ability to analyze data and draw conclusions. The limits are on the information we have available to us, our ability to formulate the right questions, and our determination in pursuing analytics as a disciplined lens to improving health outcomes and costs.

Throughout this book, we will explore the rising role of electronic data in understanding and improving health care.

For now, let's try and frame the situation as follows:

1. The volume and complexity of health-related data (clinical, administrative, financial, behavioral, social) being generated today exceeds the capacity of the human brain to digest and draw conclusions.
2. The volume, diversity, and interdependencies in research data being generated today preclude the timely adoption of medical insights by individual medical practitioners and industry executives without the aid of analytical technology.
3. This problem of complexity is growing exponentially.

So what does this mean in practical terms? It means that the future practice of medicine is more than stethoscopes and scans. It means that clinical sciences and administration functions must become information-driven disciplines. It means that health enterprises of all types must develop new competencies in information and advanced analytics, increasingly relying on more sophisticated decision support to help optimize patient-centered care management and produce improved cost structures. In short, health and life sciences professionals of all levels must acknowledge the required use of advanced analytics to consistently make the best choices for their patients and businesses.

Learning From Other Industries

There is some good news in all of this: the path ahead has already been cleared, at least in spots. If there is a silver lining in health care's cloud of lagging in its use of IT, it surely is that other industries have already figured out how to leverage information and advanced analytics to drive better performance.

One of my colleagues in the SAS Center for Health Analytics and Insights is fond of saying that her grocery

store knows more about her health than her health insurer. And she is right! Think for a moment about all of the information available through grocery loyalty programs.

- What do I eat?
- Am I cost conscious (e.g., use coupons) and/or do I purchase discretionary items?
- Have I ever bought *Fitness* or *Pipes and Tobaccos* magazines?
- Do I buy more processed foods or whole foods?
- Am I brand loyal, and in what areas?
- Do I purchase a lot of over-the-counter medicines, and which ones?
- What sorts of promotions, buying incentives, and brand conversion tactics work on me?
- Which newspapers do I read (coupon codes being specific to a distribution channel)?

Retailers have experience in collecting, aggregating, analyzing, and continuously improving their business based on data. So do financial services firms who know your income, where and how often you shop, how reliable you are in paying bills, and more. Telecommunications companies know who you talk to, what types of communication you prefer (voice, chat, email, SMS), how much you use the Internet, and what tactics entice you to switch carriers.

In short, other industries have found ways of leveraging information and analytics to develop better products, improve profitability, increase customer service, and drive business performance. Those same opportunities exist in health care as well.

Consider a lady I met named Nancy.

Nancy