

# **How “Little Data” Can Help Us Avoid an Economic Storm Fueled by Increasing Healthcare Costs**

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By Dr. Ramon Barquin and Dr. Tom Love

Experts agree that the biggest problem in our economy is the uncontrolled growth in medical costs. When you combine this with the retirement of the baby boomers, the increasing longevity of our population, the continued rise in chronic disease, and the unprecedented size of the national debt, you have all the ingredients for a “perfect economic storm.”

It was uncanny that as the ACT-IAC paper\* that provided recommendations to the incoming administration was about to be presented to the press, Hurricane Sandy stole the headlines and even caused the cancellation of the conference where the IAC Quadrennial Government Technology Review series was going to be released. That storm vividly reminded us of the central theme of this paper, which is that increasing healthcare costs must be ameliorated by an incoming administration or we will have a perfect economic storm.

Let’s review the facts. Baby boomers are about 20% of the U.S. population, and their departure from the workforce between 2012 and 2030 will constitute the largest decrease in our taxpayer base in history. Link that to the fact that while someone reaching 65 today can expect to live to 83, fully a quarter of all baby boomers can expect to live past 90 and 10% should live past 95. Calculate the pressure this puts on our Medicare system and on an already bankrupt Social Security system, at a time when the federal debt – over \$14 trillion – is 100% of our GDP.

And healthcare spending is going through the roof. In 2008 it was 16.2% of GDP and rose to 17.3% of GDP by 2009. But it is projected to rise to 40% of GDP by 2030 and keep increasing by 10% each decade after that. We can see why it is critical that we control these costs.

So what can a new administration do, and how can they leverage information technology (IT) to assist in the process? First, let’s state clearly that a new approach must be developed and health IT might be able to help.

Our national approach to healthcare has remained basically unchanged since World War II. At its core are medical systems focused on providing acute care and hence designed to treat symptoms with some 9,000 billable procedures. Yet we know that the largest part of the costs come from preventable diseases influenced by lifestyle, environment, family, friends, and work.

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Research done by the Milken Institute a few years ago identified that seven chronic diseases account for 80% of healthcare expenses. Furthermore, they also found that the incidence of these chronic diseases is growing faster than the population and is expected to increase until 2030. The deadly seven are:

- Cancer
- Mental disorders<sup>1</sup>
- Diabetes
- Heart disease
- Hypertension
- Pulmonary conditions
- Stroke

If 80% of the cost comes from seven diseases, five of which are preventable, then the best way to control our increasing healthcare expenses is to focus on disease prevention. This is the heart of what the IAC paper **Health IT: Improving Population Wellness and Reducing Growth in Healthcare Costs** recommends.

Making wellness the center of attention requires an attempt to change behavior (e.g., smoking, eating, drinking, exercising) and the confidence that it can be done with intervention from consumers, their colleagues, the medical community, insurers and employers – using information technology as a driver.

The impact can be significant. Just in avoidable treatment expenditures, the Milken Institute estimates that \$152 billion can be saved by 2023. Furthermore, there are many other specific examples of savings that can be accomplished by an emphasis on prevention, including major gains in employee productivity. In its appendix, the paper quotes sources that document the following facts:

Diseases of the heart are the leading cause of death in the U.S., yet most are considered to be preventable!<sup>2</sup> *So we are losing a city the size of Boston every year due to a preventable disease, and we are doing remarkably little to stem the tide. That's the equivalent of 200 World Trade Center disasters – every year.*

For every HIV infection prevented, an estimated \$355,000 is saved in lifetime treatment

One of every five U.S. healthcare dollars is spent on caring for people with diagnosed diabetes; but the risk of developing Type 2 diabetes can be cut by 58% by increasing physical activity and losing weight.

A 5% reduction in the prevalence of hypertension would save \$25 billion in 5 years.

A 1% reduction in weight, blood pressure, glucose, and cholesterol risk factors would save \$83 to \$103 annually in medical costs per person.

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Tobacco screening is estimated to result in lifetime savings of \$9,800 per person.

In addition, prevention increases productivity and we know that:

- Indirect costs to employers of employee poor health – lower productivity, higher rates of disability, higher rates of injury, and more workers’ compensation claims – can be two to three times the costs of direct medical expenses.
- Asthma, high blood pressure, smoking, and obesity each reduce annual productivity by between \$200 and \$440 per person.
- Workers with diabetes average two more work days absent per year than workers without diabetes.
- Absenteeism costs are reduced by approximately \$2.73 for every dollar spent on workplace wellness programs, according to a recent study.
- Modest reduction in avoidable risk factors could lead to a gain of more than \$1 trillion annually in labor supply and efficiency by 2023.

So how can IT help? Up to now the focus has been on the adoption and dissemination of electronic medical records (EMR). While this is important and certainly should continue to be encouraged, its impact will be in analyzing the huge amounts of data – big data – from the massive EMR repositories in order to identify and curtail mistakes, fraud, waste and abuse. In addition, this analysis should focus on the development of policy to transform the healthcare system from ad hoc treatment-based to proactive prevention-based care.

But IT can be most effective when it is used to collect and analyze “little data,” or the personalized data increasingly available to each individual, patient or health provider, which can be used to discover trends and empower individuals and their cohorts. By monitoring diagnostic information, we have analytics available to each patient that can start to link that information to behavioral changes which will help citizens (not yet patients!) visualize the impact of their changes. Access to personal health solutions will allow patients to stay better informed and be proactive.

The proliferation of apps for mobile consumer health IT focused on wellness has already started. We see apps for counting the calories we eat, the miles we walk or the cigarettes we smoke. In addition, we know that 51% of patients have searched the Internet for health or medical information, and 49% have searched a site related to a specific medical condition.

Needless to say health professionals should also be provided with IT tools, especially mobile apps, to promote disease prevention and wellness. Some of these will serve as analytics engines to promote continuous learning and disseminate best practices –

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evidence-based medicine in real time. Others can serve to engage and inform patients on behaviors that can lead to the prevention of chronic conditions, or on technology and approaches to minimize acute episodes, hospitalization and expensive procedures.

The most important recommendation to a new administration is a call to action by the Federal government to take the lead and to set the example and direction as an employer. It is, of course, the nation's largest employer and it already has a collection of directives, incentives and initiatives in this area. But they are all point solutions; there are no performance metrics and little attempt at identifying and disseminating best practices. No agency or department head is paid a bonus based upon improvements in the health and wellness of their employees – at least not yet!

Hence the call to action is for the Federal Government to provide leadership in driving wellness agenda among its employers by increasing the visibility and accountability for federal employee health, requiring that Office of Personnel Management (OPM) and Department of Defense (DOD) increase their commitment to wellness programs and directing other agencies to pilot and evaluate diverse wellness care approaches. Every department or agency should continue to leverage IT to enhance and extend existing wellness programs, especially wellness tools that educate employees and support behavior change, and consumer health technology focused on prevention, management and treatment of chronic illnesses. Lastly, it should take advantage of social media use to gather critical data on system-wide individual health and wellness care dynamics.

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This is one of six articles addressing the six papers offering input to the new administration that resulted from the Quadrennial Government Technology Review (QGTR) commissioned by the ACT-IAC Institute for Innovation. The American Council for Technology (ACT) - Industry Advisory Council (IAC) is a non-profit educational organization and a unique public-private partnership dedicated to helping government use technology to serve the public ([www.actgov.org](http://www.actgov.org)). The QGTR initiative's purpose was "to take a strategic look at the role that technology can play in achieving federal government objectives and missions."

More information can be obtained at  
<http://www.actgov.org/sigcom/I2/qgtrpublic/Pages/default.aspx>.

A Steering Committee provided guidance and governance to the QGTR and the papers were prepared by teams drawn from IAC member companies.

**Health IT: Improving Population Wellness and Reducing Growth in Healthcare Costs** was prepared by the following team:

Wasfi Alnabki, Performix Consulting (Member)

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Mike Arthur , AT&T (Member)  
Samira Askarova, Aegis.net (Member)  
Gary DePreta, Cisco (Deputy Topic Leader)  
Marcia DeFalco, Accenture (Member)  
J. Scott Fowler, Longevity Consulting (Member)  
Andy Lieber, Hitachi Consulting (Member)  
Patricia Leto, Oracle (Marketing Communications Liaison)  
Tom Love, Shoulders Corporation (Topic Leader)  
Sean Murphy, SAIC (Member)  
Larry Schmidt, HP (Member)  
MJ Sivulich, Jefferson Consulting (Member)  
Dan Swedberg, Synthesys LLC (Member)  
Deneen Williams, DRC (Member)

All six papers can be downloaded from the following link:

<http://www.actgov.org/quadrennial>

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#### **End Notes:**

1. While the exact cost of mental disorders is not fully known the estimates are substantial since approximately 70 million people suffer from cognitive impairment, senility, dementia and Alzheimer's disease.
2. See CNN's "The Last Heart Attack," Dr. Caldwell Esselstyn's book, *Preventing and Reversing Heart Disease*," and Colin Campbell's book, *The China Study*, for substantiation of this assertion.

## **About the Authors**

### **Dr. Ramon Barquin**

Dr. Barquin is the President of [Barquin International](#), a consulting firm, since 1994. He specializes in developing information systems strategies, particularly data warehousing, customer relationship management, business intelligence and knowledge management, for public and private sector enterprises. He has consulted for the U.S. Military, many government agencies and international governments and corporations.

He had a long career in IBM with over 20 years covering both technical assignments and corporate management, including overseas postings and responsibilities. Afterwards he served as president of the Washington Consulting Group, where he had direct oversight for major U.S. Federal Government contracts.

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Dr. Barquin was elected a National Academy of Public Administration (NAPA) Fellow in 2012. He serves on the Cybersecurity Subcommittee of the Department of Homeland Security's Data Privacy and Integrity Advisory Committee; is a Board Member of the Center for Internet Security and a member of the Steering Committee for the American Council for Technology-Industry Advisory Council's (ACT-IAC) Quadrennial Government Technology Review Committee. He was also the co-founder and first president of The Data Warehousing Institute, and president of the Computer Ethics Institute. His PhD is from MIT.

Dr. Barquin can be reached at [rbarquin@barquin.com](mailto:rbarquin@barquin.com).

**Editor's note:** More articles from Dr. Barquin are available in the BeyeNETWORK's [Government Channel](#).

## **Dr. Tom Love**

Dr. Love, CEO of [ShouldersCorp](#), is a hands-on software project manager whose career has involved iterations between billion dollar companies (like GE, ITT, IBM, and Morgan Stanley) and start-ups that he founded (including Stepstone, OrgWare, Worldstreet, and ShouldersCorp). He has always worked on the leading edge of technology (e.g., Unix, Smalltalk, Objective-C, and Agile). His project logbook includes over 40 successful projects without a failure.

While Dr. Love's first electronic medical records project was in 1994, he has been continuously involved in EMR projects since 2005 for Federal and commercial clients. In 2011, Dr. Love was a leader of an industry advisory group to provide guidance to the Department of Veterans Affairs concerning their flagship electronic medical records system, VistA.

He earned a PhD in Cognitive Psychology at the University of Washington studying both chess players and computer programmers. He can be reached at [tlove@shoulderscorp.com](mailto:tlove@shoulderscorp.com).