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Healthcare E-Commerce: Connecting with Patients

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ABSTRACT

Electronically connecting with patients is a challenging frontier at which technical hurdles are probably exceeded by political, legal, and other barriers. The rise of consumerism, however, compels a response focused more on revenue and strategic advantage than on pure cost savings. Among the difficulties faced by providers is choosing among various models of connectivity and component function. Emerging models include “freefloating” personal medical records largely independent of the office-based physician, systems with compatible and intertwined physician and consumer relationships using an application services provider office practice system, and systems that connect patients and providers through e-mail, office triage, prescription refills, scheduling, and so on. This article discusses these and other combinations of technology that significantly overcome the barriers involved and that may be woven together to provide solutions uniquely suited to various competitive situations.

KEYWORDS

- Consumerism
- Patient-provider relationship
- Data ownership
- Application service providers
- Time and cost savings

The Internet has created both opportunities and threats that providers of all stripes must eventually confront to remain viable businesses in the new economy. Although business-to-business (B2B) innovations offer great hope in reducing costs and providing other efficiencies, electronically connecting with patients is a particularly challenging frontier where technical hurdles are generally exceeded by political, legal, workflow, and other barriers. However, the rise of consumerism compels a response—one focused on the needs and demands of the patient.

Consumerism has been building for several years. It represents a subtle shift from selling to buying in the economy. Informed consumers are largely in charge of an increasing number of transactions and acts, according to their perceived needs. This is especially evident with commodities; the layers of organization between manufacturers and consumers have been reduced to the absolute minimum, with a thinning overall margin. Conducting such transactions over the Internet exposes consumers to new ways of communicating with purveyors of products and services, e-mail being a simple but stand-out example.

These experiences are shaping consumer expectations, which are spilling over to healthcare, albeit slowly and with continuing debate. Changes in consumer attitudes have been fueled by the increasing access and availability of information, again, as a result of the Internet. In healthcare, informed consumers are both better enabled and are demanding to be more involved with decision making that involves their health or that of loved ones. Very often the impetus is a life-threatening or serious illness when information— from any source—is of vital interest. Day in and day out, however, simple conveniences and respect for precious time are potentially more relevant as patient satisfiers. Why should it take half a day of inconvenience for ten minutes of service? Few have that kind of time today, and wasting time is offensive, even to those who do.

How should providers respond? Where should initiatives be focused, and what are the critical components of success? Are the underlying business models of various market solutions financially sound? Will they endure and grow? How will personal health records factor into solutions? Who will “own” those data, and who will be charged with the responsibility for managing them? Unfortunately, the answers to these questions are anything but clear. Nevertheless, the possibilities of current technology and successes in industries other than healthcare are, along with consumerism, a collective and serious call to action. Such has been suggested elsewhere.^{1,2} Providers must overcome fear, procrastination, need for perfection, and searches for the “killer app,” as delay itself has its own set of risks.

In the short run, response is a matter of getting started to overcome inertia and uncertainty. One must conclude that there is a critical mass of motivating factors, recognize the real disadvantages of the status quo, and set about a sensible course of action. In the long run, it's truly business survival that has an impact on traditional economic measures of revenue, costs, and market share. However, the ultimate by-products of these activities may be of greater importance, including an evolving electronic infrastructure for healthcare information, secure longitudinal medical records, comprehensive disease management, wellness, and an increased responsibility for health placed on the patient. To paraphrase Ian Morrison, author of *The Second Curve*, nearly every major industrial advance is overestimated in the short run and underestimated in the long run.³

Thoughtful analysis is certainly warranted in addressing what might be done. Among the difficulties in responding to the consumer is choosing among various models of connectivity and component functions, for example, e-mail and electronic medical records. Emerging models include “free-floating” personal medical records that are largely independent of the office-based physician, systems that connect compatibly with both consumers and physicians, and systems in between that connect patients and physicians through e-mail, office triage, prescription refills, scheduling, and so on. In addition, there are consumer content sites, physician content sites, physician practice management support with both administrative and clinical functions, and various blends of these services.

The premise of this article is that a significant set of successful solutions will center on the patient and that the provider-patient relationship is the one on which to begin building the future. The intent is to provide some advice and motivation in getting started.

The heart of the argument is first that consumers are the source of the revolution and must factor heavily into any resolution of equations involving providers. Second, the provider-patient relationship predates by centuries the explosion of modern technology, remains special by its very nature, and deserves any improvement and preservation that technology has to offer. It is further suggested here that the axis formed by the provider-patient relationship should be the central communications corridor around which the constellation of possible transactions among other parties revolves. Third, in this provider-patient space are value-added opportunities and a chance to improve communication, care, and convenience. Finally, at the very least, this is an opportune place and time to start with an Internet strategy. The question is how to get started and obtain benefits that outweigh costs and other risks. The discussion here applies most obviously to physician practices, but the principles apply to acute care organizations and full-fledged integrated delivery systems with all levels of provider services. As with any strategy, the details necessarily depend on organizational structures and ownership models among providers. Consumers are assumed to act independently and to aggregate no further than family groups.

Getting Started

The critical step in developing a successful and valuable consumer-oriented Internet strategy is to carefully examine current workflows involving patient interactions. Simply layering new technology atop existing processes is unlikely to yield savings to help fund the initial investment and ongoing costs that truly worthwhile initiatives will require. The challenge is to look for processes that can be reengineered to achieve greater efficiencies and effectiveness and solutions that can be integrated with remaining systems and processes. Hammer and Champy launched a whole industry of reengineering a decade ago in suggesting that processes should be obliterated and replaced as a prerequisite to automation.⁴ This analysis needs to happen when it comes to the common patient interactions in a provider organization to uncover specific automation opportunities afforded by today's Internet-enabled solutions. It is simply a common-sense matter of economic and technical discipline to counter both the hype for "just jumping in" as well as the resistance of the status quo.

A good strategy should have offsetting savings to at least partially compensate for the trouble and risk of proceeding. Savings are posited here to only occur upon fundamental repair to current processes. Whether any provider Internet strategy will produce savings to completely overcome costs is an open question. However, it seems entirely reasonable to think that some improvements in customer service might be sufficiently valued by consumers such that small fees may be assessed, if not welcomed, as an alternative to the status quo. Thus a combination of savings and fees is a potential means to cover costs.

One must also be willing to intrude on current processes for the sake of optimized customer service and potential cost savings where they may be found. The advantage of any resulting hard savings is that it potentially allows capture of intangible benefits related to convenience, satisfaction, and perhaps quality that aren't likely, by themselves, to convince providers to part with precious capital. "Soft" (intangible) benefits further expand the service offering perceived by the consumer and the qualitative benefits derived by the provider, both on the "free ride" of benefits producing real savings. It could be argued that, over time, intangible benefits may translate into consumer preference, payer preference, and increased market share and thus become tangible benefits.

But it is better if they are by-products of a self-funding effort that can build momentum and payoff from the outset.

It is important to address scope early in the process of evaluating options and to make critical choices in terms of project size, impact on operations, time to activation, overall cost, and so on. Essentially, this is a risk-reward analysis with large scope, usually involving greater risk but also greater potential payoff. The key point is that as projects increase in scope, they generally take longer to implement and penetrate farther into current operations. Both of these results are significant risk factors. Plenty of otherwise good projects fail under the weight of complexity and protracted time to market. If anything is true about Internet strategies, pertinent to this discussion, it is being fast to market, experimenting with options, and making real-time adjustments from actual system experience.

Provider-Patient Transactions

Following are a number of provider-patient transactions that would reasonably balance improved customer service, as well as affect provider operations and project scope. These transactions address important and commonly cited issues from the viewpoint of the consumer, providing a critical mass of convenience. At the same time, several significant provider processes are effected that can result in cost savings. Few assumptions are necessary regarding underlying provider automation, making it possible for these functions to stand alone or to be integrated into existing systems in a variety of ways. The resulting improved communications strengthen the provider-patient relationship, resulting in a win-win for both parties. Internet provider-patient communications also lead to a redesign of ambulatory care processes characterized by the more selective use of office visits.

Patient-provider communication via the Internet is a new and exciting concept designed to facilitate on-time healthcare delivery using the information superhighway. The Internet provides an innovative approach to the delivery of service and the rapid flow of information. The following list illustrates the varying components of patient-provider communication enabled by Internet technology:

- **In-bound message triage:** A key point of entry into a provider's operation, the triage function, is often performed by a nurse, who either handles a request personally or routes patient communication to an appropriate individual for action. This function is enhanced with automation; requests can be categorized, accumulated for batch work, routed to destinations (one or more) with value-added annotations, and eventually answered or closed.

- **Appointments and schedules:** The center of activity and ongoing provider business is the continual flow of patients through the operation. One challenge is to coordinate and efficiently fill the provider's schedule in accordance with patient demand. Another is to respond to increasingly busy patient schedules. Electronic communication facilitates the back-and-forth communication that is sometimes necessary to achieve these goals and, in any case, makes the process faster and more convenient.
- **Prescription refills:** This common special instance of inbound triaged requests lends itself to electronic routing, as needed. Personal physician attention may not be needed, depending on the circumstances. The loop may be closed via messages to the patient and preferred pharmacy.
- **Previsit preparation:** This is the collection of data in advance of an office visit, including the reason for the visit. This exchange can be structured using electronic forms to ensure that important data are gathered and available when needed. A response might also involve patient instructions pertinent to the visit.
- **Post-visit follow-up:** Helpful in closing the loop on office visits with routine results, an electronic communication is also an important means to emphasize advice, encourage compliance with medications, and refer patients to Web-based sources of reinforcing or requesting information with which the provider is comfortable.
- **Minor acute problems:** Patients well-known to the provider could get advice and reassurance for common acute problems not requiring a visit. The flu season, for instance, might manifest as a flurry of e-mails rather than a deluge of patients in the office. Patients can be seen more selectively.
- **Chronic disease management:** Continuous, on-line communication allows for patients to provide regular data for problems such as diabetes, hypertension, and obesity and receive coaching responses by physicians or changes in a treatment regimen. Visits for chronic diseases might be less frequent, with overall communication increased.
- **Questions and call-backs:** Patients have questions concerning their health, medications, travel, and so on, that might be handled electronically in lieu of office visits, depending on the nature of the inquiry. As with follow-up, messages can be further enhanced with annotations from electronic reference or Web-based sources.
- **Reminders:** Messages reminding patients of periodic examinations, age-related testing, and upcoming appointments are useful to keep busy patients mindful of schedules and important health matters.
- **Broadcast messages:** Unique with electronic messaging and similar to e-mail, this is an ability to send the same message to multiple patients. Patient selection can be based on groups assigned by the provider, age, gender, disease state, or some combination of patient characteristics that form a target population for the communication. The communication might be relevant news concerning a new drug, diet, or diagnostic testing, perhaps including a provider interpretation. Others might be seasonal advice concerning allergies or safe food storage, provider news, and so on.

Advantages of Web-Enabled Communications

The common beneficial element in the communications outlined is that they may be handled in an asynchronous manner, where messages between provider and patient are separated by time and handled by the parties at their convenience. Most have experienced this with their use of e-mail. Here, the component transactions of an involved provider-patient interaction (for example, an office visit) are parceled out over time so that various waiting times are minimized, especially those of the patient. Transactions are ideally structured to ensure the inclusion of essential data and avoidance of delays, as noted earlier. For example, patient requests could be organized into forms that include data that are necessary to serve a particular request (insurance company plan number, drug name, and so on).

This overall set of communications has the important effect of amplifying the overall services provided, especially the office visit, by preparing for efficient service consumption in advance and following up to help ensure understanding, compliance, and an optimum outcome for the service rendered. In addition, reminders and broadcasts can serve to refresh the relationship where communications and visits are infrequent with generally healthy patients. As marketing professionals know, it is much easier to retain a customer than it is to gain a new one. An ongoing, if infrequent, dialog can be an important aid in retaining patients.

These transactions involve established patient relationships, although their existence may attract new, discriminating patients. Obviously, they are oriented around routine care and not applicable in emergency situations. And these transactions are about the "customer-facing" side of the provider. There are indeed "back-door" elements of a provider organization that lend themselves to B2B automation, largely independent of what may be accomplished in the provider-to-consumer space. Examples include Internet-enabled strategies to order supplies, process patient claims, and process staff payroll, all generally to reduce costs and focus on core competencies. Although they could be combined with the examples noted earlier in a comprehensive automation effort, they are not considered in this discussion.

Payoff

The payoff from Internet-enabled communications arises in several ways; most involve time savings and efficiencies. The reengineering trick is to capture and aggregate saved time, redirecting this valuable resource to extended patient times and incremental patient volumes. At a minimum, workflow and basic operations should be smoother, with perceptible improvements in customer service.

More Efficient Use of Time. Substituting asynchronous, Internet-based communications for traditional telephone conversations can reduce the number of interruptions, incidences of "telephone tag," and the inefficiencies of getting two otherwise busy parties to coordinate communication time. Telephone time can be reserved for essential two-way exchanges and scheduled along with appointments. Communications efficiencies can reduce staff time devoted to triage, allowing focus on incremental patient volume, additional value-added communications, or other work. More efficient use of time could result in a net savings of time over the course of the work day, week, or month.

Documentation. Good systems can retain records as by-products of communications and message routing for inclusion into the medical record and subsequent reference. The exchange is permanently documented with regard to date, time, and content. Such documentation does not always occur with telephone conversations; it is difficult and time consuming for providers to dictate or transcribe notes based on verbal exchanges. The automatic trail of electronic communications is more complete and may afford some protections from liability.

Visit Quality. It is not hard to imagine that patient encounters would be improved when preliminary information and questions are processed in advance. An increasing number of patients come armed with loads of information, good and bad, usually obtained from the Internet. A certain element of surprise is reduced during the visit, and more time can be devoted to pertinent patient care issues and alternatives when there is an acknowledgment of information sources and an understanding of its use in a particular provider/patient relationship.

Fewer Office Visits. Patient office visits could conceivably be reduced by good follow-up communications, referrals to alternate sources of information, reminders concerning compliance with medications, and encouragement in the area of wellness. At the same time, important office visits might be prompted by news, reminders, and so on, the net increase or decrease of which has not been studied to the author's knowledge.

Combination with Other Internet Features. All parties using Internet-based communications generally have access to the full range of Internet functions, particularly the World Wide Web. Web sites and other material can be referenced and incorporated into communications, allowing the provider to direct patients to more appropriate or trusted sources of information. Realistically, information discovery is likely to be a two-way process; patients may be the first to discover some new information and content sources of use to both provider and patient alike; less reliable information sources can be discussed and possibly dismissed. Finally, one-to-many broadcasts, distribution lists, and database-oriented messaging leverage can strengthen the communications capability of the provider.

Provider Capacity. Managed care and other methods of cost reduction have forced providers to increase patient volumes to offset revenue loss. However, provider service is essentially based on time, and little opportunity remains to further compress patient visits. Incremental provider capacity might arise through a combination of the improvements cited earlier. Some systems of the scope suggested herein could be funded by as few as two incremental patient visits per month.

It is important to recognize that time savings will likely take time to reach maximum levels as providers and staff gain proficiency in the use of new tools. Patience and perseverance will be important watchwords in the implementation process, and it is important to continue chasing time savings as a continuing goal of using these systems. Providers also have important choices to make with time benefits, allocating portions of time saved to longer patient visits, incremental volume, or perhaps a less chaotic schedule.

Caveats and Other Considerations

Embracing and acting on an Internet communications strategy is largely uncharted territory and poses various challenges. Each should be given serious thought but none pose insurmountable barriers to action. Part of the over-all analysis involves decisions on how certain things will be handled. The potential competitive advantage in moving forward is tied directly to the fact that the "right" answer is not clear, and those taking the bold, initial steps stand to make significant gains over competitors. Providers are advised to seek qualified help when necessary and not depend entirely on commercial vendors for all of the answers. Some of the larger issues are briefly reviewed next.

E-mail. E-mail is a possible solution to patient communications. Indeed, approximately 4 percent of providers have begun using e-mail for patient correspondence.⁵ Good suggestions for use, along with ethical and legal considerations, have appeared.^{6,7} Current e-mail systems have some serious disadvantages, however. They are generally systems for discrete messages. They are not designed as complete systems of communication and will operate that way only with a heavy dose of customization, policy, and administration. Even then, the issue of scale remains in large group settings. The use of popular and powerful systems in settings with multiple providers in one or more offices would also very likely pose technical and administrative challenges beyond the capabilities of provider staff. While they can be obtained in the market, such resources are expensive and would only provide a portion of the administrative support required. Then, there is the issue that provider and patients will almost surely use an assortment of e-mail systems linked to their respective Internet service providers. A dedicated, Web-based solution is needed.

Although e-mail alone has limitations, it is useful in combination with Web-based solutions. In particular, e-mail is good for "out-of-band" communications that direct patients to the Web for messages and communications. That is, e-mail can serve as a means to notify patients that new messages, information, and so on, are available via the more secure provider-patient system.

Data Ownership and Security. A growing debate centers on security and the ownership of data associated with healthcare services. This is a complex subject; firm resolution can unfold only over time. One issue pertains to ownership as it relates to patient and provider. There is some consensus that medical data belong to the patient and that providers have a stewardship role in its management. Uncertainty surrounds the medical record itself and patient-identifiable transactions involving, for example, orders, results, diagnosis, and claims. Providers can be guided by the regulations involving paper records, phone conversations, and current processes. However, they are advised to seek qualified help when settling on one solution or another and to develop and implement firm policies and procedures concerning system and data use. The complexity of compliance also underscores the advantages of dedicated commercial solutions from vendors, which can be required to ensure through system contracting that protections afforded by a system keep pace with evolving federal and state laws.

Data ownership also needs to be clear between provider and vendor. Special attention must be paid to vendor roles and responsibilities, and any access or rights to patient data. Patient data in individual and aggregate form have significant value, legal issues notwithstanding. It should be crystal clear as to what, if any, access the vendor or other third party will have to patient data. Providers are advised to price vendor products and services in “pure form” without any offsetting amounts for data usage rights.

Subsidized Solutions. Advertising and other subsidies may be offered by vendors to fully or partially offset fees, but there is a price to be paid. Discounts are usually exchanged for the right to place banner or other advertising at strategic points in the system. It may be judged a worthwhile nuisance—or something more sinister. Sometimes customer information is intercepted in conjunction with advertising inquiries—a special case of data ownership. Generally, advertising has come under fire for bargaining away privacy in exchange for services at reduced or no cost. It is best avoided, and clarity over this issue with the vendor is paramount.

Market Stability. Commercial models and service offerings in the area of interest are unusually dynamic. There are scores of companies with overlapping and sometimes confusing arrays of products. The models are mutating; companies are being acquired and some are disappearing for lack of customers and revenue. Anyone considering one solution or another must examine the track record of the company and assess its long-term viability. Bear in mind that what is valuable to the provider and commands a price in the market also stands to generate revenue streams to the vendor that help ensure viability, either as a stand-alone company or as a potential acquisition. Unfortunately, there is no escaping the tentative nature of some products and companies. Again, if it were clear, risks would be lower but so would competitive benefits.

Adoption by Patients. Providers must also realize that not all patients can and will adopt Internet-based communications. Analysis should extend to forecasts of patient adoption, impact on process reengineering opportunities, and a schedule of shifting costs and benefits with various levels of use. Partial use will be the norm for an indefinite period, depending heavily on the success of these communication models, patient demographics, the long-term direction of healthcare, along with a host of other factors. In the interim, providers should consider incentives to increase use and emphasize benefits that resonate with consumer issues.

Application Service Providers. Web-based services are increasingly being offered under an application services provider (ASP) model that assumes reliable Internet connections of appropriate bandwidth. An ASP lowers entry and exit barriers, blunts capital outlays, and facilitates the packaging of multiple service providers into a virtual solution uniquely tailored to specific needs. There are numerous system architecture and contractual issues pertaining to local and remote hardware, data, and services. These must be addressed to base critical business functions on such a model. As with the services themselves, this model of service delivery is yet to be fully tested; a thorough discussion of ASPs is beyond the scope of this article.

Personal Health Records. Personal health records (PHRs) in the context of this discussion are patient-owned and managed records in electronic form. Most are Web-based, the most interesting of which are intended to work with a provider-based electronic record system. Nothing about an organized and comprehensive set of patient communications precludes the use of PHRs by patients. Some commercial solutions incorporate PHRs, patient communications, and provider-based medical records into a comprehensive solution. They are certainly worthy of consideration by providers but are up the scale of complexity and risk. PHRs may actually be an evolutionary step up from simpler provider-patient communications. Providers might give additional weight to commercial solutions that offer linked PHRs and office-based records as an option.

Conclusions

Over the ages, people have sought out their physician for advice and treatment of pain and other ailments. Today, the process of obtaining care engenders its own unique pain in the form of telephone tag, insurance snafus, and waiting lines, to name but a few of the common ills in our care delivery "systems."

All of it stands in stark contrast to conveniences and plain pampering that are emerging in other industries where similar frustrations are melting away in the face of rising consumerism. At the same time, a race is under way to intermediate the space between the consumer and health care so as to control transactions, create and sell information stores, and potentially "represent" patients to third parties—with or without their permission. Anyone with existing patient relationships or a desire to grow market share lets this happen at their business peril.

Pressures seem certain to grow. In the not-too-distant future, large numbers of consumers may have complete freedom to choose and switch among multiple providers as they seek to satisfy their unique needs for quality, service, and price. Various renditions of "retail health" in the form of health vouchers provided by employers have already emerged. It is not hard to imagine a quick acceleration of this trend, perhaps sparked by a downturn in the economy or ever-greater pressure for public companies to increase profitability.

The result shifts risk onto patients and helps stabilize employer costs for healthcare. Regardless of the reasons, the result would put the patient in charge in a much bigger way and bring consumerism to full bloom.

The best defense for providers is a good offense, that is, having a strategy that provides operating benefits and anticipates the future. Fortunately, an effective Internet strategy does not require access to capital markets or large sums of money. Several solutions and pricing strategies that address the functions noted can be found in the market today.⁸ More comprehensive solutions can also be found to meet specific needs, though larger projects are typically associated with greater risk.

Effective solutions proposed in this analysis do not necessarily exclude other parties but do strongly suggest a hierarchy of relationships that establishes those between provider and patient as primary communications and drivers of secondary communications with other parties. That is, the best solutions seek to emphasize, enhance, and preserve the patient-provider relationship.

They put the consumer first, provide a basis of support for consumer-driven health transactions, and create an environment where patient health data can be accumulated, accessed, and controlled by the patient but under the guidance of a chosen provider. Finally, simpler solutions are to be preferred over complex ones to help control risk, ensure more rapid implementation, and hasten analysis of costs and benefits.

Little cause for comfort or justification for delay should be attributed to the waxing and waning of health care and other dotcoms. In fact, the opposite is true. Dotcom failure has much to do with the success of traditional bricks-and-mortar businesses adopting Internet strategies. Leveraging Internet capabilities to deliver healthcare services is equivalent to providers enhancing their services and capitalizing on their established operations and physical presence. In the end, healthcare is delivered locally, and consumers turn to local providers in the majority of circumstances surrounding care and treatment.

Jack Welch has been credited with a remarkable rebirth and growth of General Electric over two decades. The company's latest initiatives have involved making GE successful in a world transformed by the Internet. In discussing his latest initiative, Welch notes the following: "Comfort is not the issue anymore [in using the Internet]. The issue for us is that we don't need something between us and our customers . . . that [using Web sites] helped us learn the big lesson: Never let anyone get between you and your customer."⁹ As to getting going, the research firm Cyber Dialog assesses the situation this way: "For physicians, the question is not whether they should or should not encourage their patients to use the Internet, because a high percentage of their patients already do. The question is whether physicians will participate themselves or leave it as a medium for others to control."¹⁰

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