Diffusion of videos on US hospital web sites

Edgar Huang
School of Informatics, Indiana University-Purdue University Indianapolis, Indianapolis, Indiana, USA

Abstract
Purpose – The purpose of this paper is to examine the adoption of videos on US hospital web sites in an attempt to find out how this new medium had been used by hospitals for marketing purposes.
Design/methodology/approach – Based on a systematic probability sample of the 6,456 US hospital web sites, a content analysis is conducted to measure the effects that hospital service quality, hospital size, hospital affiliation, and geographic population had on the diffusion of online videos.
Findings – The paper has found that, although the critical mass for using videos on hospital web sites has been reached, for the overwhelming majority of the hospitals, including those that are already using videos, there is still a long way to go in learning how to harness the power of video for marketing and to make videos an integral and routine part of their marketing strategy.
Research limitations/implications – Further studies need to be conducted to uncover hospitals’ attitudes and users’ attitudes toward new media adoption on hospital web sites for presenting healthcare information.
Practical implications – The paper gives readers an overview of the current state of hospitals’ efforts in adopting new media for marketing and can greatly help hospitals better position their marketing strategies to serve their patients, communities, and hospital staff, and invest in the right technology and new recruits.
Originality/value – The literature search indicates that this is the first study of its kind that has attempted to find out how hospitals have taken advantage of video, a salient Web 2.0 phenomenon, to present healthcare information on their web sites as a marketing strategy.

Keywords Hospitals, Internet, Video, Marketing strategy, United States of America

Research paper

Introduction and literature review
American hospitals have been criticized for many years for presenting limited and static information on their web sites. Inspired by the huge success of YouTube videos, some hospital web sites have attempted to use video, a prominent Web 2.0 phenomenon, to attract internet traffic. This study examines how hospital web sites have used videos to market themselves and how online videos have diffused through different kinds of hospitals.

As Joe Lister, a web developer who has worked for the marketing divisions of large media companies, said, “It is accepted that digital media will become another part of the marketing manager’s set of tools” (Dewdney and Ride, 2006, p. 123). A hospital web site has also been historically regarded as a marketing tool (Shepherd and Fell, 1998; Fell and Shepherd, 2001; Bishop et al., 2006a). As to how to do marketing on their web sites, hospitals have gone through a long-learning curve. Information technology (IT) staff members who dominated the computer operations for hospitals in the early days (Shepherd and Fell, 1998) were later joined by marketing staff and clinical departments (Campbell et al., 2002). Hospitals learned that integration is needed in e-health. In other
words, the e-health web site is an integral part of the operating practices of the organization and is part of the daily activities of a large number of staff and physicians. A hospital web site should presumably serve many clients, such as patients, physicians, nurses, job seekers, donors, and so on. At the Healthcare Information and Management Systems Society 2008 Conference, Jonathan Bush, Chief Executive Officer of Athenahealth, pointed out, however, that one of the most exciting trends in the health IT market is patient-centricity (Lorence et al., 2005; van Beusekom, 2005; Sarasohn-Kahn, 2008). Providing patient education on a hospital web site is an application of the altruistic marketing concept, which has been widely and successfully practiced by many brand-name companies outside of the healthcare market, such as FedEx, Walgreens, Hyundai, JetBlue (Katz, 2009). “What makes altruistic marketing such a compelling strategy is that it is a marriage between business marketing goals and objectives with a broad range of ‘feel-good’ causes” (Family Business Experts, 2009). Inside the healthcare market, some “Most Wired Hospitals” named by Hospitals & Health Networks (H&HN) magazine have begun to provide self-care resources on their web sites to supplement their web-enabled patient education at the bedside (Solovy, 2003).

The problem, however, was that hospital web sites were often “brochure-ware” (Randeree and Rao, 2004). In other words, they placed their print content on the web without taking advantage of interactivity and multimedia, two important features for online presentation. In their 2004 study that reviewed a sample of 100 premier hospital web sites, Randeree and Rao found little progress in the goal of making the web site a fully functional unit of the hospital. The sites, they said, were limited in scope and selective in their provision of information in light of the new Health Insurance Portability and Accountability Act (HIPAA) regulations. In 2006, only 39 percent of visitors reported that they were satisfied with hospital sites overall, well below the 90 percent satisfaction levels media and retail sites enjoyed (Bishop et al., 2006b), and only 18 percent of online consumers had visited a hospital web site with the majority of site users sticking to basic facility facts like visiting hours or directions (Bishop et al., 2006a).

People’s perceptions of hospital web sites affect their use of such sites. According to the Pew Internet and American Life Project (2005), while eight out of ten internet users used the internet to find healthcare information, people might overlook most hospital web sites because of their lack of relevant or useful health information and interactive services. Confirming the Pew findings, a more recent study based on street interviews published online by Priority Publications showed that consumers may be more likely to begin their online searches for health information at Google and WebMD rather than at a hospital or HMO web site (PRWeb, 2008). Jim Larranaga, President of Priority Publications, said, “This could mean HMOs and hospitals need to do better offline and online marketing to position themselves as health information providers” (PRWeb, 2008). Bishop et al. (2006b) also pointed out, “To successfully build their brands online and engage consumers, hospital marketers must improve web site usability by employing a user-centric approach to design.”

Over the years, several authors have proposed some very useful strategies to implement user-centric approaches on hospital web sites including perspectives of design, content, hospital staff coordination, and cultural transformation (Lefkof, 1999; Fell and Shepherd, 2001; Campbell et al., 2002; Gallant et al., 2006), but very few have mentioned using video as an online marketing tool. Video has been a widely used tool for online entertainment, education, marketing, and social networking, not only on
YouTube and other video hosting sites, but also on thousands of government, company, organization, school and information web sites. According to ComScore (2007), a global internet information provider, nearly 75 percent of US internet users watched an average of 158 minutes of online video per user during May 2007, during which they viewed more than 8.3 billion video streams online. That number quickly reached 10 billion in December 2007 (Kelsey Group, 2008). As Kelsey Group estimated:

[... ] as video gains more exposure and acclimation among local searchers, demand will only grow among small and medium-sized businesses, which will increasingly see it as a viable local marketing tool.

This is because it “combines the entertaining, emotional and branding attributes of video with the direct response capabilities of the Internet and local search” (Kelsey Group, 2008). Does hospital marketing need these traits from videos?

Matthew Dillingham, Vice President of MedTouch, a company that designs web sites in healthcare areas, has fervently evangelized using videos on hospital web sites. Dillingham (2008b) said:

Many hospitals still do not understand the importance of video. You can see that by the reams and reams of health content and testimonials they put on their sites. In most cases visitors who come to a hospital’s web site are not looking for a long, drawn out explanation of the greatest technologies [...] What is a better way to do that than video?

He reminds web designers that users of a hospital web site might be in the middle of a very stressed time of their lives, and the last thing they want to do is dig through content that is not relevant or engaging:

If your bounce rate [...] on your site is over 50%, most likely you have content that is not engaging and actually pushes your visitors and ultimately patients away from your institution” (Dillingham, 2008a).

Therefore, he suggested that videos be extensively used and used now, not in the future, because they are much easier and less expensive to develop, create, deploy and maintain (Dillingham, 2008c).

Some hospitals have already used online videos to establish their corporate identities; advertise their doctors, nurses, services and technologies; recruit medical professionals; broadcast live surgeries; educate patients and doctors; provide hospital information; show patient testimonials and doctors’ research; and attract donors. In fact, America’s Health Network web site (www.ahni.com) presented the first live Webcast of open-heart surgery and birth both in 1998 (Business/Health Editors, 1998). Those hospitals that have used either on-demand videos or live Webcasts on their web sites have reported positive results including helping patients find the right doctor and significantly boosting patient volume (Gentry, 2006; Greene, 2008). Amidst the intense competition among hospitals vying for patients, especially those in need of high-margin, high-prestige procedures such as heart and vascular surgeries, St Francis Heart Center in Indianapolis, Indiana presented a live Webcast of a procedure to repair an abdominal aortic aneurysm on a man in his 80s (Lee, 2006). slp3D, the company that hosted the live Webcast, touts that live Webcasts attract an average audience of 1,500-2,200 medical professionals, with many more nonmedical people watching as well. The company also said that an average of ten to 20 surgeries attributed to a Webcast are booked within three weeks of an event. In the three to four months after that operation, a web site running the archived surgery was receiving
approximately 100 hits a day. A Florida couple brought their five-year-old son to Akron Children’s Hospital after the hospital held its first Webcast of heart-catheter surgery at the hospital. The Florida boy had been diagnosed with the same condition – tachycardia – as the young patient had in the Webcast and could be cured with the same surgery (Suh, 2006).

Given these benefits, many questions still demand answers:

- Has the online video adoption rate reached a critical mass among US hospitals?
- What are the primary reasons hospitals use videos?
- How convenient have hospitals made videos for user consumption?
- Is there a gap among hospitals in terms of video adoption and implementation?

The answers to these questions may help hospitals understand where they are nationally in terms of their web video development; better position their marketing strategies to serve their patients, communities, and hospital staff; and invest in the right technology and new recruits. In addition, productions in many new media formats such as digital images, 2D animations and 3D animations often end up being converted to or assimilated into videos for online presentation. Therefore, a study of online videos can give readers a better picture of hospitals’ efforts to date in adopting new media for marketing.

This study is based on Everett M. Rogers’ diffusion of innovation theory. Essentially, the theory explains how, why and at what rate a new idea, especially a new technology, penetrates a social system. “Diffusion refers to a process in which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 1995, p. 5). Provided that decisions on new idea adoption are based on free will, each member goes through five steps in adopting an innovation – knowledge, persuasion, decision, implementation, and confirmation (Rogers, 1995). According to this theory, for most members, an innovation decision relies heavily on those made by other members of the system.

Rogers (1995) characterized varying degrees of user participation of technologies into five categories: laggards, late majority, early majority, early adopters and innovators. Rogers described early adopters as instrumental in getting an innovation to the point of critical mass, and hence, in the successful diffusion of an innovation. The early adopters of an innovation profoundly affect the innovation decisions of late adopters. Rogers used the term “critical mass” to refer to the point at which enough members have adopted an innovation that the innovation’s further rate of adoption becomes self-sustaining. Critical mass is usually reached at a 10 to 25 percent adoption rate, and when it is reached, the diffusion of innovation likely becomes irreversible (Mahler and Rogers, 1999). This study examined the characteristics of both early adopters and the late majority.

According to Rogers (1995), people adopt an innovation if they believe that it will enhance their utility and yield some relative advantage to the idea it supersedes. How much the innovation costs, to what degree the innovation will disrupt other functioning facets of daily life, whether it is compatible with existing habits and values, and whether it is hard to use all have roles in decision making. By examining the hospital web sites in the USA, this exploratory study aims to find out whether America’s Best Hospitals 2008 ranked by US News[1], large hospitals, hospitals networks, and
hospitals in more populated states tend to adopt online videos earlier and provide better online video services than their antitheses.

An exhaustive literature search was conducted from late 2008 to early 2009 on all major medicine, technology, and social sciences databases and the internet. Literature that studied hospital web sites was rare, and no literature regarding videos or even multimedia on hospital web sites was found. Most writings regarding hospital web sites and their videos were from trade magazines, newspapers, and the internet. However, two papers that were engaged in hospital web site studies have been helpful to this study.

Gallant et al. (2006) studied 100 premier hospital web sites to determine the content and interactivity users preferred so that hospitals can construct user-centric hospital web sites that can be trusted and personalized. Since research on hospital web sites was (and still is) scarce, the authors used a grounded theory approach. They conducted a usability test on a high-fidelity working web site prototype of a hospital. Participants performed 34 task scenarios using a think-aloud protocol. After the formal usability testing was finished, the test facilitator turned to an interviewing format to construct a conversational environment that produced questions and probes based on participant users’ experiences following behavioral testing. The findings show that trust, credibility, usefulness, and personalization are vital factors for a hospital web site to be successful.

In a similar study based on a convenience sample of 300 patients seen at an academic family medicine practice, Liszka et al. (2006) used a self-administered survey to obtain information on the use of the internet, demographics and socioeconomic profile, presence of a chronic medical condition, and self-rated health. The purpose of the study was to determine the extent of internet access and online health-seeking and the feasibility of implementing internet services for an urban, residency-based practice. The study concluded that the internet plays a major role for patients seeking healthcare information in their specific patient population characterized by low socioeconomic status, low education level, and high minority percentages. The authors stated:

For any primary care office around the country, offering reliable educational materials for patients and not adversely affecting the busy flow of the provider schedule is difficult to accomplish. Providing internet resources not only allows patients to explore more information on their condition at their own pace, but also provides a sense of empowerment when they make positive steps toward their own health.

Because of the nature of the small, convenience sample, the external validity of the study could not be extended to a larger population. The conclusions from these two studies have confirmed that the current study is on the right track in its online video exploration of marketing usage. Their literature review helped the author find more useful studies.

**Methodology**

In this study, a content analysis was conducted among US hospital web sites regarding the status of video usage. To legitimately claim external validity, the author derived a systematic probability sample from the list of all hospitals in the USA posted on the *US News* web site[2]. This was the most complete list for sampling hospitals. One out of every three sites was sampled. In total, 2,152 of the 6,456 web sites were in the sample. For a population of 6,456, a statistically viable sample does not have to be so large[3]. The decision to dramatically enlarge the sample was made to include as many of America’s Best Hospitals 2008 (best hospitals)[4] selected by *US News* as possible so that meaningful comparisons could be made between them and the rest of the sample.
To compare video adoption rates and usage, the study used the following four approaches to categorize hospitals as independent variables:

1. best hospitals vs the rest[5];
2. hospitals of small, medium, and large sizes in terms of number of beds[6];
3. hospitals in a national or regional network vs independent hospitals; and
4. percentage of hospitals that use videos in different states in terms of state population.

The dependent variables included the number of videos used, video content, video promotion, video frame size, video format, and presentation consistency.

The number of videos used on a hospital web site can certainly indicate how aggressively the hospital is using them to show content that is otherwise shown in text. Based on the notes taken during the content analysis coding regarding the typical number of videos most sites carried, a scale was created to suggest such aggressiveness of implementation:

- 1-2 videos, least aggressive;
- 3-10 videos, somewhat aggressive;
- 11-20 videos, aggressive;
- 21-50 videos, very aggressive; and
- more than 51 videos, extremely aggressive.

Hospital video contents were divided into the following eight categories as defined below based on the face values of the videos derived in a pilot study:

1. Establishing corporate Identity and advertisement. Promoting the public image of the hospital, such as caring, providing high-quality services, community oriented, etc. or advertising the hospital services and personnel.
2. Informational. Providing specific information regarding the hospital services, employment opportunities, time and location of hospital operation, procedure preparation, meetings, lectures, professional training, etc.
3. Educational. Showing patients how to deal with different kinds of symptoms, diseases, or medical challenges and demonstrating medical facilities or equipment in treatment. None of these videos is hospital specific.
4. Public service announcement. Promoting a cause or a health habit.
5. News. Showing what is new at the hospital.
6. Patient stories. Showing patients’ stories and testimonials[7].
7. Documentary. Showing the history of the hospital, doctors’ experiences, etc.
8. Entertainment. The videos in the form of entertainment such as MTV and drama.

To find out how convenient the hospital online videos were, the study also examined how the videos were promoted (is there a video or a video link on the home page or are the videos hidden on inside pages?), how big the video frames were (the video widths were measured), whether a streaming technology or progressive downloading technology was used, what video format(s) a site used, and whether video presentations were
consistent (does a site extensively mix video frame sizes, delivery approaches, and formats?).

To determine whether a site contained video(s), the coders examined the homepage of each site. If no video was found, the key word “video” was used in a search bar to search videos on inside pages if a search bar was provided on the site. Otherwise, a manual search was conducted. A site was counted as having videos only if the videos were shown on the site. A coding sheet was designed to maximize the coding reliability. A graduate student in communication studies was trained to serve as the second coder in addition to the author. The intercoder reliability index using Scott’s Pi was 0.9 on two major variables.

Appropriate parametric and non-parametric statistical procedures were applied to analyze the data. The significance level for testing the correlation coefficient was set at 0.05.

Findings

A. Has the online video adoption rate reached a critical mass among US hospitals?

By the end of 2008, of the 2,152 sampled US hospitals, 1,847 (86 percent) had a web site. About 28 percent of the 2,152 sampled hospitals used one or more videos. If only those hospitals that had a web site are counted, 33 percent of the hospital sites had one or more videos. The findings below are based on the hospitals that did have a web site.

In terms of number of videos used, most hospitals belonged to the “least aggressive” group (1-2 videos) (33 percent) or the “somewhat aggressive” group (3-10 videos) (28 percent). Very few hospital web sites were “extremely aggressive” (>51 videos) (8 percent) (Figure 1).

B. What are the primary reasons hospitals use videos?

The top contents included:

- directly promoting the hospital’s corporate identity, its services and medical personnel (50 percent);
providing a variety of hospital information (42 percent); and
educating patients regarding medical procedures and disease prevention (42 percent) (Figure 2).

Half of the hospitals showed only one category of content in videos (Figure 3). If only one category of content was presented, the above order of importance was retained, but the importance of promoting hospital corporate identity, its services and personnel was emphasized while patient education was somewhat marginalized (Figure 4). The number of videos used and the number of categories of videos were positively correlated: \( r(597) = 0.486, p < 0.001 \).
C. How convenient have hospitals made videos for user consumption?

*Video promoting.* Very few hospitals (7.4 percent) promoted their video services by posting a video on the home page. Some used one or more textual links or image links on the home page to link to the videos on inside pages (28.2 percent). Most hospitals that carried any videos, however, hid their videos on inside pages (64.4 percent).

*Video size.* Most web sites (65 percent) were using the conservative 320 pixels width (Figure 5). A majority of the sites used one size (75 percent), and 20 percent of them used two sizes.

*Video format.* The most often seen video formats on hospital web sites were Windows Media (51 percent) and Flash (49 percent). QuickTime still had a sizable share (25 percent), but Real (3 percent) almost fell out of the competition. Most sites used one video format (74 percent) while 22 percent used two.
Video delivery. Very few hospital web sites used a streaming technology (22 percent). Most sites used a non-streaming approach (76 percent). Very few used both (2 percent). Embedding was the most popular mode of video display (44.5 percent), but assigning a video to an external media player (33.7 percent) or to an external web page, especially to a video library (18.6 percent) was also sometimes observed. Very few sites (3.2 percent) mixed these three modes of video displaying.

D. Is there a gap among hospitals in terms of video adoption and implementation?

The data show that 80 percent of the web sites from the best hospitals adopted online videos while only 32 percent of the rest of the hospital web sites had done so. This difference is significant, $\chi^2(1, n = 1,849) = 49.5, p < 0.001$.

An analysis of variance also showed that the effect of hospital size was significant in terms of number of videos used, $F(2, 603) = 8, p < 0.001$. Post hoc analysis using the LSD post hoc criterion for significance indicated that larger hospitals ($M = 26.9$, $SD = 43.9$) used significantly more videos than medium-sized hospitals ($M = 16.7$, $SD = 24.6$), and medium-sized hospitals used significantly more videos than smaller hospitals ($M = 12.8$, $SD = 12.8$).

Significantly more hospitals in a network (63 percent) adopted videos than independent hospitals (24 percent) did, $\chi^2(1, n = 1,514) = 68.5, p < 0.001$.

Overall, the larger the state population was, the higher the percentage of hospital web sites that contained videos, $r(48) = 0.286, p = 0.042$. Figures 6 and 7 list the states that had the highest and lowest hospital online video adoption rates respectfully.

Significantly more best hospitals (37.8 percent) than the rest (17.3 percent) built an external video gallery as a dedicated video showcase place and were less likely to use an external media player or mix embedding and other kinds of showing modes, $\chi^2(3, n = 602) = 12.7, p = 0.005$. Because of this difference, significantly more best hospitals (21 percent) than the rest (6.5 percent) posted more than 50 videos, $\chi^2(4, n = 608) = 12.48, p = 0.015$, since they had a video gallery. Other than these two differences, both types of hospitals tended to show only one kind of content and the

Figure 6.
Top ten states with hospital online video adoption rates
same variety of content, hide videos on inside pages, use only one video format and one size, and adopt a non-streaming delivery approach.

Large and medium-sized hospitals also tended to mix videos of different contents than small hospitals did, $\chi^2(6, n = 599) = 23.43$, $p = 0.001$. Other than these two differences, hospitals of all sizes tended to show the same variety of content, hide videos on inside pages, embed videos on web pages (though assigning videos to an external page or to an external media player was also often seen), use only one video format, and adopt a non-streaming delivery approach.

Hospitals in a network had a significantly higher tendency to mix video, $\chi^2(3, n = 391) = 21.23$, $p < 0.001$, and use more than 50 videos, $\chi^2(4, n = 398) = 17.2$, $p = 0.002$, than independent hospitals. However, both types of hospitals tended to show videos on inside pages only, use only one video format – either Flash or Windows Media format – and one video size, embed videos on web pages (though assigning videos to an external page or to an external media player was also often seen), and adopt a non-streaming approach.

**Discussions and conclusions**

The percentage of the hospitals that have adopted online videos indicates that the diffusion of online videos on US hospital web sites is going through its early stage, but it seems clear that the critical mass for using videos on hospital web sites has been reached. According to the diffusion of innovation theory, the 33 percent of the hospitals that are already using online videos are very likely to put pressure on other hospitals to do the same. However, for the overwhelming majority of the hospitals, including those that are already using videos, there is still a long way to go in learning how to harness the power of video for marketing and to make videos an integral and routine part of their marketing strategy.

The findings show that those early adopters tend to be hospitals that are offering quality healthcare services, large hospitals, hospitals in a network, and/or hospitals in states with a larger population (in fact, the best hospitals tended to be large hospitals,
Kendall’s $\tau_b$ (609) = 0.131, $p = 0.001$). These hospitals may not necessarily be sophisticated in every technological area in terms of presenting online videos, and they present content in not much different a manner, but they all tend to use significantly more videos than the other hospitals to market themselves. In addition, the earlier adopters do excel to some extent in online video technology. Based on the findings from this study, it is reasonable to predict that using videos to do hospital marketing will become a marked trend in the near future. Therefore, while many hospitals have been experiencing dire financial problems and marketing budget constraint, it is recommended that their marketing departments look to other sources of income – grants, foundations, private endowments – to promote and expand upon such new media efforts.

These findings partly support the data from the 2008 – 100 most wired hospitals[8]. The latter show that the larger the hospitals are (with more staffed beds), the more years the hospitals have been on the most wired hospitals list, $r(98) = 0.224, p = 0.025$. The more hospitals a network has, the more years the hospital network has been on the list, $r(48) = 0.295, p = 0.003$[9]. In other words, the larger hospitals rather than smaller hospitals and hospital networks rather than independent hospitals tend to be early adopters of IT. H&HN (2008) which ranked in the most wired hospitals, claimed in a separate analysis that:

[. . .] the patient satisfaction and quality indicator analyses provide the strongest evidence in the 10-year history of the most wired survey and benchmarking study that information technology makes a difference in both the patient experience and the quality of care.

Future studies are needed to investigate whether the uses of videos on hospital web sites bring more patient satisfaction and a better perception of hospital quality of care.

Although states with larger population tend to have more hospitals that have developed online videos, some medium-sized and even smaller states have climbed to the top of the chart, including Wyoming, New Hampshire, Wisconsin, and Indiana. This finding indicates that although tapping into local IT resources is important, getting ahead in IT is more a matter of determination. Small-state hospitals do not have to be laggards or be in the company of late majority to use new media such as online videos.

What can hospitals better do to use this marketing tool? In terms of video content, the hospital web sites seemed to be doing what they were supposed to do, namely marketing by promoting hospitals’ corporate identities and doing advertising, providing hospital information, and educating patients. Among these three categories, the top two are hospital-specific contents largely serving the interests of the hospitals. Considering the fact that half of the hospitals carry only one category of content, and chances are that the category is corporate identities promoting plus advertising, the non-hospital-specific patient education content needs to be strengthened on hospital web sites. The patient education content directly serves the interests of the patients and demonstrates a hospital’s care for them, but it also indirectly serves the interests of the hospital whose web site houses such content. Experts describe such altruistic marketing strategy as “when giving away your business makes sense” (The Radial Group, 2009). The altruistic patient education content, if appropriately done, can make hospital web sites better compete with Google and WebMD for internet traffic and eventually boost hospital revenues, as shown in earlier studies (Gentry, 2006; Lee, 2006;
Greene, 2008). In addition, as Abreu et al. (2008) observed, the word “doctor,” which emerges from the Latin word docere, means “to teach” or “to show.” In other words, hospitals bear the social responsibility of helping patients and families reach logical and comfortable decisions and of removing the shroud of mystery surrounding aspects of treatment that they will be unable to witness.

In terms of the command of technology for producing user-friendly videos, most hospitals have done a good job in maintaining consistency in using the same video size, format, and delivery approaches. However, hospitals need to catch up fast in online video technology in comparison to other sectors of society. If a picture is worth 1,000 words, then such pictures, in this case, videos, should be promoted on hospital web sites and, ideally, collected in a video gallery so that they can be easily found and linked to from different sections of a hospital web site. The sad fact is that 64 percent of the US hospitals have probably regarded it as not important to promote their videos though they have spent much more time producing them than writing texts. As a result, many patients may not have been able to benefit from many of the videos. Hospital marketers must be innovative to better use and promote Web 2.0 content on their web sites. www.GE.com, www.Princeton.edu, www.Whitehouse.gov, and www.CNN.com are just a few prominent examples of non-hospital web sites that can inform hospital marketers. Web sites of the Wellmont Health System (www.wellmont.org), Integris Health (www.integris-health.com), and Geisinger Health System (www.geisinger.org) are some of the finest examples from this study.

By August of 2008, the average broadband connection speed in the USA had reached 2.3 mega bit per seconds according to the Communications Workers of America (2008) report. This speed is fast enough for busier dedicated video streaming sites such as www.YouTube.com and www.Hulu.com to present videos at the minimum 640 pixels width. The typical (65 percent) 320 pixels width on hospital web sites needs an uplifting. By September of 2008, Windows Media Player had a 75 percent pre-installation rate while Flash Player had 99 percent on computers globally[10]. Therefore, all major web sites today present Flash videos so that the maximum number of users can view their videos without difficulty. Users of those web sites that are using Windows Media, QuickTime or Real videos may not be able to view the videos without downloading the targeted media player (Huang and Marsiglio, 2008). Many hospital web sites (51 percent) need to reconsider their loyalty to Windows Media video. Both of these two facts point to the need for hospitals to update their online video presentations. A lesson to learn is that hospital web video producers need to keep a high-quality version of each of their videos so that the videos can be resized and reformatted.

The two most popular online video delivery approaches are progressive download and streaming (Richter and Ozer, 2007). Progressive download allows a user to watch a video while it is being downloaded through a web server. Since this approach does not involve a streaming server, the cost is minimal. Streaming, on the other hand, allows for advanced seeking, efficient use of bandwidth, low user system requirements and media property protection, in short, enhanced user satisfaction, but this approach costs much more since a streaming server needs to be purchased and maintained and involves a longer learning curve (Huang and Marsiglio, 2006). Since most hospital web sites do not have many videos to show, it is understandable that they have used a non-streaming approach such as progressive download to deliver their videos to cut cost.
As hospitals use more videos, they should consider using a streaming approach for user convenience and a smoother viewing experience.

Future studies regarding hospital web sites should investigate how hospital management and IT staff is thinking about using new media, especially videos, to connect to their communities and patients so that they can do more effective marketing and better compete with non-hospital healthcare resource providers. A greater challenge is to find internet users who can represent a larger population and examine how they appreciate the availability of videos and other new media presentations on hospital web sites.

Notes
1. The list can be found at: www.usnews.com/listings/hospitals/
2. The list can be found at: www.usnews.com/listings/hospital-directory
3. According to Patten (2000), a population of 7,000 needs a sample of 364.
4. America’s best hospitals 2008 were ranked by US News mainly to show their quality. As it is explained in the ranking methodology, “Each facility received a US News score from 0 to 100 made up in equal parts of reputation, death rate, and care-related factors such as nursing and patient services.” For more information regarding how the best hospitals were picked, see Comarow (2008).
5. For (1)-(3), the data were included in the US News hospitals directory.
6. The raw data from the US News web site were collapsed into three categories: <100 beds = small hospitals, 101-500 beds = medium-sized hospitals, and >500 beds = large hospitals.
7. Almost all patient stories are for promoting the hospital corporate identity in nature. Since there were many of such videos, they are singled out.
8. See the list at: www.hhnmag.com/hhnmag_app/jsp/articledisplay.jsp?dcrpath=HHNMAG/Article/data/07JUL2008/0807HIN_MW_100List&domain=HHNMAG
9. The author of this study ran the statistical calculations based on the list.
10. See statistics at: www.adobe.com/products/player_census/flashplayer/

References


About the author
Edgar Huang is an Associate Professor in the School of Informatics, Indiana University-Purdue University Indianapolis, USA. His papers on youth news consumption, media convergence, streaming media, copyright issues concerning DVD ripping, online imaging, documentary photography history, digital imaging manipulation, and the internet and national development have been published in various journals, such as Convergence, Newspaper Research Journal, Journalism and Communication Monographs, Visual Communication Quarterly, and Information Technology for Development. He has won national awards for his multimedia productions. Edgar Huang can be contacted at: ehuang@iupui.edu

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