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Physicians' Work: How the Evolution of Medicine and Supporting Technology Allows for its Transfer to Professional Staff and Benefits Patients

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In the current era of rules-, or evidence-, based and computer supported primary care, there is growing evidence that a significant majority of physicians' work could be done more consistently and cost-effectively by technicians under the supervision of physicians and using advanced evidence-based decision support systems.[*]

The potential of rules-based medicine, technology, and staff

Medicine has reached the point where the diagnosis and treatment of many conditions is rules-based. Key medical tools have advanced dramatically and are much simpler to use. As a result, in many cases the best results are obtained when a procedure is done by specialist technicians or other support staff guided by carefully developed, computerized protocols. Some physicians vigorously object to this idea, claiming that quality will suffer. However, others, who would like to pursue this strategy are blocked because of the current dysfunctional reimbursement system and scope of work regulations that make it necessary for physicians, rather than technicians, to conduct certain tasks. Physicians who support this new delivery strategy see that delegating enhances access and reliability of care; it also increases their ability to deal with complex diagnostic and therapeutic problems and allows them to analyze and improve multiple aspects of patient care.

Compelling evidence demonstrates that well-trained support staff can deliver high quality and low cost health care anywhere in the world if they are properly supervised and supported by technologies such as electronic protocols and video. An example is the new MinuteClinic model. These clinics are usually staffed by registered nurses guided by a decision support system (DSS, a computer-based information system) and backed up by a physician on call. These clinics provide excellent and convenient care at a lower cost than competing medical services, something that consumers find very valuable. Predictably though, some physicians and others have called for more regulation of such clinics, which stems their growth.

Another dramatic success in rules-based diagnosis and treatment by technicians is the Aravind Eye Care System in India. Aravind is the largest and most productive eye care facility in the world. This breakthrough service operates in rural India where it has overcome the barriers of distance, poverty and ignorance to create a self-sustaining system. From April 2006 to March 2007, including the work done in the managed Aravind Eye Hospitals, the staff has treated more than 2.3 million out-patients and performed more than 270,444 surgeries. The founder of Aravind, Dr. G. Venkataswam, was inspired by the consistent quality and low cost of the fast-food chain McDonald's. Most of the surgery is done by trained Aravind technicians at an average cost of $25 per procedure and with consistent high quality outcomes.

The next necessary change

The core of the problem is that while the tools we use to practice medicine have been completely revolutionized, our medical education and practices have not. Until that happens, we cannot make the best use of the new developments available to us.

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[*] Rules-based (also known as evidence-based or scientific) medicine urges health professionals to make decisions, provide treatment, and apply uniform standards that are based on scientifically-gathered evidence.

For the last 100 years, doctors have learned their craft from other doctors in teaching hospitals; the majority of their work is hands-on and requires direct participation. But truly revolutionary advances have made medicine more precise and easier to practice—and the digital revolution is an outright game changer. It has generated a step-function increase in scientific knowledge; it has enabled us to capture valuable information, analyze outcomes, and rapidly disseminate learning. Unfortunately, there has been great resistance to fully exploiting information technology in medicine. On the other hand, some groups like the Kaiser Permanente Foundation, the Mayo Clinic, and the earlier experimental Harvard Community Health Plan embraced digital medicine and quickly realized that tools like electronic medical records were the linchpin for a successful integrated group practice.

Integrated practices—where multiple specialists work together to solve a patient's problems—are now widespread. Starting with children's hospitals, orthopedic services, and cancer centers, there is a steady trend toward organizing physicians into a team so that a patient's care can be safely and efficiently coordinated. The next stage is already evolving with more team care and the redistribution of specific elements of medical work; physicians focus on complex and difficult patient cases while they also monitor and evaluate the team's care process to identify areas where improvement is indicated.

Envision, for example, a colonoscopy suite, where a physician sits at a center console and videos are piped in from surrounding rooms where nurses perform colonoscopies. Because the images are now recorded and projected, there is no reason that a well-trained nurse cannot do a colonoscopy and bring to the doctor's attention any questionable areas detected during the exam. The physician is just steps away from each room in case of emergency. In this scenario, doctors are using their training efficiently and nurses are safely and effectively carrying out the technical aspect of the job.

Certain physicians' groups, however, are trying to keep such a scenario from becoming widespread. They have lobbied to keep these changes at bay—and to keep information about the quality of care provided by individual physicians and hospitals away from consumers. An important step would be legislation allowing for CMS to share its full claims database with health plans in a manner that protects patient confidentiality. Such information could help consumers make better decisions about where to go for care. If consumers could compare the outcomes and safety and efficiency records of various healthcare delivery sites, they would see the advantages of centers like MinuteClinics clearly. That would likely lead to the demand that we ease prohibitive regulations.

The context

The long-standing model—where physicians themselves deliver almost all healthcare directly—is very reassuring, not just to patients, who feel they are getting the highest level care at all times, but also to doctors. After all, doctors tend to charge much higher rates for their services than technicians do.

Many argue that this is simply how it has to be: That a highly-skilled professional, a doctor, must directly provide most aspects of a patient's care. Otherwise, the patient is at risk. There is growing evidence clearly contradicts this statement. Besides the examples given above of the MinuteClinics and Aravind eye hospitals, there are many other situations in which non-physicians have filled in as a "stop gap" measure when doctors are in short supply. The rise of the nurse practitioner is an excellent example of that. Few people would argue that a nurse practitioner could not be taught to determine when a patient with a sore throat needs an antibiotic from when they don't.

Patients deserve consistently high quality care. They simply aren't getting enough of it now. The high cost and poor quality of care in the U.S. represents a widespread crisis. The Institute of Medicine's report *Crossing the Quality Chasm: A New Health System for the 21st Century* (2001), and other research such as that by the RAND Corporation and by Jack Wennberg's group at Dartmouth Medical School, has clearly documented widespread safety issues and inefficiency. The IOM report contrasted the dismal state of healthcare delivery against the impressive quality and productivity gains seen in other fields that have optimized the use of information technology, systems engineering, and associated organizational innovations.

While rules-based healthcare that is well managed and engineered is clearly the right choice for many procedures, the ability to drive these innovations will require that we restructure the regulatory environment to one that seeks to measure specific goals of care—including good outcomes and consistent, safe care that is accessible and delivered at a high level of service. The denominator, which includes the type and cost of resources, creates the value equation that is the future metric for care. Patients must be empowered and informed in order to drive this system forward to one that will ultimately be far more satisfactory for patients and physicians alike.

Entrepreneurs, such as the founders of retail clinics, have already taken the first steps to implement healthcare delivery engineering, and their patients have benefited. Now it is time for us to implement these principles on a much wider scale.