The imaging value chain

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We need to focus upstream, at the "scene of the crime" where the studies get ordered.

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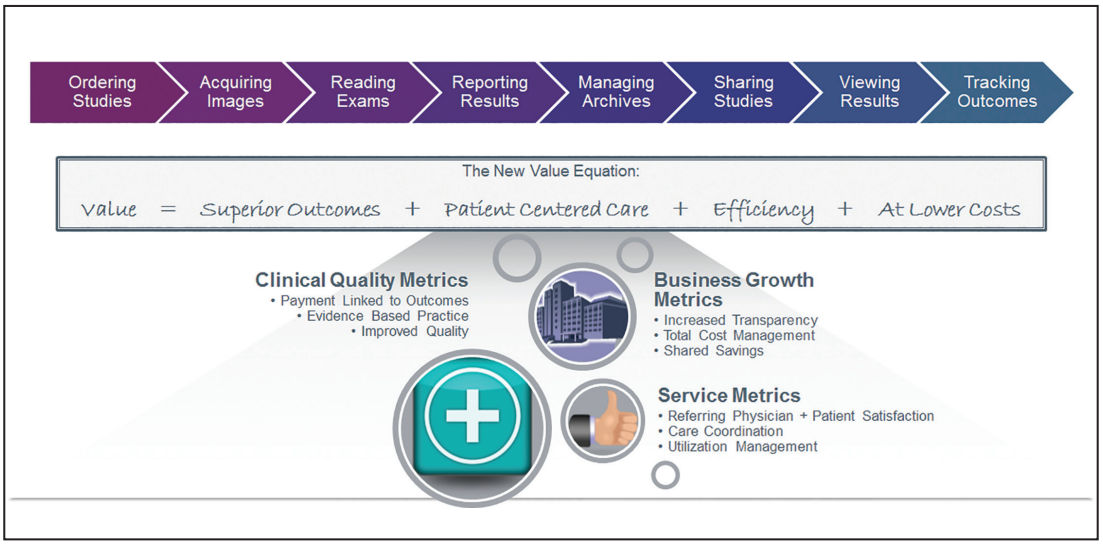
Imaging, in more ways than one, is the poster-child for healthcare reform. It always has been, and it seems, it always will be for at least some time to come. With unprecedented margin compression, efficiency pressures and quality of care pressures, it seems radiology is being attacked on all fronts. The only remaining hope, quite likely, may be for us to truly look within, and reevaluate the imaging value chain.

It may be high time for us to rethink what's not working in the excesses of healthcare delivery, and relate this to the value we as imagers bring to the continuum of care for our patients. It has been said that healthcare in the United States is in a predictable collision course between patient needs and economic reality. The spiraling costs of healthcare in the United States (U.S.) is nonsustainable, and it has perhaps been rightly stated that "advanced imaging is the bellwether for the excesses of fee-for-service medical care."[1] The U.S. spends more on healthcare services than any other country, exceeding $2.6 trillion, or about 18% of our gross domestic product, yet Americans have had a shorter life expectancy than people in almost all of the peer countries.[2] What's worse, this spending is increasing at a rate faster than inflation and the economy as a whole. While there are many reasons for this, one of the key reasons cited is that we tend to pay doctors, hospitals and other medical providers in ways that reward doing more, rather than being efficient in the way healthcare as a whole is delivered. Here's what is not working: our predominantly fee-for-service system that reimburses for each test, procedure or visit, alongside medical systems that lack integration, propagate unnecessary tests and overdiagnosis. The U.S. did 100 magnetic resonance imaging (MRI) tests and 265 computed tomography (CT) tests for every 1000 people in 2010—more than twice the average in other OECD (Organization for Economic Co-operation and Development) countries.[3]

Healthcare reform — Finally driving value?

But reform in one way or another has been trying to address these excesses for a while now. When policymakers see that legislation, such as the Deficit Reduction Act (DRA) of 2005 and the Patient Protection and Affordable Care Act (PPACA) of 2010, actually flatten imaging growth and expenditures, it encourages them to add more cuts. Despite an exceptional run in the late 1990's and early 2000's with Medicare outpatient imaging volumes experiencing growth rates from 10% to 15% annually, there has been a distinct slowing in the growth of discretionary noninvasive diagnostic imaging in the Medicare fee-for-service population since 2005, with the slowdown being most pronounced in MRI and nuclear medicine.[4] Current trends also point to declines in hospital-based imaging in almost all modalities. The previous 'age of growth' in imaging has given way to an 'age of accountable care,' with increased scrutiny, greater price sensitivity and focus on full cost of care that rewards imaging appropriateness.[5]

The Centers for Medicare and Medicaid Services (CMS) has also finalized the expansion of Multiple Procedure Payment Reduction (MPPR), and this clearly has an impact in reimbursement. CMS will apply MPPR to the professional payments of certain advanced imaging services, such as CT, MRI, and ultrasound, primarily in situations when multiple-imaging services are furnished to the same patient in the same session, on the same day, by the same practitioner. The imaging procedures, which carry the highest professional payment, will be paid in full, while



professional payments for other services will be reduced by 25% (Services).[6]

Healthcare reform continues to be broadly adopted, and as the spotlight shifts from volume to value, imaging continues to be in the headlines. In his State of the Union speech last year,[7] President Barack Obama remarked, "We'll bring down costs by changing the way our government pays for Medicare, because our medical bills shouldn't be based on the number of tests ordered or days spent in the hospital—they should be based on the quality of care."

According to a recent study that retrospectively analyzed a large group of CT and MRI examinations for appropriateness using evidence-based guidelines, approximately 26% to 30% of the imaging tests ordered were deemed either unnecessary or inappropriate.[8] The American College of Physicians (ACP), the largest U.S. medical specialty group, found that excessive testing costs a staggering $200 billion to $250 billion per year.[9]

Refocusing and creating value-based competition

In their book "Redefining Health Care," Michael Porter and Elizabeth Olmsted Teisberg shed new light on why decades of reform have only worsened the problems of our healthcare system with what they call the propagation of dysfunctional competition.[10] They argue that the root cause of the woes of our healthcare system is not a lack of competition, but the sustenance of competition at the wrong level—where competition is both too broad and too narrow. Porter and Teisberg convincingly argue that competition is too broad because it currently takes place at the level of health plans, networks, hospital groups and clinics—and not in addressing particular medical conditions.

Competition is also too narrow because it takes place at the level of discrete interventions or services—and not in addressing medical conditions over the full cycle of care, including monitoring and prevention, diagnosis, treatment and the ongoing management of the condition. Value in healthcare is created (or destroyed) at the medical condition level, not at the level of a hospital or physician practice. Their argument is a strong caution for us in radiology to take pause and re-evaluate our value chain, and bring a defined set of frameworks to help capture the value that we bring to the sustainability of the healthcare delivery system at large.

Evaluating the entire imaging value chain

As radiologists, we are often much further down the chain of events that lead to the process of our patients getting a certain imaging study performed. By the time the patients' studies end up on our picture archiving and communication systems (PACS) worklists, it's too late to effect any change around ordering appropriateness and imaging utilization. We need to focus upstream, at the "scene of the crime" where the studies get ordered, and where ordering physicians interact

with the computerized physician ordering system (CPOE) within their electronic medical record (EMR) system. A thought-provoking NEJM paper titled *The Uncritical Use of High-Tech Medical Imaging*,[11] makes an interesting observation: imaging tests are most valuable when the probability of disease is neither very high nor very low but in the moderate range. Various imaging utilization management systems have been enforced in various forms by insurance companies and radiology benefit management (RBM) companies. Prior authorization, prenotification, and various forms of network strategies that focus on examination costs, total quality and practice guidelines have also had varying levels of success. Beyond more tailored tort reform, and an evolution in medical education and training, perhaps the most effective antidote to this trend is data – *intelligent personalized data* based on solid evidence-based medicine, presented tightly integrated into the decision support and physician order entry workflow. Ordering physicians want to do what is best for their patients, and presenting them with intelligent personalized data around image order entry appropriateness, alongside easy access to relevant priors will work wonders. This is difficult, but not impossible — and is a critical step towards meaningful value based imaging.

Evaluating the entire imaging value chain will shed light on the definitions of accountable care and value-based imaging. Accountable care entails a keen focus on quality, outcomes, and costs across the entire care continuum – and continuous quality improvement is a linchpin that will enable better clinical outcomes at lower costs. The focus needs to be on the total value for patients, not just on lowering costs. The focus for radiologists needs to be in addressing medical conditions as part of a broader integrated team, not individuals or as one specialty. Radiologists rarely have full control over the value delivered direct to patients (except perhaps for women's imaging and interventional radiology), but we need to be fully aware of the care cycles around the patient—and ensure that we are able to affect care in an integrated manner both upstream and downstream to ensure good, measurable patient results, with accountability tightly coupled to results and outcomes.

The transformation of healthcare delivery entails evaluating and adapting the care delivery value chain (CDVC) in the practice of medicine across entire cycles of care around a particular medical condition, such as stroke or chronic kidney disease. What is interesting is that the simple act of delineating the various activities around the CDVC begins to reveal gaps, duplication of tasks, redundant testing, and numerous other inconsistencies that were previously assumed as normal practice. Our hope in reenergizing imaging then may lie in our capability to sincerely look within and reevaluate the entire imaging value chain, such that we incentivize a cohesive system that is measured by key clinical quality, service, and business growth metrics.

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