Internet Interventions Aid Endovascular Care

These digital instruments provide personalized and interactive care for the evolving healthcare marketplace.

BY BARRY T. KATZEN, MD; MICHAEL R. JAFF, DO; AND L. ELEANOR J. HERRIMAN, MD, MBA

Major healthcare market transformations, including the patient as a medical consumer, compensation based on performance and quality initiatives, and public reporting of provider performance, have significantly altered how specialists relate to patients and referring physicians. Specialists need to find new methods for reaching, involving, and engaging patients and other providers throughout the continuum of care. An emerging technology gaining widespread use is a digital instrument for clinicians, also referred to as *Internet interventions*. Internet interventions serve as clinician-prescribed information and communication packets. These packets of information serve a key role in involving patients in their care, while leveraging the clinician's expertise and time. When applied throughout the continuum of care, endovascular practices have already found these technologies beneficial in generating referral growth, improving the level of service quality, streamlining patient discussions, differentiating their practice within the marketplace, and generating data that can serve as a knowledge asset and quality improvement tool.

HEALTHCARE MARKET TRANSFORMATION

The US healthcare marketplace is rapidly evolving into a consumer-driven and value-based, transparent system in which the ways providers are measured, evaluated, and compensated will be altered. Driven by what is viewed as crisis-level healthcare spending and suboptimal quality and value, employer and government healthcare purchasers are increasingly driving the reporting of information regarding provider quality and costs, as well as creating a new type of healthcare consumer: the patient. These purchasers are essentially demanding that healthcare plans implement a variety of free-market initiatives that financially motivate patients to use high-performing/high-value clinicians and services.

The consumer healthcare strategies aim to transform the patient from a passive, ignorant recipient of care to an activated, engaged consumer. One tactic in this regard is the emergence and rapid growth of new healthcare plans, including tax-advantaged Health Savings Accounts, high deductibles, higher co-pays, and wellness incentives. Also, a major wave of retail, drop-in clinics are being rolled out nationally in major pharmacy and retailer chains.

Reinforcing this move toward healthcare consumerism is the ongoing healthcare information revolution, driven primarily by the now ubiquitous (at least in the US) use of the World Wide Web. This movement is facilitating access to medical knowledge and information and overwhelming consumers with data, recommendations, and advertising of variable quality and credibility. On a typical day, an estimated 8 million consumers are searching for health information on the Internet,[1] resulting in many patients asking their clinicians to review and interpret the relevance of Web-based information.

Together these trends are altering the roles of clinicians and patients toward more of a consumer partnership: vendor and customer at a higher level, with much higher levels of patient involvement in their care. Patients and their families are more motivated than ever to become active partners in their care and take part in the decision-making process, particularly because they are more empowered by Web-based medical information. As Woolf et al describe, "Deeper engagement in decision making is increasing for several reasons: increased patient autonomy, broader access to information, expanding clinical options, rising costs,

ascendancy of chronic illness, complex trade-offs, and greater accommodation of personal values."[2]

Professional, policy, and healthcare market leaders are also advocating for patient-centered care as a catalyst for improving clinical quality. This model elevates the patient's involvement, preferences, and needs, reorienting the system around the patient. With the increasing complexity of clinical decisions, many of which have insufficient evidence from which to draw, and patients more likely to be seen by multiple clinicians, a fragmented and Byzantine healthcare system has developed. Given this complexity, healthcare leaders assert that systemic solutions require a new delivery system model with much higher levels of patient participation and self-management.

Another market solution being pursued entails value-based purchasing and performance transparency. A number of payers and government purchasers are planning to link reimbursement rates to service quality and value, as well as publishing quality and pricing results of providers to encourage market selection. There are now more than 100 pay-for-performance programs linking provider reimbursement to clinical performance, and about one-half of these are publicly reporting provider scorecards.[3] Medicare has also begun rolling out physician-based pay-for-reporting bonuses, and announced plans for pay-for-performance reimbursement over the next 2 to 5 years (Figure 1). Some estimate that 20% to 30% of total Medicare payments might be tied to quality and efficiency performance.[4] A major component of these measurements concerns patient experience surveys, again reflecting the trend toward elevating patient influence and market power.

Figure 1. Institute of Medicine–proposed Medicare pay-for-performance timeline. Reprinted with permission from: Herriman LEJ. Using Internet interventions to control performance in a transparent market. IC Spotlight. 2006;1:3. Adapted from National Academy of Sciences Institute of Medicine. 2006. Rewarding provider performance: aligning incentives in Medicare.

THE INTERNET ANSWER

These market transformation dynamics will likely affect endovascular specialists in a number of ways. For example, referring physicians' performance measurements include patient ratings regarding their specialty care, putting new emphasis on the importance of a satisfactory patient experience. Also, payer-contracting negotiations are increasingly considering processes and measures that demonstrate high-value services as the basis for differential reimbursement rates.

The Internet affords specialists a powerful platform for advancing how specialty-based physicians approach and serve referring physicians, patients, and the market community. One of the leading applications in this regard is the Internet engagement intervention, also known as an interactive health communication application (IHCA). These dynamic, interactive, Web-based patient portals combine health information with interactive components such as self-assessment tools, behavior change, peer, and/or decision support and are prescribed to patients by a physician. Internet interventions can serve to educate patients about their condition, test, and treatment options, help motivate them to adhere to treatment plans, and offer self-care support. Boston-based IC Sciences' NorthPoint Domain business unit has been providing tools such as these for nearly 7 years.

TABLE 1. INTERNET APPLICATION PRACTICE BENEFITS

Adopting Internet applications can benefit specialty practices by:

- Stronger relationships with referrers and patients
- Practice growth through new channels
- Increased efficiencies in patient throughput
- New tools for capturing/analyzing clinical results

Engaging patients refers to enabling patients to participate fully as responsible, informed partners in their care. Engagement is vital from a quality perspective because evidence has demonstrated improved outcomes and improved patient satisfaction. Engaging patients is important to specialists from a business standpoint as a driver of referral growth, performance ratings, market differentiation, and patient retention. Specialty practices who have adopted various Internet applications have experienced a range of benefits, for example, more effective development of relationships with referrers and patients, practice growth through new channels, efficiencies in patient throughput, and new capabilities for capturing and analyzing clinical results (Table 1).[5]

ENGAGING PATIENTS

At the beginning of the care continuum, Internet engagement can expand the endovascular specialist's identification of potential referrals, while also encouraging early detection of vascular disease within the community. Practice portals can act as a screen for potential patients browsing the Web for information related to a sign, symptom, or specific condition. For example, an endovascular specialist might post an online patient questionnaire that assesses whether a patient would be a candidate for varicose vein therapy, along with an electronic consultation request function. Another opportunity would be to use the Internet to distribute information electronically on screening for peripheral arterial disease or a risk assessment survey to primary care providers, health plans, and employers in the area.

Preparation for the initial consultation offers another opportunity for Internet-patient engagement. The endovascular clinician sends an electronic message, which directs patients to a secure portal area where they can read prescribed informational articles describing their condition, test, and treatment alternatives. They are also asked to enter intake and medical history information through secure online data forms.

This preconsult information dialogue empowers the patient to discuss options with the specialist in an informed manner, diminishing waiting room and registration times, focuses the encounter in a way that promotes the physician-patient relationship, and results in more accurate and thorough collection of medical data (entering data from home, allowing the patient to access prescription bottles and provide accurate medication lists and dosages; asking family members for input regarding personal and family history; and avoiding data re-entry related transcription errors).

These interactive Internet interventions are able to inform the patient more effectively before and after the specialty consultation, resulting in a stronger adherence to treatment plans from increased patient buy in. Clinician in-office education and instruction has limited effectiveness because of the rushed, anxious, face-to-face office visit. Studies show that, on average, patients recall approximately 50% of what healthcare providers tell them. Up to 45% of patients cannot remember the

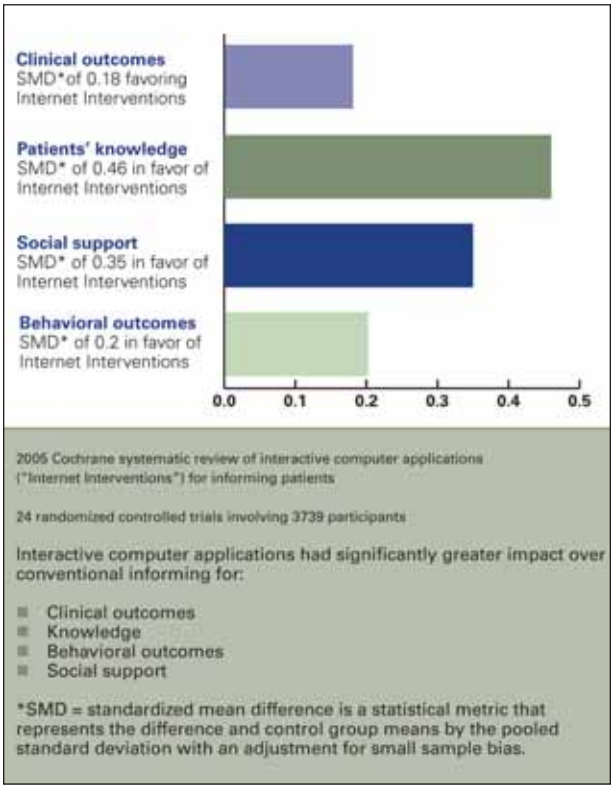

Figure 2. Evidence of effectiveness of Internet interventions. Used with Permission from: Herriman LEJ. Using Internet interventions to control performance in a transparent market. IC Spotlight. 2006;1:3. Adapted from Murray E, Burns J, See TS, et al. Interactive health communication applications for people with chronic disease. Cochrane Database Syst Rev. 2005;4.

TABLE 2. INEFFICACY OF IN-OFFICE EDUCATION

Do not read or understand information on informed consent	60% to 69%
Unable to recall provider discussion	Approximately 50%
Unable to recall surgical risk	45%
Lack of understanding nature of procedure	44%

risks of surgery, 44% do not know the exact nature of their operation, many are unable to answer basic questions about the procedure or services they agreed to receive, and 60% do not understand information in consent forms (Table 2).[6]

A growing body of research shows that patients who are well informed about their condition, test, and treatment options are more likely to comply with prescribed therapies.[7,8] A recent Cochrane database review of Internet interventions suggests that the Internet is a more potent way of informing patients. This meta analysis determined that use of these tools produces statistically significant, positive effects on clinical outcomes, patients' knowledge, social support, and behavioral outcomes (Figure 2).[9]

One dynamic driving these findings may relate to better patient preparation and adherence to periprocedural instructions, as has been observed when patients receive personalized, Internet-delivered instructions from their procedural specialist. This heightened compliance might also lower the rate of cancellations and patient-related complications.

Internet portals can be programmed to deliver electronic notices to patients regarding longer-term self-care and follow-up appointments. Electronic patient surveys are also being used as a means of checking for early signs of late complications or the development of comorbid conditions. Not only does the patient view these services as indicative of high-quality care, but also the specialist benefits from ensured follow-up visits and a retained clinical relationship with the patient.

Internet interventions are also being used by specialists interested in capturing clinical histories and profiles as well as outcome results from patients. Online, validated patient survey instruments are available for a wide variety of clinical conditions and quality-of-life measures, and delivering these to patients through an Internet portal enables the specialist to build a clinical data warehouse efficiently and inexpensively. These clinical warehouses are becoming increasingly critical for measuring and managing clinical quality, providing evidence for the cost-effectiveness of new procedures, and participating in clinical investigations.

Finally, adopting Internet-based patient engagement portals provides endovascular specialists with a new opportunity for market differentiation, and one that is in alignment with the major market transformations currently underway. Providing these Internet-based engagement services positions the endovascular specialist to referring physicians as patient-centered and invested in high-quality care. As provider performance transparency is already a concern for primary care physicians, this emphasis on patient engagement and experience can drive case referrals and even support a premium in reimbursement rates.

CONCLUSION

Adding the Internet to the specialist's intervention toolkit makes business as well as clinical sense given the market trends toward patient engagement, service value, and transparency. Highly personalized and interactive health information exchanged between the endovascular specialist, the patient, the referring physician, and the payer, facilitated by these Internet interventions, arguably enables the endovascular practice to deliver care in a manner better aligned with the new, emerging healthcare marketplace. ■

Barry T. Katzen, MD, is the founder and Medical Director of Baptist Cardiac and Vascular Institute, and Clinical Professor of Radiology at the University of Miami School of Medicine. Dr. Katzen is also Founder, Chief Medical Officer and Chairman, Medical Advisory Boards, IC Sciences Corporation. He has disclosed that he receives compensation from IC Sciences Corporation. Dr. Katzen may be reached at (786) 596-5990; btkatzen@aol.com.

Michael R. Jaff, DO, is a Vascular Medicine Specialist and Medical Director of the Vascular Diagnostic Laboratory at Massachusetts General Hospital in Boston and Co-Chair of NorthPoint Domain's Vascular Domain Medical Advisory Board. He has disclosed that he is salaried by IC Sciences Corporation. Dr. Jaff may be reached at (617) 726-3784; docmrjaff@aol.com.

L. Eleanor J. Herriman, MD, MBA, is Executive Vice President and Chief Science Officer IC Sciences Corporation. She has disclosed that she is a salaried employee and shareholder in IC Sciences Corporation. Dr. Herriman may be reached at (617) 259-3304; eleanorh@icsciences.com.

1. Fox S. Pew Internet & American Life Project. Online health search 2006. http://www.pewinternet.org/PPF/r/190/report_display.asp. October 29, 2006. Accessed June 25, 2007.
2. Woolf SH, Chan EC, Harris R, et al. Promoting informed choice: transforming health care to dispense knowledge for decision making. Ann Intern Med. 2005;143:293-300.
3. Med-Vantage, Inc. Provider pay-for-performance incentive programs: 2004 national study results. Available at: www.medvantageinc.com/Pdf/mv_2004_P4P_National_Study_Results-Exec_Summary.pdf. March 2005. Accessed June 25, 2007.
4. National Academy of Sciences Institute of Medicine. Rewarding provider performance: aligning incentives in Medicare. http://www.iom.edu/CMS/3809/19805/37232.aspx. September 21, 2006. Accessed June 25, 2007.
5. Data on file, NorthPoint Domain Inc.
6. Kizer KW. National Quality Forum. Implementing a national voluntary consensus standard for informed consent: a user's guide for healthcare professionals. http://www.qualityforum.org/publications/reports/ic_users_guide.asp. September 2005. Accessed June 25, 2007.
7. Guadagnino C, Branch W. Physician-patient communication, Physician's News Digest July 2006. http://www.physiciansnews.com/cover/706.html. Accessed June 25, 2007.
8. Tang PC, Ash JS, Bates DW, et al. Personal health records: definitions, benefits, and strategies for overcoming barriers to adoption. J Am Med Inform Assoc. 2006;13:121-126.
9. Murray E, Burns J, See TS, et al. Interactive health communication applications for people with chronic disease. Cochrane Database Syst Rev. 2005;4:CD004274.