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Young Man/Woman Go Healthcare

by Andrew Vazsonyi, Feature Editor

Since the collapse of Health Plan of the Redwoods, our local HMO in Northern California that serves 78,000 people, a day does not go by without an article lamenting the problems of its participants. I am convinced that the troubles of healthcare can be greatly alleviated by the use of decision sciences. Currently, this industry is like an errant dinosaur lumbering along without mathematical models. Why do I have faith in decision sciences, and what can we do about it?

When I study dozens of web sites about healthcare, I have an overwhelming feeling of déjà vu. Wind back the clock fifty years. Observe the level of confusion and anarchy in factories, and the resistance to change to new approaches like the use of mathematical models and/or the computer. I was told that production could never be improved by using such theoretical approaches. The problems are just too complex, the experts said, and production or marketing could not be improved because of "the human element." These same nay sayers insisted that computers would never replace typewriters, and no one imagined the computer would provide a resource better than an infinite encyclopedia, the World Wide Web.

Today, no industry would attempt to compete without the proper toolkit of management science. Admittedly, some maverick wizards are already using the toolkits for healthcare. Billions of dollars are being spent digitizing healthcare systems and potentially provide information for modeling work. Many large consulting firms are busy improving quality and reducing costs. Of course, there are frustrations and disappointments. Many projects cost more and produce less than advocates had hoped. The best practices in health care are in their infancy.

But the great majority is ignorant, skeptical, or just doesn't pay attention. The math wizards speak a different language from the Muggles, the ordinary persons

without magic from the Harry Potter series. But as Ernst Mach, the great Austrian physicist and philosopher, pointed out, the ordinary person can reap the benefits of science without understanding it. It takes the creative genius of a mathematician like von Neumann to invent the computer, but little children and grandmothers have no problem using it.

How do I know that decision sciences can help? First, I examined the goals of the industry, the Ideal Health Care System, then, what we, decision scientists, can do.

The Ideal Healthcare System

Patients and Clinicians

The ideal healthcare system is envisioned, planned, and designed around patients, focuses on service responsive to patients' needs, health promotion, disease prevention, convenience, and quality—for both patients and clinicians. The patient decides what's best, with clinician as coach. The system specifies a gateway person who is responsible for maintaining the patient's personal care plan. The emphasis is on patient and staff satisfaction, good clinical and financial outcomes, and the patient-clinician relationship. When leaving the hospital, patients are provided with a discharge plan including help for themselves, and emotional, social, clinical, physical and financial support for their families.

Clinicians are provided with extra time for updating and improving their knowledge. Staff is continually trained for new and broader skills, and cross functions. Goals for patients include greater access to one's physician, less need for urgent and emergency care, improved health for those with chronic disease, and zero tolerance for errors. Goals for practices include happy, relaxed employees; a staff that functions as a team; and increased revenues through greater productivity, a bigger patient panel, and lower costs.



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ceived a Ph.D. from the University of Budapest. He is currently an emeritus professor at San Francisco University and has 20 years of teaching experience. Prior to becoming an educator, he served for 25 years in industrial positions. These days he focuses on books, articles, and his website (www.reallifemath.com) that apply Microsoft Excel and Visual Basic to the decision sciences including healthcare systems.

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Access to Services

The system provides open-access scheduling and just-in-time medical care dispensing. Patients have access to care at all times, and may walk into the office any time—without calling ahead—for monitoring, lab work, or other routine care. Prediction, flexibility, and contingency plans are used to eliminate waiting and queues. Patients can come in when it's most convenient for them, may call anytime, and be seen the same day. Bypassing the waiting room, they will be ushered into a combination exam/consultation room, where lab work can also be done. Face-to-face health-care encounters are minimized and replaced by other types of healing relationships (such as TV links to clinicians), although plenty of time is provided with physicians when needed, or specified by nurses. Self-reliance of patients is much encouraged. Available space can be checked via telephone.

Clinical care for the sick is provided when needed. Preventive care is stressed to keep people well. All the clinicians involved in a specific patient's care remain in close touch, improving continuity of care while using providers at the appropriate skill level for each patient need. Staff relies on evidence-based protocols and outcomes to target patients.

Computers and Information Systems

The system takes full advantage of computer systems and information technology. It is electronically plugged in, so doctors and nurses keep in close touch, and convey information to patients via e-mail. Using the phone is discouraged and is replaced by email. Advice and recommendations are freely given through email. The charting and follow-up for each patient encounter is accomplished on hand-held computers, "real time," online. Patients "own" their computerized medical records, accessible by password. Online access allows them to review, update, and add comments to their medical records and use the Internet to hook up those with similar conditions. The system encourages patients to use services such as support groups, Internet chatting in conference rooms, free transportation, and well-baby care. It enables patients to visit those with a shared disease or condition, offering a combination of social support and routine monitoring.

Cost/Benefit Control

In this ideal system, the healthcare industry operates like any other successful corporation of America. It follows sound business practices; it is efficient, fiscally responsible, and employs the best relevant management tools. It takes advantage of modern techniques of operations management, operations research, and management science. It provides the highest quality service at the lowest possible cost. It uses lower-level providers optimally, and relies on registered and practical nurses or techs to handle routine work. It provides many alternatives to match the different needs of patients. Billing records are analyzed for diagnostic codes associated with particular conditions. Medical records are problem oriented, continually shaped for usability and less complexity. Patient registries are created by using sophisticated data management technology. Patient-satisfaction surveys are frequently carried out. It explores different ways of charging for services. Staff tracks ongoing care, and makes sure the practice meets recommended preventive and monitoring guidelines. Supply is continually shaped to match expected demand. It responds rapidly to feedback, sets specific yearly goals, and checks performance.

Indicators and Effectiveness

The system tracks over time various healthcare figures of merit and indicators of costs and quality. It monitors the different types of waits that patients are subjected to, along with medical successes, mistakes, errors, and deaths by preventable causes. It keeps record of the length of hospital stays. It keeps an eye on financial soundness, investments, revenues, and expenses per member/per year/per encounter. The ratio between net revenue and expenses, and the ratio of administrative expenses to total expenses would be analyzed. Also it tracks the number of doctors, professional and technical registered nurses, and practical nurses.

What We Can Do

Now that I have a shopping list of goals, I picked some specific goals and examined what I could do to facilitate reaching it. I have yet to find one where our models would not be appropriate and where we

could not apply some of our user-friendly tools. I suggest you do the same to convince yourself. Admittedly, uncertainty dominates healthcare and conflicts are inherent. Goals are multiattribute; decision making is made by groups and controlled by negotiations. Models are applied in an evolutionary manner. The problems strain our knowledge, and the challenges are daunting.

I suggest we find some problems where we have specific applications to "prove" that decision sciences will help. We know from other fields that this is not an easy job. But we also know that some innovative person, sometimes from an unexpected source, will be receptive to our ideas, perhaps not even mentioning the words "decision sciences." He or she will be the advocate of our methods. With a collaborative effort, we will be instrumental in transforming the healthcare jungle into an effective system benefiting all. ■

NOMINATIONS, from page 1

The 2001-02 Nominating Committee, chaired by Michael J. Showalter (Florida State University) has completed the slate of nominees for the 2003 election of officers (see list on page 1). The Nominating Committees for the regional subdivisions also have compiled the names of nominees who are running this year for the office of vice presidents elected by the regional subdivisions.

Ballots will be mailed in December 2002. Additional nominations may be made by November 29, 2002. Each additional nomination must be made by petition signed by at least five percent of the members and submitted to the Institute's Secretary, c/o the Institute's Home Office, 35 Broad Street, 8th floor, Atlanta, GA 30303.

Additional nominations for vice presidents elected by the regional subdivisions may be made upon petition signed by at least five percent of the regional subdivisions' members. ■