Preamble: "First Break All the Rules."

When I was admitted to membership in SPHEX some 8 years ago I quickly picked up on some cultural norms and expectations – especially as they related to the presentation of papers. Never under estimate the power of the culture of an organization - or as Teyve in Fiddler on the Roof would say – "TRADITION'.

Some of the Rules:

- Rule One - the title of the paper should obscure the true subject less the audience study in advance and therefore become more knowledgeable than the presenter.

- The paper should be presented on a scholarly topic – demonstrating the speaker's knowledge about matters of scientific, philosophical, historical, educational, or even of unknown subjects. And demonstrating that the presenter is a well rounded intellectual. Inherently this norm seems to discourage topics in the presenters chosen profession. (Thus the need for Rule One) It also discourages topics that relate to current issues and events.

- Papers are to be scholarly works – written and read. The emphasis is more on content than delivery. Papers tend to be more factual in nature than editorial in content.

- Presentations are followed by questions - rather than debate. Thanks in part to Rule # One above.

These cultural norms seem to have served the SPHEX Club well. Tonight I am ignoring most of them. "First Break All the Rules." In doing so I know that I am exposing myself to some level of critical reaction. As a matter of fact within 3 minutes of the email notice that included my unabashedly transparent title, I received a snarky chiding email from Marc Schewel. All I can say, is that it warms my heart to receive a complaint about being too transparent from the man who goes on TV each week to promise us the next "Greatest Sale in the History".

Tonight I am ignoring the Rules for several reasons. The first is my deep passion for the subject - yes it is in my professional sweet spot – and that serves to increase my passion. But more fundamentally, I deeply appreciate all that the US Healthcare system has provided me – both occupationally and as a patient. I can honestly say that, but for the healthcare system I would not be standing before you tonight. I literally owe my livelihood and my life to the dedicated men and women with whom I have worked and who have cared for me as a patient.

It is because of this passion – not in spite of it that I will speak candidly and directly about my chief concern. The second reason is that the Healthcare System as it

operates in our society is fundamentally flawed. And because of these flaws it faces serious disruption from within and from without. This disruption has serious implications for the healthcare system, as we know it - but also for each of us. We are all patients. Some of you have a direct role in shaping our local healthcare system and all of you have influence. Together we can make it better.

Finally, I believe that there is benefit to SPHEX in exploring an alternate format for occasional future presentations by others. To be clear, I am not suggesting that the conventions which have served well for many years be abandoned willy-nilly. But I do offer the thought that more frequent exploration of contemporary topics in our society may be appropriate.

And so tonight I am going to borrow from the TED talk format in presenting my paper. If you are not familiar with this format it will a source will be listed in my reference list. In order to honor the SPHEX archival tradition, a written copy has will be submitted – but every word may not be read. I intend my paper and delivery to be persuasive - but in the TED tradition I believe my views to be supported by facts. These too will be supported by my reference list. I welcome your disagreement and your critical comments - and therefore I hope to preserve time for these as well at the end of my presentation.

Things You Don't Know About the Healthcare System... And Why You Should

By George Dawson
A Presentation to the SPHEX Club
March 27, 2014

On August 1, 2011 I walked into my primary care physician's office with with symptoms that had been of somewhat increasing concern for the past month. Within 48 hours I would learn that I had a bile duct tumor adjacent to my pancreas that was almost certainly malignant and would require a surgical intervention in the form of a Whipple Procedure – named for Dr. Allan Whipple who first described the procedure in the 1930's. From my limited knowledge I associated this procedure with pancreatic cancer and poor outcomes. The 5-year survival rate for pancreatic cancer patients who successfully undergo the procedure is still only 20%. Before a week would pass, I was in an operating room at Johns Hopkins where the head of my pancreas, and my bile duct, gallbladder and duodenum were removed. Thus beginning a medical journey that would continue for the next several years and which involved post surgical care, chemotherapy and radiation therapy all in Lynchburg.

My story is fundamentally different from that of most pancreatic patients in one critical way –the blockage in my bile duct gave us early warning and made early diagnosis possible. Today thanks to early diagnosis, excellent care, and good fortune, I enjoy good health. What is of greater interest and relevance to my talk tonight is the melting of the two perspectives I bring to the table: (1) My world view shaped by a 42 year career as a hospital administrator and (2) The perspective of a patient trying to navigate thru a confusing and complex healthcare system.

Tonight I will speak candidly from both perspectives about the US healthcare system.

The Merriam- Webster definition of "system": - (noun) - a group of related parts that moves or work together.
(http://www.merriam-webster.com/dictionary/system)

So lets start there. Here are 5 things you should know. I will leave it to you to decide whether the parts work together.

#1. 50% of the doctors in the United States are below average. (Source: Math). So are 50% of the Hospitals. (Same Source).

By themselves, these facts are not disturbing. The real problem is the shape of the bell curve. There is too much dispersion. The difference between the top and bottom performers in the healthcare system is huge. This disparity exists

with respect to patient safety as well as outcomes. It is a differential that should not be allowed in important parts of our economy or society.

- Consider the experience of Dr. Douglas Rex, Distinguished Professor of Medicine at Indiana University and Director of Endoscopy at Indiana University Hospitals. Dr. Rex co authored the Colonoscopy Screening Guidelines of the American College of Gastroenterology and is widely respected for his expertise. **While he helped write the national standards for this procedure - he found large variation in his own backyard.** Dr. Rex wanted to know about the consistency of routine colonoscopies among the 7 highly trained doctors in his own Department. To get at this he video recorded routine colonoscopies by the seven colonoscopists, with and without their awareness. He then graded colonoscopy quality w by blinded assessment of inspection time and technique. His findings – " When his colleagues were notified that there work was being reviewed by video, " mean inspection time increased by 49% for all colonoscopies combined and increased significantly for four individual colonoscopists. The overall quality of mucosal inspection technique improved by 31% after awareness of video recording." From this he concluded, "awareness of video recording improved physician performance of colonoscopy. Further investigation of the role of video recording in achieving sustained improvements in the quality performance of colonoscopy, including increases in adenoma detection, is warranted. " (Source: Am. J. Gastroenterology. 2010; Nov;105(11):2312-7; PMID: 21048675).

- Consider the following from a 2008 study reported in the Journal of the American College of Cardiology, which stated, "Although published recommendations on cardiac interventional procedure indications and effectiveness are widely available, marked regional variations exist in the use of cardiovascular procedures. Indeed, **previous evidence has demonstrated that there exists a 2-fold regional difference in the use of cardiac catheterization after acute myocardial infarction (AMI) within the U.S. These regional differences persist after adjusting for patient, physician, and hospital factors."** (http://content.onlinejacc.org/article.aspx?articleid=1138725). The authors of the study wondered if a higher level of appropriate catheterizations resulting in improved outcomes could explain this difference in rate and if the difference impacted mortality. They found that high utilization geographic regions did more caths on all groups – both appropriate and inappropriate. They also found no mortality benefit from increased hospitalization rates in the higher utilization group.

- Or consider hospital surgical site infection rates. Surgical infection following colon surgery is a serious and persistent issue. New York State

has collected and publicly reported this data since 2007. In 2012 the 4.5 % of colon surgery patients in New York had such infections. What is more interesting is that 5 hospitals with significant case volumes had statistically better performance of 2% or less. Another 7 hospitals, including Memorial Sloan Kettering, had statistically worse performance from 6.7 to 13 %. In other words the best performers were more than 6 times better than the worst. (For a number of years some hospitals nationally have voluntarily submitted data to the CDC. Many others have not bothered. The federal government just started reporting data on the Medicare data at https://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/2012/docs/hospital_acquired_infection.pdf.

- In a previous paper I reported on the work of Jack Wenneberg and his associates at the Dartmouth Health Atlas. Consider Wenneberg and associates' study of end of life care at the 23 top teaching hospitals in the United States. **Finding a greater than 300% variation in the amount of care given to patients. Patients who received most of their care at Cedars-Sinai Medical Center in Los Angeles saw physicians almost four times as frequently in their last six months of life compared to those who received most of their care at Scott & White Memorial Hospital in Temple, Texas. More than twice the percentage of patients treated at the University of Michigan Medical Center was enrolled in hospice in the last six months of life compared to those treated at New York-Presbyterian Hospital.** These findings led the research team to conclude, "All of these hospitals are academic medical centers affiliated with medical schools and should be exemplars of evidence-based medicine. Therefore, one would expect best practices to dictate when patients should be admitted to the hospital, how long patients should stay there, and how often they should see their physicians. If the practice of medicine varies so widely from one academic medical center to the next, they cannot all be right. For end-of-life care, the patterns of practice are based more on the accidents of local health care resource supply than on evidence; in other words, they are supply-sensitive.
  http://www.dartmouthatlas.org/downloads/reports/Residency_report_103012.pdf

It was Wednesday morning when my gastroenterologists called to follow up on the failed ERCP from Tuesday. I stepped out of the budget meeting to take the call. He explained again, as he had the day before, that he had not been able to maneuver the gastroscope as needed to thread a catheter through the opening in my duodenum and into my bile duct. He said something was blocking the way. On the MRI it looked like a tumor.

He suggested I think about going someplace else to see a subspecialist mentioning that there was a gastroenterologist at UVa who did a specialized gastroscopic ultrasound and might be able to also get a biopsy. He also mentioned Hopkins or Carillion as options. I asked, you are sure it is a tumor? Yes. Is it likely malignant? Yes. How likely? 95%. Oh. Then I guess it's about the surgeon. Where would you go I asked?

 # 2. There effectively no way for most patients or referring physicians to make a data driven, evidence based choice between the best doctors and hospitals and those that are not nearly as good. The relevant information is either not collected or is hidden from public view. Organizations, institutions, and governmental agencies have been slow in collecting relevant data and often restrict it from public view. As a result most such choices are made on the basis of to anecdotal information, personality and social criteria, availability and insurance network coverage. The natural selection benefits of a competitive market that drives improvement in most sectors of our economy are missing from healthcare.

In the words of Marty Makary, MD, MPH, Associate Professor of Surgery and chief of minimally-invasive pancreaticobiliary surgery and surgical director of the Johns Hopkins Pancreas Multidisciplinary Cancer Clinic, "As a busy doctor, I have watched patients increasingly fed up with a fragmented health care system littered with perverse incentives. It's an industry that does not abide by the same principles of accountability for performance that govern other industries. Instead, our health care system leaves its customers walking in blind. All while simply rewarding doctors for doing more." (**Unaccountable – What Hospitals Won't Tell you and How Transparency can Revolutionize Health Care.** Bloomsburry Press, New York, 2012. Page 2.

Most people outside of the healthcare arena, view it as a highly regulated industry with robust scrutiny by external parties. Where is the disconnect? Governmental, regulatory, accreditation, and professional groups largely focus on compliance with burecratic standards and requirements. For the most part they do not require, review, or collect relevant data on what actually happens to patients – and when they do such information is not generally available to the public. Some specifics:

- How about the Board of Medicine in each state? Members of the public often assume that these Boards weed out the bad actors. From my experience and from empirical study (http://aspe.hhs.gov/daltcp/reports/2006/stdiscp.htm#exhibit17) these Boards provide minimal oversight and are driven largely by complaints – most often from patients and families. They are simply not designed or funded to conduct data driven analysis of results. Investigations even of serious offenses alleging substance abuse or misconduct, investigations lag months behind. The cited study found that serious sanctions at the rate of less than 1 per one hundred doctors licensed.

- Specialty Boards are a good starting place. While some would debate the usefulness of Board Certification and Maintenance, I believe it is a good place to start in picking a doctor. Studies by the Institute of Medicine and others have shown positive equality benefits and lower mortality. (http://www.researchgate.net/publication/8372463_The_role_of_physician_specialty_board_certification_status_in_the_quality_movement most but not all leading hospitals require Board certification and or eligibility before admitting doctors although many have "grandfather" clauses. Board Certification typically requires completion of an approved residency program, a minimum time in practice, passing a written or computerized and typically an oral exam. Most specialty boards have a recertification process that requires a certain number of CME credits and often passing of a further exam at intervals of 5 to 7 years. First time pass rates typically run in the 85 to 90% range for medical subspecialties. (http://www.abim.org/pdf/pass-rates/cert.pdf0

- One Specialty Board that has distinguished itself is the Society of Thoracic Surgeons who have collected and publicly reliable heart surgery volumes and outcomes by Hospital and by surgical group. (http://www.sts.org). Reporting is voluntary - but a decision not to report speaks volumes to me. A one, two, or three star rating is awarded for a number of performance standards and procedures based on quantitative process and out come measures. The Society serves as an example of exactly what we need. I would not receive a significant cardiac or thoracic surgical procedure without consulting this site.

- For Hospitals the Joint Commission on Healthcare Accreditation 9JCAHO) has been the "Good Housekeeping seal of Approval" for more than 50 years. JCAHO accreditation is almost a requirement especially since JCAHO accreditation was given "deemed" status by the Medicare and Medicaid programs in 1965. In practice, except for those hospitals whose accreditation is threatened, JCAHO has offered little real information to help the average patient choose a hospital. Recently JCAHO has launched a new portal aimed at the general public (http://www.qualitycheck.org). This portal gives specific accreditation status for each institution and allows the public to review recommendations for improvement. It also reports the hospital performance compared to the National Patient Safety Goals and required CMS reporting measures. While JCAHO requires each hospital to identify and respond to serious safety events, and encourages but does not require these to be reported to JCAHO. It does summarize these reports by topic and issue alerts to the industry as to common causes of events. It does not report an individual hospitals safety record except as described above.

- CMS, the Center of Medicare and Medicaid Services, is chipping away at the reporting of meaningful Hospital data regarding a number of "core measures" about common diagnoses and hospital risk factors. It is driven by data hospitals are required to submit regarding all Medicare and Medicaid patients. For instance - the colon surgical infection rate at Centra LGH is reported as 5% similar to the national average. This site would be much more useful fi it included procedure volumes.

- The National Practitioner Data Bank is a confidential information clearinghouse created by Congress in 1986 with "the primary goals of improving health care quality, protecting the public, and reducing health care fraud and abuse in the U.S". By law specific entities including hospitals, state licensing boards, specialty boards, liability insurance firms, and accrediting and peer review organizations are required to report adverse licensure decisions, or sanctions, malpractice claim settlements and awards, and negative credentialing actions affecting doctors, other healthcare practioners and entities. However the information is tightly guarded and not generally available to the public. Release is restricted to reporting institutions and organizations, to plaintiff's attorneys under limited circumstances, and to individual practioners regarding their own data. While summary information without personal identification is available to journalists and public media, its use was further restricted in 2011 after a complaint from a physician. (http://www.propublica.org/article/how-complaints-from-a-doctor-caused-the-govt-to-take-down-a-public-database). If our credit scores are publicly available, should our professional sanctions also be publicly available?

- A site that does include some volume data as well as limited cost data is sponsored by the Virginia Hospital and Healthcare Association. (http://www.vapricepoint.org) It is a good source for certain procedure volumes.

- Other sites that offer some help include:

  http://www.vhi.org/default.asp - aggregates public data about Virginia hospitals and nursing homes and some doctors.

  http://www.medicare.gov/hospitalcompare/search.html - Medicare site reporting Medicare derived data about hospitals including quality and patient satisfaction and Medicare spending.

  http://www.leapfroggroup.org - Employer based site reporting Hospital comparative data.

Dr. Makary is pretty hard on hospitals - and on doctors as well. But he is right to be. For the most part Hospitals have been slow to take a data driven approach to improve quality and reduce errors and even slower to publicly share this information. I know, because I have been one of those responsible for these shortcomings.

Most health systems have the ability to collect and publicly report physician specific data including procedure volumes, compliance with risk adjusted best clinical practices, complication and infection rates, and the frequency of adverse and "never" events. Such data can be risk adjusted to account for those that care for the sickest and most complex cases. The Institute of Healthcare Improvement has built tools to allow the systematic collection of "trigger" events that warn of high-risk practices and environments. In the best systems this information is shared with all staff from the Boardroom to the frontline. It is used in evaluating performance and granting clinical privileges. But even in the best systems this information is rarely made public.

I wake up early and drink the two bottles of contrast fluid. It's a big day – but I feel great. Looking forward to the half way mark – 2 and half years since surgery with no reoccurrence. I had preregistered several days before. The CT scans at LGH go quickly once they have me on the table. Less than 15 minutes for a CT of the Abdomen, Pelvis, and Chest. CPT codes 71260, 72193, and 74160. The next day my oncologist calls me. Every think looks great. A sigh of relief from thanks and me. By the way, who read the scan I ask? Not sure he tells me he'll check the report. Nowhere in the entire process have bothered to find out how much the scans will cost.

 # 3 Public information about hospital charges is even worse than information about quality and safety. Prices vary widely from hospital to hospital. Prices at the same hospital also vary widely from patient to patient depending on type of insurance. And yet, patients rarely even consider price when selecting hospitals or doctors. As a result, the natural selection benefits of a competitive market that drives lower prices and higher efficiency in most sectors of our economy are missing from healthcare.

In their book, *The Innovator's Prescription,* Christensen, Grossman, and Hwang describe the impact as follows; "...the insertion of massive insurances/reimbursement firms between patients and caregivers over the last three decades has obfuscated all sense of whether the value of services offered is a good deal or a bad one. The dominant mechanism today remains fee for service,

which defines a simple formula by which providers can prosper: the more services you provide, and the higher price of these services, the more money you make."

The lack of price competition in healthcare is a natural by product of the payment system, as it exists today:

- Medicare accounts for nearly 50% of all hospital admissions in the United States (Torio CM, Andrews RM. National Inpatient Hospital Costs: The Most Expensive Conditions by Payer, 2011. HCUP Statistical Brief #160. Agency for Healthcare Research and Quality, Rockville, MD. August 2013.) And in Virginia Medicaid adds another 6%. Medicare patients with supplemental insurance have virtually no reason to be concerned with prices because they have essentially no out of pocket expenses. Furthermore, rates paid to mm hospitals for Medicare and Medicaid patients are preset by governmental agencies. There is no opportunity to lower or raise prices to attract or discourage patients, In fact Hospitals are required by law to opt in or opt out - that is accept all Medicare and Medicaid patients or not participate in the programs at all.

- Commercial insurance coverage largely insulates patients from the direct financial impact of the choices they make. The uninsured have a price incentive but only if they have the financial resources to pay for the care they receive.

As a result, hospitals and doctors rarely compete for individual patients on price and patients pay little attention to price. But there is intense negotiation and competition about price in contract negotiations with commercial insurance and managed care companies. Hospitals and health systems usually sign multi year contracts with insurance companies like Anthem, Cigna, and United. These agreements specify rates (or discounts) for inpatient services. Rates are often negotiated on a per admission/per diagnosis basis for inpatient care. In other words, a fixed fee for a gall bladder operation regardless of how long the patient stays or what treatment is required. Outpatient services are often based on a fee schedule. Sometimes "global rates" are negotiated in which the hospital pays for the care required from supporting doctors like anesthesiologists and radiologists.

There is often intense negotiation about price escalators for multi year agreements, and prices relative to other health plans. Health plans seek pricing advantages over competing plans and long term agreements that helps them predict future costs and market their plans in the employer market and to individuals by guaranteeing a network that has wide choice in hospital and doctors. They often seek "exclusive" agreements that restrict contracts with competing health plans or guarantee them better prices. Hospitals and doctors seek pricing advantages to offset the impact of dramatically lower prices they receive from Medicare and Medicaid. And they hope to capture increased numbers of profitable insured patients.

Once these agreements are set they largely govern patient choice of providers. Patients are often restricted or discouraged from going out of the network of preferred providers. Within the network, patient exposure to price differences is limited to the deductibles or coinsurance provisions of the health plan. The patient with a major hospitalization is likely to "max out" on his or her out of pocket. So price differences have little effect. Contracts typically prohibit both parties from disclosing specific prices.

The chart below depicts the charges and payments at Centra Health for the three CT procedures I received recently. A quick look demonstrates how distorted the picture is. The commercial payment is five times that paid by Medicare.

CT Scan Charges by Payor
Centra LGH
March 2014

		2014 Charges and Reimbursement			
CPT	**Description**	**Centra Lynchburg Charge**	**Self Pay Charge**	**Medicare Reimbursement**	**Commercial Reimbursement**
71260	CT of Chest with Contrast	$1,284.00	$899.00	$232.00	$1,184.00
72193	CT of Pelvis with Contrast	$1,468.00	$1,027.00	$232.00	$1,146.00
74160	CT of Abdomen with Contrast	$1,468.00	$1,027.00	$232.00	$1,146.00
Note:					
~Self Pay Patients receive a 30% discount on billed charges.					
~Charges and Reimbursement Rates are specific to Centra Lynchburg.					
~All three CPT codes above fall under the Medicare Multiple Imaging Composite Reimbursement. If more than					
one of the above CPT's are billed on a claim, Medicare pays a composite rate of $511 and does not pay individually for each code.					

#1 – Some are much better than others, #2 – It is almost impossible to sort out the best from the worst, and #3 – Prices don't matter to the end customer. These are the traits of a system that is perfectly designed to meet the needs of the system – rather than those of the customer. Such a system is unsustainable in the long term.

#4. We are poised for significant disruptive change in the healthcare system. It will rock the world of hospitals and doctors. It will change the role and responsibility of patients.

Change is coming – a belief based on my personal observations - as well as the writings of some of the leading thinkers engaged on this topic. (Michael Porter, Thomas Lee, Robert Kaplan and Elizabeth Heizberg of the *Harvard Business Review* and Clayton Christensen and colleagues author of the Innovator's Prescription and Atul Gawande, MD and author, to name a few).

Surgeon and author Atul Gwande, MD writes about the early days when, "The core structure of medicine—how health care is organized and practiced—emerged in an era when doctors could hold all the key information patients needed in their heads and manage everything required themselves. One needed only an ethic of hard work, a prescription pad, a secretary, and a hospital willing to serve as one's workshop, loaning a bed and nurses for a patient's convalescence, maybe an operating room with a few basic tools. We were craftsmen. We could set the fracture, spin the blood, plate the cultures, and administer the antiserum. The nature of the knowledge lent itself to prizing autonomy, independence, and self-sufficiency among our highest values, and to designing medicine accordingly." In the beginning doctors were craftsman and hospitals were organized as their workshops. As he notes, the doctor of today must deal with more than 6,000 drugs and 4,000 surgical and medical procedures in a completely different enviornment. This leads Gwande to a profound conclusion: **"the reality that medicine's complexity has exceeded our individual capabilities as doctors."** Therefor we need new physicians with a new set of values. "They include humility, an understanding that no matter who you are, how experienced or smart, you will fail. They include discipline, the belief that standardization, doing certain things the same way every time, can reduce your failures. And they include teamwork, the recognition that others can save you from failure, no matter who they are in the hierarchy. These values are the opposite of autonomy, independency, self-sufficiency." (Atul Gawande, Pit Crews and Cowboys, posted on May 26, 2011, The New Yorker).

Michael Christnsesen, a Harvard professor and the author of NY Times bestseller, *The Innovator's Dilemma,* has teamed with two noted physician policy leaders to write about the nature of disruption. He refers to those early days that Dr. Gawande spoke of as the reign of "Intuitive Medicine." Despite the technological sea change that has taken place since those early days, he asserts we have been largely stuck in the same two business models – the hospital and the physician practice – that were

designed a century ago when most of medicine was "Intuitive". Intuitive Medicine is characterized by highly trained and expensive professionals solve medical problems through experimentation and pattern recognition. Think of the computer engineers who designed mainframe processors in the late 1960's and early 1970's. His books include bestseller, *The Innovator's Dilemma,* and his healthcare volume, *The Innovator's Prescription.*

We have been slow to progress, according to Christensen, to more advanced stages like "empirical medicine" in which certain ways of treating patients have been determined to be better, on average, and finally to "Precision Medicine" where precise and clear pathways have been developed, standardized and implemented. (Think of the treatment of infectious lung diseases today as compared to treatment of consumption in1900.) Why have we not followed the expected path thru the three stages? Christensen and colleagues point to the lack of competition resulting from regulatory enviornment and the distortions of third part payment mechanisms. (***The Innovator's Prescription,*** Clayton Christensen, Jerome Grossman, MD, and Jason Hwang, MD, McGraw-Hill, 2009.) One of their core beliefs is that innovative disruption will inevitably come from outside of the established healthcare structure with profound impact on those invested in the old order.

Others believe the change can come from within. Harvard's Michael Porter is a leading authority on competitive strategy, and Thomas Lee along with other associates have published extensively on their research and study of the US healthcare system. They identify the lack of true competition on price, quality and customer satisfaction as the key source of healthcare's cost, quality, and satisfaction shortfalls. Their landmark article in the **Harvard Business Review,** "The Strategy that Will Fix Healthcare: October, 2013) asserts that providers must lead the way to high value healthcare offer six interdependent components for accomplishing this: (1) organizing around patients' medical condition rather than physicians' medical specialty, (2) measuring costs and outcomes for each patient, (3) developing bundled prices for the full care cycle, (4) integrating care across separate facilities, (5) expanding geographic reach, and (6) building an enabling IT platform.

A Partial List of Disruptions happening Today:

- **The Cleveland Clinic National Marketing Campaign.** A few years ago the Cleveland Clinic rolled out a strategy that Christensen would describe as a "value added shop" approach. It is built squarely on the Porter and Lee model. It should send shivers down the spine of hospital executives and orthopedic surgeons.

  "The Cleveland Clinic is making a push to win more business directly from the nation's largest employers by marketing package deals for new hips and knees and spine surgeries. The Cleveland Clinic—which already contracts with retail giant Wal-Mart and home improvement chain Lowe's for package

deals on some cardiac procedures—said it and three orthopedic practices that operate in Arizona, New Jersey, North Carolina, Michigan and Pennsylvania will seek to contract directly with employers to provide orthopedic and surgical care with a bundled price for all services.

The new venture, the National Orthopedic & Spine Alliance, includes the CORE Institute with operations in Arizona and Michigan; OrthoCarolina, in Charlotte, N.C.; and the Rothman Institute, which operates in New Jersey and Pennsylvania. The venture also has letters of intent with OrthoIndy and OrthoCalifornia.
The Cleveland Clinic reached its first bundled payment contract with Lowe's in 2010 and has since signed a half-dozen more, primarily for cardiac services."

- **Primary Care Disruption – The** Affordable Care Act is seeking to restructure the primary care delivery model. It offers enhanced reimbursement and other incentives for those practices that meet the criteria for restructuring. Meanwhile the private sector and various entrepreneurs are introducing their own disruptors. Specific Examples:

    - **Walgreen Clinics.** Using existing locations and a network of primary care physicians and nurse practioners, Walgreens has introduced primary care "minute clinics" in 400 locations nationally. They feature walk in appointments, $79 starting prices, and short wait times. Building pharmaceutical, taking business from doctors and hospitals, and establishing Walgreens as a player.

    - Expensive "Concierge Physician Practices" have been around for a while catering to the wealthiest of patients. A new play takes advantage of growing patient dissatisfaction with the experience of interacting with primary care practices. And with the dissatisfaction of the primary care physicians. Physician and entrepreneur Tom Lee is the founder of **One Medical Group** headquartered in San Francisco. Early in his career, physician Lee, wondered, "How do you make a broken system more efficient?" That question became the basis for One Medical Group, which offers a new model for primary care. The service provides some 90 physicians in metro areas from the Bay Area to New York City. Its iPhone app lets you schedule same-day appointments, get test results, ask for an Rx and tap into your medical records. All for $150–$200 year on top of what your insurance costs. One Medical Group doctors see at most 16 patients a day; the nationwide average for primary-care physicians is 25. They welcome e-mail communication with patients, for no extra charge. Same-day appointments are routine. And unlike most concierge practices, One Medical accepts a variety of insurance plans, including Medicare Says

Lee: "I got tired of hearing everyone complain. I decided to fix the system." Oh, one more thing. Lee's venture is backed by $77 million in venture financing

- **Patient Engagement – as a financial driver**

  More than 75% of US health care costs are due to chronic conditions. Chronic diseases cause 7 in 10 deaths each year in the United States. (cdc.gov). Care of chronic illness is longitudinal in nature, primarily occurring outside of institutions, and is controlled more by patient choice than by physician action. The traditional physician practice model – with fee for service reimbursement and productivity based physician compensation - is poorly suited to make a meaningful change in the life style choices of the 40% of the population with chronic conditions. Hospital based programs living is a culture built around acute care, high cost episodic interventions, and an "illness model" are an even worse choice. Both of these setting are based on an economic model that rewards them for doing more.

  Institute for Healthcare Improvement describes **patient engagement** as "actions that people take for their health and to benefit from care." Engagement's close cousin is patient activation—"understanding one's own role in the care process and having the knowledge, skills, and confidence to take on that role," (http://content.healthaffairs.org/content/32/2/202.full).

  Using team-based medical best practices and computer-supported care registries, Kaiser Permanente- Colorado doctors and clinical care teams reduced overall mortality by 76 percent and cardiac mortality by 73 percent. The program is driven by agreed-upon, consistent clinical care guidelines and protocols that are integrated into Kaiser Permanente HealthConnect™ as decision-support tools to guide the care teams, at the point of care, as they treated more than 12,000 CAD patients. Immediate access to reliable, evidence-based information at all points of care enables each care team member to support a given patient's care plan, encourage treatment adherence, and allow disparate care teams—from primary care to pharmacy to rehabilitation centers—to coordinate care, regardless of setting.

- **The Power of multiple disruptive influences** working in concert is a concept that Christensen and others have emphasized. Interestingly, an opportunity for such disruption under the Affordable Care Act is just now beginning to gain national attention. The Direct Primary Care provision enables Americans to elect thru the Health Exchanges a more affordable health care option compared to traditional insurance plans — an alternative in which patients and/or employers pay a flat monthly fee directly to a primary care provider for all primary and preventive care, chronic disease

management and care coordination throughout the entire health care system. Under the new law, a flat-fee DPC membership can be bundled with a new, lower-cost "wrap-around" insurance plan that covers unpredictable and expensive services outside its scope, such as specialist care, hospital stays or emergency room visits. Not unlike a health club, DPC practices allow unlimited use. It remains to be seen what disruptive power can come out of this lower cost solution.
http://www.forbes.com/sites/davechase/2012/05/29/health-insurances-4-4-billion-bunker-buster-part-i/

- **The Power of Volume.** I chose Johns Hopkins and my surgeon, John Cameron, in large part because of the experience gained through performing many Whipple procedures. Dr. Cameron has performed more than 2000 Whipple procedures – more than any other surgeon ever. Over an entire career he and the team at Hopkins perfected this procedure reducing mortality from 25% to less than 2%.
http://www.baltimoresun.com/health/bal-whipple-doctor-pg,0,6061684.photogallery. Dr. Cameron and Hopkins have **clearly improved the value equation for this procedure,** but Hopkins, to my knowledge, has not achieved the price reductions typically associated with "value added process" improvement. The expensive, academic medicine setting is a likely contributor to cost.

    - Most authors cite Lasik surgery as a good example of the power of a highly competitive market, the concentration of volume, and the single-minded focus of value added shops. Christensen has noted that if you have the same surgeons performing the surgery in the same way, but just in a different environment, then you wouldn't expect to see a big impact on cost. But if the technology to perform the surgery became more routinized, so that the ability to perform the surgery correctly every time was more embedded in the equipment and the procedure than the intuition and skill of the doctor, that's the mechanism by which the cost would come down. And so, for example, the cost of LASIK [laser-assisted in situ keratomileusis] surgeries has come way down, as a result of it's becoming essentially an automated, standardized procedure.
    - A better example is the Shouldice Hospital in Ontario, Canada. Shouldice is unlike any US hospital I have encountered. It only treats hernia repairs – and it purports to be the best in the world at this single procedure. The facility performs 7000 repairs a year and reports a complication rate of less than one half of one percent – the lowest reported in the world. Most general surgeons will repair 20 to 30 hernias in a year. Shouldice surgeons average over 700 cases a year. Shouldice reports it's complication rate for inguinal hernia repairs as .5% - vs. the typical 2-5% rate in US hospitals. The Shouldice approach includes a 3 to 4 day stay in a country club like

setting at a cost that is reported at 30 to 40 % less than an outpatient procedure at a US hospital. (Shouldice website and Christensen, et al.)

- **The Growth of Medical Information, Patient Knowledge, and its impact on the Doctor Patient Relationship.**
  Medical knowledge is exploding. New information is generated faster than a physician can ever hope to assimilate it even is a subspecialty. According to one study of the subject, "Five hundred years ago, Leonardo da Vinci could be a painter, engineer, musician, and scientist. One hundred years ago, it is said that a physician might have reasonably expected to know everything in the field of medicine. Today, a typical primary care doctor must stay abreast of approximately 10,000 diseases and syndromes, 3,000 medications, and 1,100 laboratory tests."
  http://research.microsoft.com/enus/collaboration/fourthparadigm/4th_paradigm_book_part2_gillam.pdf

  An editorial by two physicians in the New England Journal of Medicine in 2010 started like this, "Medicine has built on a long history of innovation, from the stethoscope and roentgenogram to magnetic resonance imaging and robotics. Doctors have embraced each new technology to advance patient care. But nothing has changed clinical practice more fundamentally than one recent innovation: the Internet. Its profound effects derive from the facts that while previous technologies have been fully under doctors' control, the Internet is equally in the hands of patients. Such access is redefining the roles of physician and patient." The editorial went on to question whether a more informed – and occasionally misinformed – patient base was a good thing. (Untangling the Web — Patients, Doctors, and the Internet, Pamela Hartzband, M.D., and Jerome Groopman, M.D., N Engl J Med 2010; 362:1063-1066 March 25, 2010)

  This represents an "old world" view of the relationship between patients and physicians represented by control and knowledge on the doctor's part and passive acceptance on the patient's part. This attitude is at odds with the worldview held by most tech savvy members of society today. The clash of these views coupled with the explosion of medical knowledge is a major driver of change.

  There is a more progressive and patient centered approach. Rather than question the value of educating patients, doctors and hospitals can harness the power of the Internet to achieve establish greater equity and mutual respect in the patient/doctor relationship. One exceptional example of that is provided by no less than the Mayo Clinic.

Mayo embraces patient education and actively seeks to share medical information with patients. For instance, the Mayo web site includes a search engine with an alphabetical listing of hundreds of diseases and conditions. There is a patient tutorial regarding each – including a basic definition, symptoms, causes, treatments, complications, risks and a list of questions to ask the doctor as well as a list the doctor may ask you.

- **Data, Big Data, and EMR's**

Despite spending $34 billion annually on healthcare IT, the US healthcare system is the least prepared industry in America do collect and use data in a meaningful way – let alone take advantage of the Arrival of the Big Data Era according to a recent study by Oracle. (Definition: Big data is a collection of data from traditional and digital sources inside and outside your company that represents a source for ongoing discovery and analysis). (http://www.forbes.com/sites/lisaarthur/2013/08/15/what-is-big-data/) The American Recovery and Reinvestment Act of 2009 authorized CMS to pay hospitals and doctors a bonus payment for installing Electronic Medical Record (EMR) systems that met certain meaningful use standards. So far those bonus payments have reached $19 billion annually.

Despite this level of investment, we have a long way to go: Here are a few of the ways the digital age will disrupt healthcare:

- You next doctor may be named Watson. In 2012, IBM's Jeopardy-playing supercomputer is going to school at New York's Memorial Sloan Kettering Cancer Center, where clinicians at the elite research hospital will begin "teaching" the computer to review oncological case histories and come up with the right diagnoses and treatments. The two organizations, the big idea is to create an online decision-support service with the smarts of Watson and the clinical insights of MSKCC. "It will be like having a Memorial Sloan Kettering trained colleague for any doctor on earth," says MSKCC oncologist Mark Kris. "The goal here is to be part of the relationship between doctor and patient." The technological assist will surely help as cancer care gets more complicated, and treatment costs rise faster than industry average, with all the genetic research pushing doctors to sub-type cancers they once thought were monolithic. The first stage of Watson training will focus on cancers of the lung, breast and prostate. MSKCC plans to dump into Watson's database its tens of thousands of patient records and histories, as well as all the publicly available clinical research it can get its hard drives on.

Watson has made huge strides in its medical prowess in two short years. In May 2011 IBM had already trained Watson to have the knowledge of a second-year medical student. In March 2012 IBM struck a deal with Memorial Sloan Kettering to ingest and analyze tens of thousands of the renowned cancer center's patient records and histories, as well as all the publicly available clinical research it can get its hard drives on. Today Watson has analyzed 605,000 pieces of medical evidence, 2 million pages of text, 25,000 training cases and had the assist of 14,700 clinician hours fine-tuning its decision accuracy.

Watson doesn't tell a doctor what to do, it provides several options with degrees of confidence for each, and along with the supporting evidence it used to arrive at the optimal treatment. Doctors can enter on an iPad a new bit of information in plain text, such as "my patient has blood in her phlegm," and Watson within half a minute will come back with an entirely different drug regimen that suits the individual. IBM Watson's business chief Manoj Saxena says that 90% of nurses in the field who use Watson now follow its guidance.
WellPoint will be using the system internally for its nurses and clinicians who handle utilization management, the process by which health insurers determine which treatments are fair, appropriate and efficient and, in turn, what it will cover. The company will also make the intelligence available as a Web portal to other providers as its Interactive Care Reviewer. It is targeting 1,600 providers by the end of 2013 and will split the revenue with IBM. Terms were undisclosed. http://www.forbes.com

- Population data, predictive modeling, and other big data applications will alter the way healthcare is delivered and received. http://www.kevinmd.com/blog/2014/03/health-care-learn-amazon.html
- McKenzie and Company's recent findings – "Traditionally, the healthcare industry has lagged behind other industries in the use of big data. Part of the problem stems from resistance to change—providers are accustomed to making treatment decisions independently, using their own clinical judgment, rather than relying on protocols based on big data. Other obstacles are more structural in nature. Many healthcare stakeholders have underinvested in information technology because of uncertain returns—although their older systems are functional, they have a limited ability to standardize and consolidate data. The nature of the healthcare industry itself also creates challenges: while there are many players, there is no way to easily share data among different providers or facilities, partly because of privacy concerns. And even within a single hospital, payor, or pharmaceutical company, important information often remains

> siloed within one group or department because organizations lack procedures for integrating data and communicating findings. But a series of converging trends is now bringing the healthcare industry to a tipping point at which big data can play a major role,"
> The Big Data Revolution in Healthcare, McKenzie and Company, **January 2013**,Peter Groves Basel Kayyali David Knott Steve Van Kuiken

When it came to selecting a doctor and hospital I had some advantages over most patients. I knew volume counted especially for the complex procedure I needed. While the volumes at Johns Hopkins were readily available, they were not publicly available for the other alternative I was considering. Access to a proprietary database used by Centra in competitor analysis provided that information. I was impressed by the credentials and volumes of Dr. John Cameron at Johns Hopkins but the fact that he was well past his 70th birthday gave me pause. A physician friend with an inside track at Hopkins was able to get information that alleviated this concern.

When it came to my hospital stay, I knew enough to worry about errors and safety issues. There were none that were life threatening. The residual neuropathy I am left with is a small price to pay for my recovery. I do not know if it could have been avoided by better nutrition or the communication glitch that delayed the removal of my gastric tube for several days.

Selecting the right chemotherapy course following surgery proved to be a difficult decision due to the lack of any clear efficacy data or clinical trial results. I was impressed by the willingness of my local oncologist to engage with me in consideration of the options, by the nurse navigator's role in seeking a second opinion from MD Anderson by email. I was surprised to receive differing opinions from my surgeon at Hopkins and the oncologist at Hopkins. Some centers present cancer patients with the consensus views of multidisciplinary cancer conferences.

Implications for Hospitals, Doctors, and Patients

The Importance of Patient Responsibility

At the end of the day, we are each responsible for our own health. The choices we make in how we live, and how we seek healthcare matter a great deal. Here are some thoughts about those choices:

- On selecting a doctor:
  - Select a primary care doctor and, any other doctor making diagnostic decisions, on the basis of her or his credentials, ability to listen, the time to do so, and willingness to partner with patients. Fit with your personality is really important here.

- When selecting a doctor for procedures – find the person with the most experience treating your condition. Volume counts here. Research annual case volumes of your specific procedure and ask the doctor to supply this information. If she or he is unwilling or unable to do so, look for a different doctor. Also conduct your own research about the procedures and the various invasive or minimally invasive ways to accomplish it. Be prepared to discuss these options. Also research risks, complications, and potential errors and discuss these with your physician including her or his personal track record. Also ask the doctor to verify that she or he will be the person actually doing the procedure – as opposed to a resident, partner, or assistant. Inquire about coverage arrangements for your doctor and who will be providing care post operatively. Understand if your doctor will be leaving on vacation while you are in the hospital and if so who will care for you.

- Do not hesitate to seek second opinions.

- Do not overlook choices about other doctors who will be part of your care. As a patient you have a right to know who will be putting you to sleep, reading your x-ray, and analyzing the biopsy. If the health system is not willing or able to furnish this information that is a cause for concern. The best practices have multiple physicians cross review important studies.

- On selecting a Hospital. This choice often must be made in advance of selection of the physician. Often the choice is whether to seek care locally or travel to a referral center. Again, research volumes of procedures done at the institution but also the incidence of complications, readmissions, and errors or safety events. The most progressive institutions list this information on their web site. If not ask the hospital to supply that information. If unable or unwilling, consider selecting a different hospital.

  Understand what the hospital charges, what those charges cover, your responsibility vs., the insurance companies, and how those prices compare to other alternatives. Ask the hospital to address up front any financial concerns you have and the availability of sliding scale or discount policies.

- Assume primary responsibility for your own health. This relates to choices you make in your life from diet to activity, your willingness to take follow the plans you and your doctors agree on, but it also relates to your responsibility for self education about your health concerns. Review and keep copies of your own medical records. They belong to you not the institution or doctor. Research, learn, ask questions and speak up.