I. Introduction
Many of us in the medical profession are familiar with cost-effectiveness analysis, and the attempt to compare the value of two medical treatments by comparing the benefit-cost ratios of each treatment. Will it ever be possible to compare the value of two physicians in the same way? Under the Affordable Care Act (“ACA” or “Obamacare”), the U.S. government is trying to do just that.

Since becoming law in 2010, the ACA has expanded government-provided health insurance to add more than 15 million Americans who previously were uninsured.\(^1\) While many people feel that covering the uninsured will be Mr. Obama’s greatest accomplishment as president, there are other important changes sweeping through the U.S. healthcare system, also as a result of Obamacare. The goal is to fundamentally improve the average quality of medical care that patients receive, while at the same time decreasing the cost of healthcare. In other words, to increase the cost-effectiveness or “value” of physician clinical performance, from the patient point of view.

In this special article, I describe the value movement in healthcare from the point-of-view of a physician who is familiar with American and Japanese clinical practice. I am board-certified in the primary-care specialty called “family medicine”, which combines internal medicine and pediatrics. Currently I teach clinical medicine to resident physicians in a medium sized (350 bed) Japanese hospital, and I work with other hospitals in Japan who use outcomes research and reporting to improve quality of care. Every year, I work for several months in American clinics, most recently for the Indian Health Service in central Oklahoma.

II. Healthcare Quality and Cost in Different Countries
Every two years, the Paris-based Organization for Economic Cooperation and Development (OECD) publishes data that compares healthcare statistics between various countries. In particular, the following OECD graph creates concern and embarrassment for politicians and health officials in the United States:

This graph highlights the fact that the U.S. has the most expensive healthcare system in the world but with life expectancy rates significantly less than other developed countries. Only developing countries in Eastern Europe, South America and Asia have life expectancy rates less than the U.S. rates. If one chooses infant mortality rates as the outcome, then the results are very similar. For example, in 2011 the Japanese infant mortality rate was 2.3 deaths per 1000 births, whereas in the U.S. it was 6.1 per 1000 births.\(^3\) Yet the U.S. spends greater than 200% the amount that Japan spends on healthcare per capita, when one counts both private...
and public expenditures. Compared to other countries, the U.S. is truly a healthcare “outlier”.

III. How did America Become the Biggest “Healthcare Outlier” among the Developed Countries?

One hypothesis is that high U.S. spending on healthcare has reduced U.S. mortality rates as a function of time, more than in other developed countries, such as Japan. One might imagine how many years ago, the U.S. started from a worse position in terms of health status, because of its diverse, multi-ethnic, immigrant-based population. As a result, high healthcare spending was necessary in the U.S. for it to “catch-up” to the mortality benefits of healthy lifestyles seen in more traditionally based nations, such as Japan. Healthy lifestyles cost very little, after all. However, as data from the Institute for Health Metrics (IHME) shows in Figure 2 below, this has not been the case.

From 1990 to 2013, despite roughly double per-capita healthcare spending in the U.S., the increase in life in expectancy in Japan actually exceeded the increase in the U.S by about 10%: +4.3 years in Japan vs. +3.7 years in the U.S. IHME studied the contribution of major disease groups to the life expectancy changes over the past 25 years, as shown schematically in Figure 2 by the color legend. Cardiovascular disease (CVD) is the largest cause of death in all developed countries, and mortality rates have dropped by a remarkable 35% to 40% over the past 25 years (IHME graph not shown). The U.S. was the largest beneficiary of CVD mortality reductions, in absolute terms, but the relative effect was not high enough to move American life expectancy past the 80 year mark. Surprisingly, Japan had higher gains in cancer-related life expectancy than the U.S. did (using a composite outcome of all neoplasm types), and they achieved a broad base of small improvements in other disease categories. On the other hand, the U.S. failed to achieve a broad base of gains — other than in CVD, oncology, injuries and HIV disease, as it failed to “catch-up” to Japan over the past 25 years. (It was also one of the only developed countries to lose life expectancy (~0.3 years) as the result of mortality rate increases over time in a single IHME disease category: substance abuse and mental health.)

Results are similar when one uses IHME data to compare U.S. year-over-year life-expectancy gains to those in European developed countries. There is no evidence that excessive healthcare spending, year after year, increased overall life expectancy, beyond what much smaller spending achieved in Japan and other countries.

In 2013 the U.S. National Research Council (NRC) and the Institute of Medicine (IOM) published U.S. Health in International Perspective: Shorter Lives, Poorer Health, which gave a unique multi-dimensional
perspective to the problem of “cross-national health differences among high-income countries.” Part I of the report concluded with this list of nine areas of health disadvantage that are excessive in the U.S., compared to other high-income countries (not only Japan):

- adverse birth outcomes;
- injuries, accidents, and homicides;
- adolescent pregnancy and sexually transmitted infections;
- HIV and AIDS;
- drug-related mortality;
- obesity and diabetes;
- heart disease;
- chronic lung disease; and
- disability.

As far as offering solutions to the American Shorter Lives, Poorer Health problem, on p. 279 of the report, the authors pointed out that the U.S. National Prevention Council already targeted these same nine areas and published their recommendations in 2011, which are reproduced in Box 10-1 of the report. Importantly, the recommendation category called Clinical and Community Preventative Services provided strong support for Obamacare’s healthcare policy overhaul, at the time. Specifically, these recommendations were to:

- Use payment and reimbursement mechanisms to encourage delivery of clinical preventive services.
- Expand use of interoperable health information technology.
- Support implementation of community-based preventive services and enhance linkages with clinical care.
- Reduce barriers to accessing clinical and community preventive services, especially among populations at greatest risk.
- Enhance coordination and integration of clinical, behavioral, and complementary health strategies.

IV. What Has been GOOD about American Healthcare?
The combination of generous research funding and entrepreneurial reward has made America a leader in biomedical research, clinical research and medical technology development. These healthcare assets flow into excellent research institutions, such as universities and the NIH, which then draw a continuous flow of new talent, such as through immigration. The U.S. clearly has the research and business talent to invent and sell new solutions to complex medical problems. In particular, government research money and private venture funding are now rewarding the development of healthcare IT systems, which are centered on clinical data capture and system integration. Healthcare IT is the new hot area for healthcare entrepreneurs.

V. Defining Value in Healthcare
For the Obama government, improving healthcare IT was only “clearing the road” for other bigger changes. Starting around 2010, a powerful combination of university scholars, health insurance executives and government leaders began “waking up”—pushing American healthcare into the 21st century. Their goal was to create “value for the patient”, rather than the current system of creating value mostly for physicians, hospitals and life science companies.

But what exactly is better “Value” in healthcare? To begin with, even in the U.S., nearly everyone agrees that healthcare systems must achieve these three basic goals: (1) better care for individuals, (2) better health for populations and (3) lower costs. Value simply unites these 3 goals into one single calculation: patient health outcomes achieved per dollar spent.

In business, value is defined as the results achieved (outputs) relative to the costs required (inputs), which is a measure of efficiency. Professor Michael Porter at Harvard Business School is the acknowledged visionary and architect behind American value-based healthcare reform. Harvard’s website calls Porter “the founder of the modern strategy field and one of the world’s most influential thinkers on management and competitiveness.” Healthcare reform is a new central focus of Dr. Porter’s academic and consulting work. He writes that:

“It is value for the patient that is the central goal,
Porter’s “system actors” are physicians and hospitals, insurance companies and government payers. The “rewards”, which Porter refers to, are financial ones. It’s surprising that one of the world’s most respected corporate strategy consultants, Michael Porter, promises doctors and hospital executives that good “business sense” focuses on increasing “value for the patient” (instead of maximizing only patient volume or business profits). “Value should be defined around the customer, not the supplier.” In healthcare the patient is the customer and the physician is the supplier. During 2010, in a series of policy articles published in the New England Journal of Medicine, Professor Porter worked hard to change the minds of physicians who were uncomfortable with a healthcare policy based on value or efficiency. At the same time, however, the government was already “rolling out” Obamacare, which (to many physicians’ surprise!) embraced the following value concepts, originally from Porter:

1. Profitability…is not a reliable indicator of value in healthcare because of flawed reimbursement and lack of competition based on actual results.\(^7\)
2. Every (healthcare) provider can begin to measure the outcomes in the medical conditions it serves, and track progress versus past performance.\(^6\)
3. Outcomes define success for every physician and health care organization, and are the ultimate motivator.\(^9\)
4. Outcomes highlight and validate opportunities for value enhancing cost reduction.\(^9\)
5. The most powerful single lever for reducing cost is improving outcomes.\(^9\)
6. Cost-reduction, without regard to outcomes achieved, is dangerous and self-defeating (in healthcare).\(^10\)

In business, people say “quality is free”. But how does this work in healthcare? According to Porter, it means spending more money on “high-value” services, such as prevention and appropriate early-stage specialty care, which will then decrease the intensity and volume of late stage care — so the net cost over the full cycle of care actually drops.

An important recent example is Hepatitis C. The U.S. government is already paying for the full cycle of Hep C care delivered to Native Americans under the Indian Health System (from the personal experience of the author). From patients’ point-of-views, the quality benefit of early Hep C diagnosis is large. The outcome benefit to the Indian population is even larger, as the epidemic may extinguish in the long run. As far as costs, although antiviral treatments are expensive, cirrhosis and hepatocellular carcinoma are terrible complications. By looking at both the numerator and denominator in the value calculation, outcomes are higher, costs measured over the full cycle of care are lower, and so Hep C screening programs greatly increase value.

(However, with disease screening, there may be exceptions, such as universal PSA-based prostate cancer screening, when early diagnosis can cause more QOL harm than good, while unnecessarily increasing the frequency of early stage treatments.)

In conclusion, the ideal healthcare system improves outcomes while simultaneously reducing costs, which is to say: the best healthcare maximizes value for the patient. Again, very few can argue with this statement. So why is it still controversial among physicians?

VI. “Life in the Gap” between Volume-based and Value-based Healthcare

Just three years ago, “first curve” dynamics rewarded U.S. doctors and hospitals who increased volume of services provided and maximized fee-for-service payments. If Obamacare “Part 2” works, the second curve will reward value. The most important strategic issue for hospitals and physicians is to transform from “first-curve” to “second-curve” practice-models. The American Hospital Association refers to this transformation period as “Life in the Gap”.\(^11\)

Many hospitals live “in the gap” at the moment (including my hospital in Oklahoma): patient care seems centered around gathering data (with doctors focused the computer screen) rather than on the patient. The clear benefits of collecting the data are not yet visible. Yet we are collecting the data. Why? Because
the U.S. government is rewarding physicians who “cross the gap”, by slowly transforming their compensation (salaries) from a formula based on volume, to a formula based on value. This reward for value has been a step-wise process. First step was to reward doctors who buy and implement EHR systems. The 2nd and current step is to pay physicians who report their own performance. It simply follows Porter’s advice that “measuring and reporting standardized sets of outcomes is the single most important step in transforming health care.” 9

VII. Physician Quality Reporting System — “PQRS”
PQRS is the U.S. government’s new financial reward (or penalty) system for physicians who do (or do not) measure and publically report their own performance, in terms of selected clinical outcome measures. This “pay-for-reporting” system is sponsored by the Center for Medicare and Medicaid Services (or CMS), which is the largest payer for healthcare services in the United States. Medicare is the public health insurance system for all people 65 years and older, and Medicaid is the public insurance program for children and low income or disabled individuals. Private insurance companies (for working Americans under 65) almost always follow the lead of what Medicare does first, so PQRS will be universal in the U.S.

Timeline for U.S. government (CMS) PQRS system start-up:
2006: Start-up of the “old” Physician Quality Reporting Initiative (PQRI)
2010: Government converts the old PQRI system to the new PQRS system.
2011–2016: “Roll out” EHR incentive program: for physicians who document “meaningful use” of an EHR (computer) system, pay annual bonus of up to $15,000 (but this decreases to $4000 by 2016).
2013–2014: Pay annual bonus of 0.5% to doctors who measure and publically report specialty-specific clinical quality measures. This bonus applies to government insurance payments only.
2014–2016: Penalize (reduce physician pay) by 1.5% to 2.0%, if doctor fails to report quality outcomes.
2015–???: Start the “Value-Based Payment Modifier Program”: (See Section XIII below.)

VIII. To Measure and Report: What, Where and When?
Today, any patient enrolled in a government insurance program (Medicare or Medicaid), may view a small report card about their primary care doctor on the “Physician Compare” website: http://www.medicare.gov/physiciancompare/.

For example, the CMS published the following measures in Feb 2014:12

**Published Quality Measures** (sample from 2013 and 2014 group practice sets)

- Diabetes Mellitus (DM) measures—percentage of diabetes patients with
  - Hemoglobin A1c Control (HbA1c) (<8 percent)
  - Blood Pressure (BP) < 140/90 Control
  - Tobacco Non Use
  - Aspirin Use
- Coronary Artery Disease (CAD) — percentage of CAD patients taking
  - ACE Inhibitor or ARB Therapy for Patients with CAD and Diabetes and/or Left Ventricular Systolic Dysfunction (EF <40%)
New measures for 2015 include (for data collected during 2013):

**2015 Additional Quality Measures**
- HbA1c poor control > 9%, and
- Lipid Control (LDL-C) < 100 mg/dL.
- Plus 6 additional satisfaction measures (not listed).

Starting in 2016, physicians in hospitals and clinics (≥25 providers) will have internet “report cards” for all data collected the PQRS system, including the following:

**2016 Additional Quality Measures**
- Heart Failure (HF): Beta-Blocker Therapy for LVSD
- Screening for High Blood Pressure and Follow-Up Documented
- Medication Reconciliation: within 30 days after hospitalization, doctor updated (merged) outpatient med. list using inpatient list.
- Influenza Immunization
- Pneumococcal Vaccination Status for Older Adults
- Breast Cancer Screening
- Colorectal Cancer Screening
- Adult Weight Screening and Follow-Up
- Screening for Clinical Depression
- Ischemic Vascular Disease (IVD): Use of Aspirin or Another Antithrombotic
- Tobacco Use: Screening and Cessation
- Screening for Fall Risk

**Potential General Surgery Preferred Specialty Measure Set**

In surgical specialties, there is limited evidence (and little agreement) for what specific indicators and measures can best predict (risk-adjusted) surgical performance and skill. Starting in 2017, however, CMS (Medicare) will publish outcomes on surgeons who provide data on “potential” measures. For example, CMS is asking general surgeons to report 2015 practice results using the following guide:

- Patient-centered Surgical Risk Assessment and Communication: “Percentage of patients who underwent a non-emergency major surgery who had their personalized risks of postoperative complications assessed by their surgical team prior to surgery using a clinical data-based, patient-specific risk calculator and who received personal discussion of those risks with the surgeon.”
- Surgical Site Infection (SSI): “Percentage of patients aged 18 years and older who had a surgical site infection (SSI).”
- Unplanned Hospital Readmission within 30 Days of Principal Procedure: “Percentage of patients aged 18 years and older who had an unplanned hospital readmission within 30 days of principal procedure.”
- Unplanned Reoperation within the 30 Day Postoperative Period: “Percentage of patients aged 18 years and older who had any unplanned reoperation within the 30 day postoperative period.”
- Anastomotic Leak Intervention: “Percentage of patients aged 18 years and older who required an anastomotic leak intervention following gastric bypass or colectomy.”
- (+5 additional measures that apply to vascular surgery only)

**IX. Participation Rates**

As the Figure 3 shows, from 2007 to 2013, the total participation rate in PQRS increased from 15% to 51%. This slow, steady increase was most likely the result of increasing government payments every year to participating physicians. Also, the government recently reported the following financial results:

- Physicians and other providers earned a total of $218,930,348 in PQRS incentive payments in 2013, “which reflects successful participation of 494,619 eligible professionals within 48,313 practices.”
Total incentive payments in 2013 increased by 31 percent, compared to 2012 ($166,925,037).

The average incentive was $443 per eligible professional and $4,531 per practice; the average incentive decreased slightly from 2012.

X. The 2015 PRQS Negative Payment Adjustment

This year (2015), CMS started decreasing pay to physicians who did not participate in PQRS back in 2013. The government calls this (future) salary penalty the 2015 PRQS negative payment adjustment. As a result, physicians practicing in 2013 were looking into the future—at their expected 2015 incomes—and “jumping on board” to the PQRS system from 2012 to 2013, when the PQRS physician (voluntary) participation rate increased from 36% to 51%.14 The 51% participation rate in 2013 is an impressive accomplishment for a “voluntary” government program which had only 15% and 16% participation rates 6 and 7 years earlier, respectively. It also shows the power of financial incentives to change physician behavior, especially when faced with a future salary reduction. Nevertheless, approximately 470,000 clinical providers, including 240,000 physicians (about 40% of the total who take care of government-funded patients), will face a 1.5% government pay reduction in 2015, because they did not participate in PQRS system during 2013. Then for the following year, if they still do not report their 2014 data, the doctors will face a larger 2% negative pay “adjustment” in 2016.

XI. Physician Feedback: Early Positive Support from Academic Medicine

From 2009, when Obamcare was created, to 2015, the New England Journal of Medicine (NEJM) published strong support for the Obama government’s PQRS program and for Obamcare itself. For example, NEJM published 5 Perspective articles by Michael Porter PhD, including 2 detailed implementation guides as appendices to his important 2010 article.7,8,10,15,16 In fact, the NEJM published 5 of the 9 total articles (in any journal) written by Dr. Porter in the 2009 to 2015 period. It seems NEJM is the main “organ” giving voice to Dr. Porter’s opinions. (As I stated earlier, Dr. Porter of Harvard Business School is the leading intellectual behind American value-based healthcare reform.) NEJM also published commentaries by prominent doctors who specifically supported Dr. Porter’s recommendations. For example, the NEJM editorial board member, Dr. Thomas H. Lee, wrote this positive-sounding advice to practicing doctors who read the New England Journal:

“The goal of the value framework is to create a context for improvement, for every physician and provider group to try to be better this year than it was last year. Value can be enhanced by improving one or more outcomes without compromising others or by reducing the costs required to achieve the same levels of outcomes. The competition is with oneself. That feels like a fair fight—and worthwhile work.”17

In contrast, during the same 2009–2015 period, the NEJM published only 2 commentary (“perspective”) articles against PQRS or healthcare reform (Obamcare) in general—by any author.18,19 Therefore, one can safely conclude that elite academic medicine in the U.S.—as represented by NEJM authors and editorial staff—are generally supportive of value-based healthcare reform.

XII. Physician Feedback: Critical “Backlash”

As far as the limited negative coverage in NEJM, the
strongest criticism was from Dr. Berenson and Dr. Kaye, two well-known health policy experts. Their 2013 article, “Grading a Physician’s Value-The Misapplication of Performance Measurement,” raises the following points:

“PQRS measures reflect a vanishingly small part of professional activities in most clinical specialties. A handful of such measures can provide a highly misleading snapshot of any physician’s quality.”

“Primary care physicians manage 400 different conditions in a year, and 70 conditions account for 80% of their patient load. Yet a primary care physician currently reports on as few as three PQRS measures, in order to have their value as a physician calculated by the U.S. government.

“...Rewarding professionals on the basis of a particular measure has the potential to crowd out (decrease) the intrinsic motivation to perform well across-the-board (broadly), not just on the few activities being measured.”

In its Journals, the American Medical Association (AMA) also published several articles that were critical of PQRS and what it calls a U.S. government “policy overreach”. For example, in their 2012 JAMA article “Assessing Individual Physician Performance. Does Measurement Suppress Motivation?”, authors Cassel and Jain found evidence that:

“Group practices that share performance data among clinicians and managers find that merely making performance data transparent stimulates improvement—absent any additional financial incentive. This observation suggests that a number of the motivations such as mastery, accomplishment and professional pride are acting in the clinical setting.”

Dr. Lara Goitein is a critical care specialist and the manager of quality improvement programs at a private hospital in Santa Fe, New Mexico. She also writes a monthly blog in JAMA Internal Medicine. She often raises common-sense questions about using computer-based measures to measure, rate and pay doctors. In her published 2014 commentary article, The Argument Against Reimbursing Physicians for Value, she asked, “Is there too much focus on measuring and reporting quality rather than on the conditions needed to improve it?” After a review of the research, she concluded that:

“Studies of public reporting and pay-for-performance programs in the United States have failed to demonstrate a clear connection to improved quality,” and that “…although publicly reported measures are highly influential (in terms of impact on hospital organization and management), much of their effect does not reach the bedside.”

Then she provided this clinical example from her hospital:

“The substantial resources currently used to measure and report the use of venous thromboembolism prophylaxis would be much better applied toward improving the treatment of sepsis, or the use of sedation or antibiotics in the ICU.”

Another 2014 study in JAMA Internal Medicine reported that hospital executives also have mixed opinions about the benefits of pay-for-reporting programs. While 70 percent of hospital executives agreed “public reporting stimulates quality improvement activity at my institution,” less than 50 percent agreed that differences among hospitals were clinically meaningful. Most disturbing was about half the executives surveyed admitted to making better grades mostly through changes in coding and documentation.

XIII. The Future is Here: The “Value-Based Payment Modifier” Program

This year (2015) the U.S. government will start the “Value-Based Payment Modifier” program, starting with hospitals or groups of 100 or more physicians. The Value-Based Payment Modifier Program uses both PQRS (quality) data and Medicare financial (cost) data
to calculate the “value ratio”. The program adjusts (increases or decreases) current-year payments to hospitals, as a function of value-ratios calculated from quality/cost data that is 2 years old. Then by 2017, the Affordable Care Act (Obamacare) rules that the government must adjust payments to all physicians (even small private clinic doctors) using their government-computed value ratios.

Clinics with high performing doctors (high quality and low cost) will get paid maximum fees for each medical service delivered; clinics with low-performing doctors (low quality and high cost) will get paid minimum fees. Clinics whose doctors perform in the middle (high quality and high cost; or low quality and low cost) will probably see their payments unchanged. Preliminary data suggest that 80% to 90% of doctors perform in the middle, 10% to 15% perform at the high level, and only 5% or less of doctors are low-performing.

Fee adjustments are small to start with — the difference between maximum fees and minimum fees is less than 10%. However, the U.S. government is expected increase adjustments as necessary until there is genuine evidence that the program is causing significant increases in “high-value” care.

**XIV. Conclusion**

In summary, there is a quiet revolution going on in U.S. healthcare; and as a result, Americans may someday achieve the “Triple Aim” of healthcare: (1) better care for individuals, (2) better health for populations and (3) lower costs. The early success of this movement depends on the government “pushing” the change onto American doctors, by changing their payment system. First the government financially rewarded participation in PQRS, and then later — starting in 2015 — it is punishing doctors (financially) who refuse to participate.

In business, disruptive change spreads rapidly and globally. Disruptive change can bankrupt whole industries which are slow to change to the new model. The ACA (Obamacare) is the most disruptive change to American medical practice since President Johnson signed Medicare into law in 1966. The ACA attempts to prevent a Medicare financial “meltdown”, caused by exploding medical costs and the rising elderly population. Japan faces its own possible future healthcare financing crisis, as it also pays for the ever rising cost of geriatric medical care. The Japanese healthcare community might pay close attention to this “disruptive” change in American healthcare.

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