

# Patients, Doctors and Health 2.0 Tools

By Kent Bottles, MD

## In this article...

Learn the Web sites, social networking sites and other tools that patients and doctors are beginning to put to use today.

Physician executives understand that the major challenge of the early 21st century is to provide health care that delivers more value for patients, employers, third-party payers, and government. Physician executives also understand that increasing the quality and decreasing the cost of health care (increasing value) must be achieved within the physician/patient relationship that is still central to most medical care.<sup>1</sup>

One of the most intriguing aspects of the evolving physician/patient relationship is how it will change as patients and physicians participate more and more in what has been termed Health 2.0.

Health 2.0 is a term that is related to the term Web 2.0. Web 1.0 describes what most of us do on the Internet: we search for information about a subject and then we read the documents that the search engine identifies for us. Web 2.0 describes how more and more of us are using tools like blogs, podcasts, online forums, Really Simple Syndication (RSS), social networks, Wikis, and other disruptive technologies to create user-generated content. Tim O'Reilly states "Web 2.0 is the network as platform, spanning all connected devices...creating network effects through an 'architecture of participation.'"<sup>2</sup>

Health 2.0 describes how patients are using the Internet to take charge of their own health care, and how some pioneering providers are using the same tools to partner with their patients. How Health 2.0 patients and providers are integrated into the traditional health care system will determine the future of health care and the physician/patient relationship.

The traditional health care system is largely ignorant about Health 2.0, and doctors, hospitals, and health plans are certainly not leading this movement.

## Search for health care

Search engines are central to how patients use the Web for their health care needs. Several presenters at the Health 2.0 conference held in San Francisco (October 22-23, 2008) noted that 80 percent of Americans who are online are looking for health care topics; 80 percent of those are using a search engine to start their inquiry; and 60 percent to 80 percent of those start their health care search on Google.<sup>3</sup>

Several companies are trying to become the search engine that consumers turn to after using Google or Yahoo or another general search site for the initial search. The need for this function is summarized nicely by Jude O'Reilly:

- A common part of the consumer's health experience is to face a health challenge, Google it, spend 20 minutes getting totally overwhelmed, and then do what they did in the 1980s: Call a friend and work through their offline social network.<sup>4</sup>

Microsoft Health Search, Praxeon, Kosmix/Right Health, Healia, Healthline Networks, and Organized Wisdom are all sites trying to fill this niche on the Web. Praxeon uses a natural language approach, includes links to current news articles, and was the favorite of attendees at an early Health 2.0 conference.

Organized Wisdom combines search technology with human beings who try to eliminate spam and irrelevant sites from the results. Kosmix/Right Health includes complementary and alternative medicine results in a searches.

A related area of concern for Health 2.0 search is how to connect the patient to the best doctor for a specific disease. Angie's List Medical, Emphasis Search, American Well, ZocDoc, and HealthWorldWeb all attempt to use Internet technology to guide the patient to the provider best able to help that patient.

Social network sites are changing the way patients and providers cope with health care concerns. There are 178,000 health care sites on Yahoo, and many of these groups have thousands of active members.

**Patients in social network sites talk to other patients who have the same disease, compare notes on treatment options, aggregate the disease community's experience, and provide emotional support.**



Clay Shirky in *Here Comes Everybody* believes that these networking sites will ultimately totally transform the doctor/patient relationship.<sup>5</sup> His key insight is that single patients and patients who are active in social network sites act completely differently in relation to doctors, hospitals and health plans. Patients in social network sites talk to other patients who have the same disease, compare notes on treatment options, aggregate the disease community's experience, and provide emotional support.

For example, a member of the Patientslikeme site had leg spasticity from his multiple sclerosis that was unresponsive to the dosage of Baclofen his doctor prescribed. After communicating with other multiple sclerosis patients on the site, he found that they gained relief with a higher dose of the drug; his doctor agreed to try the higher dose of the muscle relaxant and it worked.<sup>4</sup>

Examples of other social network sites that patients are using include:

### **Table 1: Resources For Learning More About Health 2.0**

- [www.health2con.com](http://www.health2con.com) Matthew Holt and Indu Subaiya, MD have organized well-attended conferences that include demonstrations, lectures, and panel discussion.
- Jane Sarashohn-Kahn, *The Wisdom of Patients: Health Care Meets Online Social Media*, [www.think-health.com/library.html/](http://www.think-health.com/library.html/)
- [www.thehealthcareblog.com](http://www.thehealthcareblog.com) The best health care blog, bar none.
- Carleen Hawn, Take Two Aspirin and Tweet Me in the Morning: **How Twitter, Facebook, And Other Social Media Are Reshaping Health Care.** *Health Affairs* 28, no.2 (2009): 361-368; 10.1377/hlthaff.28.2.361

MedHelp, HealthCentral Network, Diabetic Connect, Inspire, Disaboom, iMedix, DiabetesMine, Daily Strength, and Sophia's Garden.

Providers have also started to participate in social network sites. The most successful in terms of membership is probably Sermo with its 90,000 physician members. Daniel Palestrant, the Sermo CEO, describes his company as facebook for doctors.

Although 99.9 percent of the activity on this site is peer-to-peer exchange of information about medicine or recreational activities, Palestrant has negotiated deals with ten out of the twelve largest pharmaceutical companies and with Bloomberg. Other companies in this space include: MyPACS.net, Ozmosis, MedicalPlexus, Within3, and iMedExchange.



## Twitter & Cell Phones: The Future (And Present) of Health Care

Twitter 

**What is it?** 140-character tweets (messages) posted at [twitter.com](http://twitter.com)

**Who's using it?** 14 million users

**How many times do they visit [twitter.com](http://twitter.com)?** 99 million times in March/2009

**What does it have to do with health?**

- Henry Ford Hospital reported on brain surgery
- Could be used to fill unexpected open appointments
- Paired with sensors used to monitor home patients
- Tissue recruitment for transplants
- Epidemiology surveys
- 24/7 disease management

**Are any famous doctors twittering?** You can follow Kent Bottles and Sanjay Gupta

### Cell Phones

Health care is moving out of the hospital and into the physician office, the home, and now wherever you are with your cell phone.

At the recent Health 2.0 Meets Information Therapy Conference in Boston the most buzz was around the new Medzio product from A.D.A.M. with its Mobile Health Network that sits on iPhones.

"I have seen the future of Health 2.0 and it is Medzio. It's flexible, it's consumer-facing and—friendly, it integrates into activities of daily living, it makes accessing health information easier and integratable, and it's fun," said Jane Sarasohn-Kahn.



### Resources

1. <http://philbaumann.com/2009/01/16/140-health-care-uses-for-twitter/>
2. Miller CC, Putting Twitter's World to Use, *New York Times*, April 14, 2009
3. <http://acpinternist.org/archives/2009/04/twitter.htm>
4. <http://www.healthpopuli.com/2009/04/medzio-as-metaphor-for-future-of-health.htm>

## Using Health 2.0

Examples of physicians using Health 2.0 tools to better take care of patients are hard to find. HelloHealth and American Well are two leaders in this area. Sean Khozin, MD, MPH, and Jay Parkinson, MD, of HelloHealth are two primary care physicians who have created a sophisticated online community around their practice in Williamsburg, New York.

American Well has developed an Online Care system that allows physicians with a computer, Web browser, and a telephone to see patients who are seeking medical advice. The Hawaii Medical Service Association of Blue Cross/Blue Shield will deploy American Well to serve its enrollees and uninsured Hawaiians in early 2009, and Blue Cross Blue Shield of Minnesota has recently announced an agreement with American Well.

In Hawaii and Minnesota all Blue Cross/Blue Shield plan physicians are eligible to participate in the Online Care system. "We have allowed physicians to step in at their own pace, to do as much consulting online as they like. If they do one transaction, their fee for the visit appears in their bank account. The insurance and claim management system is seamlessly, transparently built into American Well," stated CEO Roy Schoenberg, MD.<sup>6</sup>

MaryAnn Stump, CEO of Consumer Aware, has pioneered the use of the Internet to help patients tell stories and connect with other "patients like me" via theHealthScoop.com. This unique website is affiliated with Blue Cross Blue Shield of Minnesota and is a great example of a health plan being innovative with Health 2.0 tools.

Patients and providers are also rapidly embracing Twitter. Innovators are thinking about using Twitter and sensors to tell doctors when homebound patient's vital signs or weight or laboratory values indicate a serious problem.

In aggregate, such data could be valuable to medical researchers trying to establish how best to keep patients out of the hospital. At Henry Ford Hospital in Detroit, surgeons tweeted during a recent operation to remove a brain tumor from a 47-year-old man.<sup>7</sup>

So what do these new Health 2.0 tools mean for the future of the physician patient relationship? Susannah Fox of the Pew Internet and American Life Project in a Youtube video recorded at an early Health 2.0 Conference predicts that patients will assume leadership and management of their own care, physicians will need to adjust to the new technology and more and more health care will be delivered over mobile telephones.

Many of us in the health care system have acknowledged the movement of care from hospital to outpatient settings to the home. A further evolution where care can follow the patient wherever he and his mobile phone are is a new concept for many of us.

Deb Levine, executive director of ISIS, has pioneered the use of SMS mobile health by developing reproductive health information and HIV/AIDS referrals for low income, youth at risk in San Francisco. Physicians may be surprised to learn that many consumers trust “people like me” more than some experts<sup>8</sup> and that 80 percent of consumers are using Health 2.0 tools to obtain a second opinion to check on the physician’s advice.<sup>9</sup>

Although I think it is impossible to forecast all of the implications of Health 2.0 tools for the future of the physician patient relationship, I do think that providers that explore how these tools can bridge the consumer/provider gap will take better care of their patients.

It is clear to me that taking care of patients as single individuals is different from taking care of patients who are aggregated and talking to each other on a social network.



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4. Jane Sarashohn-Kahn, *The Wisdom of Patients: Health Care Meets Online Social Media*, California HealthCare Foundation, [www.think-health.com/library.html/](http://www.think-health.com/library.html/)
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9. [www.edelman.com/EngageInHealth.com](http://www.edelman.com/EngageInHealth.com)

### Kent Bottles, MD

President ICSI in  
Bloomington, Minn.

[kentbottles@gmail.com](mailto:kentbottles@gmail.com)



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# Integrated Health Care Economics

## Part 2: Understanding the Revenue Drivers in Fully Integrated Community Health Systems



By Daniel K. Zismer, PhD, Jeffrey McCullough, PhD, Peter E. Person, MD, MBA, FACP

### In this article...

Take a look at new research on the revenues derived from inpatient and outpatient services in a community health system.

Community-based hospitals (health systems) in the U.S. typically operate with significant levels of costly assets (especially facilities and technologies) and relatively fixed operating expense structures. Consequently they depend upon predictable revenue flows to satisfy total operating expense and margin requirements.

Most community health system business models are of a type where physicians (the principal “causal agent”) in the generation of health system revenues are independent practitioners, that is they operate from and own business models (independent medical practices).

In these models community health systems do not control numbers of physicians, specialty mix, geographic location, productivity or physician services pricing in the business model. Said otherwise, the conventional community health system may influence, but doesn’t control the principal component in their revenue production equations: physicians.

A growing number of not-for-profit community and academic health systems have chosen an alternative business model and business strategy, the fully integrated health system.<sup>1, 2</sup>

For purposes of this article, the fully integrated health system is one where most, if not all, physicians required to meet mission, clinical service plans and financial requirements are employees. Ostensibly a model where revenue production is more manageable and one where quality may be higher with prices better controlled.<sup>3</sup>

### Purpose of the study

This study was undertaken with the assistance of an integrated health system to determine how physician services explained overall health system revenue production. An integrated health system provides for complete transparency of all physician services and their relationships with the production of all other health system services (revenues).

Moreover, since all (or at least most) physician services (physician labor) are derived from physicians employed by the health system, there is no (or a very small) proportion of health system physician services production that exists outside the business model. The value of undertaking such a study with an integrated health system is the ability to observe the effects of physician services labor on total health system revenue productivity.

### Study setting and management data

This study was conducted with the cooperation of leadership of Essentia Health System and one of its larger, integrated community health systems SMDC (St. Mary’s Duluth Clinic). Essentia Health operates integrated health systems employing more than 700 physicians, with 14 hospitals in Wisconsin, Minnesota, North Dakota and Idaho. Essentia Health also participates in health services partnerships with the Great Falls Clinic in Great Falls, Montana.

SMDC is based in Duluth, Minnesota. It employs more than 400 physicians and it owns and operates four hospitals, including a regional, tertiary referral center. Its regional reach covers 400,000 square miles in Minnesota, Wisconsin and the upper peninsula of Michigan and it serves a large number of rural communities. SMDC provides physician services in more than 50 clinical specialties (medical and surgical).

The majority of regional physicians who refer to SMDC’s tertiary center are employees of SMDC, but are medical staff members of smaller, independent community hospitals (mostly critical access hospitals). Their inpatient services production is credited to total SMDC physician services production. SMDC does not capture the inpatient hospital

services revenues at these sites.

The study made use of existing management reports that management uses to evaluate health system performance relative to budget projections. These reports routinely reported physician labor productivity in the form of inpatient and outpatient work relative value units (WRVUs), a standard unit of physician services effort.

In addition to these measures, other potential proxies of physician services effort were used as available from these routine reports. Of special interest in the analysis were procedures, including surgeries, as each procedure reliably requires the direct application of physician effort (direct physician labor). Thirty-six months of management reports were available for observation.

## Methods and results

For the time period observed, SMDC averaged \$66 million in total monthly revenues (Table 1). Inpatient services revenues (including associated physician services and billings) account for nearly 35 percent of all revenues generated while outpatient services accounted for 65 percent of revenues.

We further investigated the potential physician services' relationships with total health system revenues using multivariate regression analysis. Specifically, we measured the correlation between health system revenue and a series of covariates including outpatient WRVUs, inpatient WRVUs outpatient surgeries, and inpatient services.

These covariates account for 93 percent of total monthly revenue variation. Of these covariates, outpatient WRVUs (all outpatient physician services production) and surgeries (inpatient and outpatient) are the strongest determinates of overall health system revenue variation.

Our results reported in Table 2 indicate that each outpatient WRVU is associated with \$320 of total health system revenue (inpatient and outpatient revenue combined). Additionally, inpatient and outpatient surgeries are positively correlated with total health system revenue.

Our model also explains most inpatient revenue variation, about 66 percent. We again find that outpatient WRVUs and inpatient surgeries are positive and significant correlates of inpatient revenues.

This suggests that outpatient services are important determinants of inpatient revenues. It is somewhat

**Table 1. Descriptive statistics, monthly averages**

Variable	Mean
Total revenue	\$65,799,917
Inpatient revenue	\$22,959,719
Outpatient revenue	\$42,840,198
RVUs, outpatient	85,138
RVUs, inpatient	78,333
Surgeries, inpatient	753
Surgeries, outpatient	935
Wages	\$32,450,198

**Table 2. Multivariate analysis of revenues**

Variable	Total Revenue	Inpatient revenue	Outpatient revenue
RVUs, outpatient	320*** (63)	115** (53)	205*** (64)
RVUs, inpatient	-55 (45)	-56 (38)	2 (46)
Surgeries, inpatient	21962*** (6245)	10781** (5225)	11180* (6343)
Surgeries, outpatient	9932** (4461)	-1810 (3732)	11742** (4531)
Constant	10300000** (4574751)	8032964** (3827691)	2275560 (4646664)
R-squared	0.93	0.66	0.87

\*denotes significance at p=0.10, \*\*at p=0.05, and\*\*\*at p=0.001 Included but not reported: time and time squared

surprising to find that inpatient WRVU variation is not correlated in a significant way with total health system revenues. Similarly, outpatient WRVUs and outpatient surgeries are strong predictors of outpatient revenues.

Overall outpatient physician service production (all specialties) explains a sizable portion of total health system revenues. It is important to note that outpatient physician production explains a substantial portion of inpatient revenues. This result has intuitive appeal as inpatient admissions are frequently preceded by outpatient visits and succeeded by outpatient follow-ups.

While this doesn't necessarily imply that outpatient production causes inpatient revenues, it does suggest that outpatient and inpatient service coordination is a critical dimension of health system strategy management.

## Discussion

This study points to the importance of the management of the outpatient physician services components of a health systems' revenue generation strategy. Said otherwise, to reliably control total health system revenue (levels and types of clinical services revenues) requires a community health system business model that doesn't leave physician services to the vagaries of the independent practice model of physician services supply.

It should be noted that given the strong effect of outpatient physician services (WRVUs) and the effects of surgeries in the model (inpatient and outpatient), it should not be presumed that all outpatient physician services are pre-surgical.

Certainly outpatient post-surgical visits must be considered in overall interpretations. This does not, however, diminish the argument for managing the outpatient physician services efforts of a health system.

Health system leaders should be cautioned in their interpretations of these results from at least two additional perspectives that may be obvious:

1. Not all revenues generated by a community health system are profitable.
2. Not every configuration of outpatient physician services is an equally productive revenue generating model.

These results naturally produce follow-up questions worthy of additional study.

1. If outpatient physician services are strong correlates (predictors) of total community health system revenues, how do individual clinical specialties weigh differentially upon total revenues?
2. Are there specific combinations or groupings of physician specialties that are especially powerful in explaining health system revenues?

These findings do point to the importance of outpatient physician services planning and management (together with surgical and procedural services) as a foundation for overall revenue management for fully integrated health systems. As cited, these findings beg the question of how would this be accomplished with the more traditional private practice medical staff model for physician services.

Furthermore, this study points to the value of having access to detailed physician services production data in any revenue planning and management model. Such data are rarely available in the more traditional and less integrated models of community health services delivery.

### Daniel K. Zisner, PhD

Associate professor, Division of Health Policy and Management, School of Public Health, University of Minnesota. He also serves as director, ISP; executive studies program and he is managing principal of Essentia Health Consulting.

[dzisner@smdc.org](mailto:dzisner@smdc.org)



### Jeffrey McCullough, PhD,

Assistant professor, Division of Health Policy and Management, School of Public Health, University of Minnesota.



### Peter E. Person, MD, MBA, FACP

CEO of Essentia Health located in Duluth, Minnesota.



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