This is a thought leadership piece I wrote for a healthcare technology executive.

Evidence-Based Medicine: Putting the Evidence To Work for the US Healthcare System

In an ideal world, if you were a 57-year-old man suffering a myocardial infarction, it wouldn't matter whether you lived in Miami or Missoula, your chances of survival would be the same.

Not so in the United States today where, to a large extent, your zip code determines what kind of care you receive. And much of the time, that care will **not** be informed by evidence-based medicine (EBM). Witness the fact that in Pennsylvania, your chance of having a mastectomy for breast cancer could triple if you moved from one part of the state to another, according to the Dartmouth Atlas of Healthcare.

Through widespread implementation of evidence-based medicine, the United States has its best chance of erasing the variations in care that currently extract such huge costs – both human and financial – from the healthcare system. Once medical care is firmly anchored to sound science, lives will be saved, outcomes will improve and efficiencies will be realized.

But what will it take to put the evidence to work? To begin with, it will require continuing pressure by organizations like the Leap Frog Group and the National Business Group on Health to reform a system whose pace of change is typically glacial. It will also call for huge cultural and technological changes at the payer, provider and patient levels—changes that will:

- force competitors to cooperate
- reward scientifically supported care processes through carefully thought out incentive programs
- drive the adoption of technology that makes EBM possible

The State of the Union

The Dartmouth Atlas of Healthcare, last published in 1999, put the issue of medical practice variation on the map, and that map was a variegated one. Using medical claims databases from payors like the Centers for Medicare and Medicaid Services, the Atlas describes how medical resources are distributed and used in the United States. Geography is indeed destiny, as its authors famously announced, with findings that included a mastectomy rate for breast cancer in Pennsylvania that ranged from .8 to 2.4 per 1,000 Medicare enrollees.

Practice variation proved an equal opportunity discriminator: rates for a common surgery for men -- transurethral prostatectomy for benign prostatic hyperplasia -- ranged from 4.4 to 11.1 per 1,000 enrollees in that same state.

And when the United States compares itself to other countries, using average life span and infant mortality as yardsticks, it lags far behind other industrialized countries like Japan, Switzerland, France and Australia. Granted, these disparities aren't 100 percent attributable to U.S. physicians' inability to consistently bring scientific evidence into the exam room. But the fact remains that our focus on the latest and greatest medical technologies often comes at the expense of those less glamorous pursuits that many of our neighbors excel at: preventive care and chronic disease management.

We are undoubtedly the go-to folks if you need a marrow transplantation or a complicated mitral valvuloplasty. But if your complaint is more pedestrian, you might consider heading elsewhere. A 2003 *New England Journal of Medicine* study of over 400 indicators of quality care for 30 common conditions determined that, on average, patients received recommended care only about half the time.

Dissecting the Reasons

Why has evidence-based medicine had such difficulty insinuating itself into the daily practice of many physicians? Let's start with the factors outside of their control. First, the amount of new medical information physicians could potentially absorb on a regular basis is staggering. Each month, there are more than 150,000 articles published in some 20,000 medical journals.

And relying on practice guidelines, as opposed to the source material, isn't always the answer. A 1999 JAMA article, Are Guidelines Following Guidelines," concluded that guidelines published in peer-reviewed medical literature during the past decade often do not conform well to established methodological standards. Of 279 guidelines examined, only 29.9% adhered to evidence identification and summary. And even when guidelines reflect the evidence, that evidence becomes dated rather quickly.

Finally, while clinical research has mapped huge tracts of medical science, there are still vast territories that remain unexplored. A good example of one of these areas where lack of evidence continues to bedevil us is how best to migrate a patient from one level of care to another in a hospital setting. You won't find much scientific investigation into the question of when is the precise time for a patient to move from the intensive care unit to a regular medical floor and vice versa and which interventions will accelerate that progression.

Physician Resistance: Skepticism About the Evidence

Physicians' resistance to changing the way they do business is one of the biggest barriers to EBM adoption. For years, the medical community has operated under the mistaken assumption that the doctor <u>always</u> knows best. It took the work of organizations like The Leapfrog Group and Bridges to Excellence to point to the glaring gaps in care quality. Payors have now taken up the quality mantle, using much more sophisticated analytics to make their case.

Thus, the system's growing ability to quantify quality has begun chiseling away at some physicians' reluctance to change the way they practice.

Old Dogs, New Tricks

Sometimes, even when presented with the evidence, physicians will fail to revise their approach, often for understandable reasons. One example: the evidence now recommends that if administered early enough after a thrombotic stroke, tissue plasminogen activator (t-PA), a clot-dissolving medication, can reduce or prevent the chance of brain injury.

But some physicians are reluctant to intervene in this way, because of the fact that administering t-PA has the potential to induce a cerebral hemorrhage, and perhaps they have even witnessed this dangerous side effect. They have yet to synthesize into their current practice the newer evidence that the potential benefits outweigh the risks, if the drug is administered early enough.

This single example points to a larger issue about many physicians' relationships with published clinical research: it's often complex. It's not at all uncommon for a physician to pick up the latest research study published in even the most esteemed medical journal and to think, "No way. This conclusion flies in the face of everything I've experienced in my own clinical practice." And that skepticism may sometimes be completely on target. Claims of rigorous peer review aside, many studies undoubtedly wouldn't stand up to extremely close scrutiny -- in the form of a meticulous statistical analysis, for example.

Systemic Obstacles

But responsibility for research's slow migration from lab bench to bedside doesn't all lie at the physician's doorstep. There are plenty of systemic reasons for the failure of EBM to penetrate many physician's daily practice, beginning with the fact that until fairly recently, there were few incentives for physicians to deliver evidence-based medicine.

Historically, compensation hasn't been linked to ensuring that your diabetics are getting regular hemoglobin A1c tests, your middle-aged woman receive regular pap smears and mammograms, and other quality slam-dunks like these.

Further complicating matters is the fragmentation of patient information. The data of a patient with co-morbidities may reside in numerous computer systems, including those of his health plan, a couple of disease management programs, the emergency room at the local hospital and the home health agency that cared for him after his most recent admission. How can physicians do right by their patients, from an EBM perspective, with such sub-optimal information?

The Road Map to Evidence-Based Care

So how do we overcome these obstacles, and finally become world leaders in the use of evidence-based medicine?

To begin with, we need to continue rebuilding the incentive system, so that physicians are properly rewarded for following the principles of sound science. That means not just creating pay-for-performance (P4P) programs, but designing ones that inspire change where it is most needed.

For instance, a typical P4P program may not begin issuing incentives until physicians are prescribing beta blockers for 75% of their heart attack patients. Where does that leave the physician who is current prescribing beta blockers for just 30% of her eligible patients? Pretty unmotivated, I would guess. Rewarding low-performing physicians for making significant progress, even if they're still falling short of the ideal, targets those providers who most need to be engaged.

A recent JAMA study confirmed the tendency of many programs to reward their quality stars most generously, at the expense of their lower performers. The study, which evaluated a pay- for-performance program conducted by California

insurer PacifiCare Health Systems Inc, found that doctors already at the target levels received 75 percent of the bonus money.

P4P programs can also play a large role in driving improved adoption of EBM-centric technology in physicians' offices. A large part of this is ensuring that reward levels are generous enough to enable even the smallest practices to purchase an electronic medical record system. Of course every practice wants to do what's best for its patients. But the reality is that if there's no financial incentive to make a huge investment in a technology that so far you've done O.K. without, you're unlikely to take the plunge.

The good news is that generous incentives are not a pipe dream. A pay-for-performance program organized by California's Integrated Healthcare Association (IHA), a consortium of medical groups, health plans and health systems, distributed $50 million in bonuses to medical groups in 2004.

A final way that pay-for-performance has been ineffectively implemented is the lack of coordination among different payors' programs. Every plan has its own idea of the best way to measure quality. The result is a tangle of different metrics and standards that confuses and frustrates physicians. Payors can have a large hand in raising the standard of care across the healthcare system if they come together **now** and define a universal measure of quality.

Evidence-Based Medicine and the Patient's Responsibility

What role does the patient play in this brave new world of evidence-based medicine? Making the patient a partner in EBM is not just strategic, it's inevitable. As consumers are being asked to shoulder a greater and greater percentage of their healthcare costs, it absolutely behooves them to become more informed about what the science says.

But we have to be realistic. Even with years of schooling and practice, many physicians agonize over tough medical decisions. Do we expect a patient to be able to make complex medical decisions, even with a little bit of EBM under his belt?

Absolutely not. It needs to start simple with consumers, focusing primarily on preventative care. Consumers need to be able to answer basic questions like, "What do I, as a person of this age, gender and race, need at a bare minimum on an annual or bi-annual basis?" And then the health plans need to start building incentive systems, paralleling physician pay-for-performance programs, that reward patients who play by the rules of EBM.

Toward an Interconnected Healthcare System

The final act of the EBM story is the one that brings all of the stakeholders together, eliminating the disconnects that currently plague the system. This is where the need for an interconnected healthcare system comes in, a future where physicians have at their fingertips a comprehensive picture of their patients' care, not just fragments. And this is where the full power of EBM can finally be realized, where the different stakeholders mutually reinforce its practice.

I leave you with a scene that will become commonplace in the not-too-distant future:

A patient receives a post card from her health plan reminding her that she's due for her yearly mammogram. She knows how important it is, thanks to the literature her health plan sends her annually, but nevertheless puts off scheduling it. A week later she receives an email from her physician's office, whose EMR has alerted staff that the patient is due for a mammogram. Because the physician's EMR is connected to that of the local freestanding clinic the patient often visits, the physician's office knows she hasn't had a mammogram

there either. All of this happens just as the health plan's care management system alerts the payor that a mammogram claim should be arriving soon. If for some reason the claim doesn't come through after a designated period of time, the health plan alerts the physician and the patient that a mammogram still needs to be done.

The curtain descends, the music rises. Evidence-based medicine has triumphed.