

## Social Media Strategies in Healthcare

**Françoise Simon, PhD**  
fls4@columbia.edu  
Columbia University,  
New York

**Loick Menvielle, PhD**  
Loick.menvielle@edhec.edu  
EDHEC Business School,  
France

**Mathieu Salvadore, PhD**  
Mathieu.salvadore@unice.fr  
IAE Nice / EDHEC Business  
School, France

**François Meurgey**  
francois.meurgey@skynet.be  
CEO, Oukelos Consulting,  
Brussels, Belgium

### Abstract

From YouTube to Facebook and Twitter, social media are widely used in healthcare, but challenges remain, from increasing regulation to varying literacy and privacy concerns. This paper first examines consumer trends as well as new regulation in the US and Europe, including guidelines on the risk/benefit balance of online information. We then analyze several strategies, including a crowdsourcing initiative by Sanofi and a multichannel approach by the Mayo Clinic. Given the greater regulation faced by biopharmaceutical firms, we present a Social Risk Assessment model to measure the risk vs. reward for several levels of participation, from active listening to unbranded disease education and branded information. While the spread of social media now supports a new co-creation model, the risks inherent in healthcare warrant the stepwise approach we present for providers and biopharmaceutical firms.

**Key words:** social media, healthcare, strategies, crowdsourcing, biopharmaceutical firms

## **Introduction**

In recent years, the healthcare sector has experienced radical changes regarding the empowerment of patients in relation to their diseases or those of their loved ones. The Internet has been a true catalyst by offering more outlets for consumers to express their deepest personal health-related concerns. The first patient groups, particularly for diseases such as AIDS and cancer, laid the foundations for a participatory and collaborative approach, between patients but also with the various stakeholders, such as healthcare professionals or biopharmaceutical companies.

Many of these changes would not have been possible without Information & Communication Technologies (ICT), making these tools a weapon of choice to express and convey messages that some practitioners may have been tempted to ignore. As an illustration, the community of acor.org patients (Association of Cancer Online Resources) is one of the largest groups in the world (130 communities of patients with different types of cancers). This type of social media enables patients, their loved ones but also caregivers to share and exchange information on the disease. These virtual forums offer new places to share experiences and exchange information, fostering anew among the various stakeholders a dialogue that was sometimes too limited, to the benefit of the patient. Limited to a marginal audience until a few years ago, social media are now increasingly inserting themselves in our daily lives and are also beginning to dominate the medical world.

## **Social media: from one world to another**

Mentioning social media is not a new phenomenon, either to describe traditional consumer uses or to illustrate the business strategies of large organisations wanting to attract new customers, to strengthen commercial relationships or to reinforce brand loyalty. The Internet has become a communication medium accessed by more than 40% of the world population, nearly 2.95 billion users. The number of active users of social networks is around 2.03 billion led by Facebook with close to 1.4 billion users. As technologies and practices evolve, major trends appear to be turning more and more to mobile media strategies. The outlook for mobile social networks is certainly encouraging with nearly 3.61 billion registered accounts and 1.56 billion active users<sup>1,2</sup>. Other social media, such as video sharing websites, have also dramatically modified the behaviour of individuals. YouTube has become a major vehicle for the dissemination of content and messages, on the strength of its 1 billion monthly active users and 4 billion video views per day, 25% of which on mobile devices.

These examples of the pervasiveness of social media in our environment have largely conquered the commercial sphere from mass market to luxury goods, as well as politics and culture. Health has recently become the subject of greater interest from players and investors in the field, who see there a growing potential in line with behavioural changes in society. In the United States alone, of 87% of adults using the Internet, 72% of them sought medical information through this

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<sup>1</sup> <http://www.journalism.org/2013/11/14/news-use-across-social-media-platforms/>

<sup>2</sup> <http://www.pewinternet.org/2013/12/30/social-media-update-2013/>

channel<sup>3</sup>. Nearly a quarter of Internet users have accessed information on specialised websites such as HealthGrades<sup>4</sup>, RateMDs<sup>5</sup> or Vitals<sup>6</sup> to guide their choice of doctor. The principle remains the same: practitioners, regardless of their area of expertise, are evaluated by their patients. These new kinds of platforms allow users to access multiple resources: medical information, specialised blogs or discussion forums dedicated to various pathologies. The work of Gao et al. (2012) demonstrated that the rating of doctors was not subject to negative overvaluation from disgruntled patients but reflected objective assessments of practitioners' skills. Researchers have demonstrated a positive correlation between physician evaluations on the Internet platform and their professional skills such as experience, advice and education.

### **Patient to Patient vs. Patient to Provider**

The development of these types of platforms and more generally of medical social networks is powerfully forging a new relationship to health. The necessary demand for interaction, speed and immediacy of response required by patients or their families inevitably has redefined medicine in favour of a participatory approach (Guistini, 2006). Some medical social networks can be dedicated solely to providers, whereas other larger networks can also involve patients, their families and caregivers.

As an example, PatientsLikeMe.com - one of the largest communities of patients in the world - was founded on the basis of information-sharing to enable patients to better understand their disease and to improve their own condition (Simon and Meurgey, 2014). Based on the principle of open resources, this type of platform has enabled patients and scientists to connect easily (Schwamm, 2014). These platforms provide an opportunity for patient dialogue, enabling them to establish a social connection often broken by the disease or to guide them in their course of care. For practitioners, these sites provide the opportunity to obtain additional opinions on various pathologies (via opinions of colleagues both for widespread conditions and orphan diseases). Multimedia communities have now emerged by posting numerous medical videos online (Burke et al., 2009), using YouTube as a teaching tool for transmitting information to future practitioners. This turns out to be a meaningful resource that contributes to the improvement of the learning process.

In a more comprehensive evaluation, Silber (2009) believes that these social media help patients make choices or confront dilemmas. The information asymmetry and the power held by practitioners are declining, changing the traditional balance of power between doctor and patient. The multiplicity of platforms, especially those dedicated to patients, allows them to break the isolation associated with the disease. These communities induce a proactive approach on the part of the patient leading to interaction with other disease sufferers. Community spirit and guidance on this type of interface lead to a true sharing of experience, enabling patients to approach the disease from a different perspective (Frost and Massagli, 2008). In addition to the sites mentioned previously, the recurrent use of patient groups on Facebook maintains links between

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<sup>3</sup> <http://www.pewinternet.org/data-trend/internet-use/latest-stats/>

<sup>4</sup> <http://www.healthgrades.com/>

<sup>5</sup> <https://www.ratemds.com>

<sup>6</sup> <http://www.vitals.com/>

patients while Twitter or specialised blogs are also important vectors of medical communication (appendix 1).






To illustrate the use of social networks by specialised medical sites, the following table provides a selected overview of the main patient or practitioner sites in the United States. The use of social networks is now an essential tool employed by the various players in the field of medical communication. Some American institutions have largely benefited from these social media and can be considered as references in the field. The Mayo Clinic<sup>7</sup> is exemplary in the field of media usage such as Facebook, but also Twitter and YouTube to disseminate messages. Since 2008, Kaiser Permanente<sup>8</sup> has developed a number of services (Internet, mobile, video tools...) for its 3.4 million members and 8,000 practitioners. These widely available resources enable users to monitor their condition, collect data or for other purposes around the patient journey.

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<sup>7</sup> <https://www.facebook.com/MayoClinic>  
<https://twitter.com/mayoclinic>  
<https://www.youtube.com/user/mayoclinic>  
<https://plus.google.com/+MayoClinic>  
<http://www.pinterest.com/mayoclinic/>  
<http://instagram.com/mayoclinic>  
<https://www.flickr.com/photos/mayoclinic/>

<sup>8</sup> <http://healthy.kaiserpermanente.org/>

**Table 1: Major medical platforms according to intended target**

Intended target	Features	Example of Internet sites	Associated social networks					
								Others
<i>Patients</i>	Physician evaluation, search for competencies and advice from other healthcare users	<a href="http://www.healthgrades.com/">http://www.healthgrades.com/</a>	X	X	X	X	X	X
		<a href="https://www.ratemds.com/">https://www.ratemds.com/</a>	X	X	X			
		<a href="http://www.vitals.com/">http://www.vitals.com/</a>	X	X			X	X
		<a href="http://www.drscore.com/">http://www.drscore.com/</a>	X	X				X
		<a href="http://www.ratemymd.ca/">http://www.ratemymd.ca/</a>	X	X	X			
		<a href="http://www.doctor.com/">http://www.doctor.com/</a>	X	X	X			
<i>Health care providers (HCPs)</i>	Sites exclusively dedicated to physicians/healthcare providers. Exchange of medical opinions and diagnoses.	<a href="http://www.sermo.com/">http://www.sermo.com/</a>	X	X		X	X	
		<a href="http://www.doccheck.com/">http://www.doccheck.com/</a>	X	X	X	X		X
		<a href="https://secure.quantiamd.com/">https://secure.quantiamd.com/</a>	X	X		X	X	
		<a href="http://www.medscape.com/">http://www.medscape.com/</a>	X	X	X	X	X	
<i>Patients (mainly) but open to all</i>	Sharing site on the disease among patients and caregivers, but open to HCPs. Characteristics vary by pathology. Exchanges on innovation in the medical field (new treatments)	<a href="http://www.patientslikeme.com/">http://www.patientslikeme.com/</a>	X	X		X		X
		<a href="https://www.rareconnect.org/">https://www.rareconnect.org/</a>	X	X				
		<a href="http://www.carecloud.com/">http://www.carecloud.com/</a>	X	X	X	X		
		<a href="http://www.acor.org/">http://www.acor.org/</a>		X				
		<a href="http://www.mdjunction.com/">http://www.mdjunction.com/</a>			X	X		
		<a href="http://www.healingwell.com/">http://www.healingwell.com/</a>	X	X		X		X
		<a href="http://www.askapatient.com/">http://www.askapatient.com/</a>	X	X	X			
		<a href="http://www.healthtreatment.com/">http://www.healthtreatment.com/</a>	X	X				
<a href="https://www.healthtap.com">https://www.healthtap.com</a>	X	X	X	X		X		

### Towards regulation of social media and digital tools

The growth of social networks in the medical sphere but also the development of connected medical devices have led regulatory bodies to study the phenomenon and start issuing guidance on how to protect individuals against the risks associated with the spread of inaccurate information. The Food and Drug Administration (FDA) has addressed three major areas through new regulations designed to adapt to a changing market and its players. The main guidelines concern marketing posts on social networks and medical advertising<sup>9</sup>, the balance of risks and benefits associated with information that is broadcast on these domains<sup>10</sup> and finally the type of corrective actions that companies faced with disinformation issues can take<sup>11</sup>.

<sup>9</sup> <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM381352.pdf>

<sup>10</sup> <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM401087.pdf>

<sup>11</sup> <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM401079.pdf>

The case of TIROSINT™ (levothyroxine sodium capsules from Institut Biochimique SA or IBSA) is one of the most significant steps taken by the FDA<sup>12</sup> to end false, partial and misleading information spread about the drug via social networks, namely Facebook. Social media but also blogs and other digital interfaces are now the subject of heightened attention in order to guard against abuses. The existing guidance for the pharmaceutical industry mostly governs the topic of off-label usage. Similarly posts on social media should include very clearly the approved product label when providing information on a drug. Post-hoc surveys should not include advertising claims and cannot be considered as sufficient evidence.

In Europe, a similar vigilance is now being implemented to avoid any abuses. Thus, measures to promote ethical behaviour and good conduct by researchers are integrated into the RESPECT program under the auspices of the European Commission. The International Federation of Pharmaceutical Manufacturers and Associations (IFPMA) has adopted the principle of self-regulation by companies. The low investment in digital marketing by the European players can justify this type of approach for now, but this will need to change quickly because the digital world knows no borders, and because of the increasing power of patient advocacy.

### **Social Content Risk Assessment**

Although many of these measures have been put in place to guarantee and preserve the integrity of individuals, companies can also suffer the consequences of misinformation directed against them via social media. Thus, some players in the pharmaceutical industry have adopted a strategy to avoid direct exposure of branded products and to limit communications to unbranded disease awareness. This is the case of J & J on YouTube, opting for corporate and general content related to cancer, AIDS, autism or even diabetes. AstraZeneca elected a similar approach on Twitter, coming into contact with patients via #RXSave and enhancing corporate programs developed by the firm such as AZ & Me.

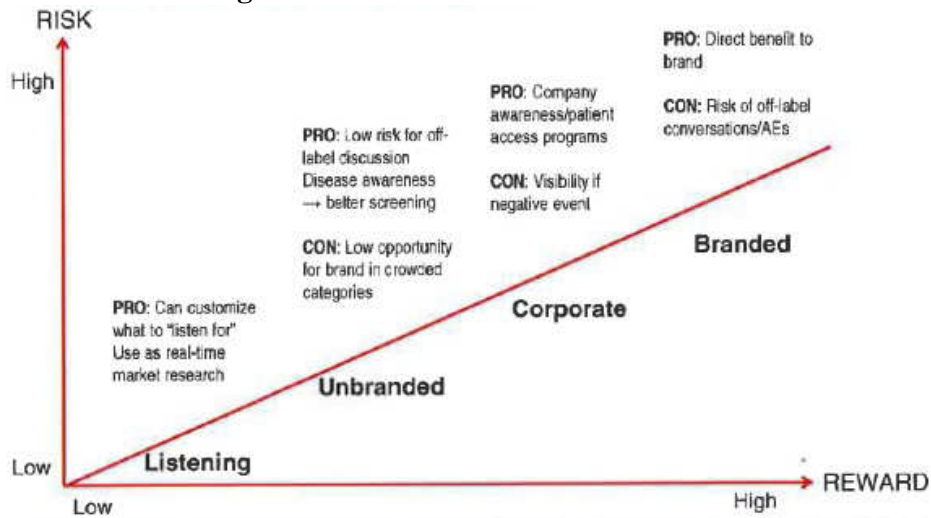
In order to preserve or enhance the corporate brand equity, several strategic directions can be identified on how to leverage social networks. This requires first for the company to determine its level of visibility on these networks, leading to more or less significant consequences depending on the specificity of information. Avoiding direct product information lowers the risk of significant damage for the company, in case of adverse effects. By contrast, if products are clearly identified, the company risks substantial damage to its brand. The visibility level will also drive more or less measurable benefits for the company (disease awareness, company image, brand equity, etc.). The following graph shows a stepwise approach, with benefits and disadvantages depending on the specificity of information.

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12

<http://www.fda.gov/downloads/drugs/guidancecomplianceregulatoryinformation/enforcementactivitiesbyfda/warninglettersandnoticeofviolationletterstopharmaceuticalcompanies/ucm388800.pdf>

**Figure 1: Social Content Risk Assessment**



Source: F.Simon and K.Risch , “Social Media Strategies in Healthcare” (2014)

In general, pharmaceutical companies face the highest challenges in using social media. Multiple regulations are significant barriers and may explain the delay in adopting this type of strategy. However, digital tools have many advantages for the industry. They enable easy collection of information, a kind of ‘crowdsourcing’ to assess what is happening about a product or service and to identify consumers’ unmet needs. For the health industry, these virtual spaces also allow the application of pharmacovigilance methods. The use of medical information monitoring via social media accelerates the transmission of information back to pharmaceutical companies in order to improve their processes. In the case of rare diseases, for example, social media contribute to the acceleration of knowledge and better understanding of all issues related to a given pathology, whereas ‘traditional’ methods of transmission of medical information tend to be slower.

The skillful use of social media also allows stakeholders to create a quasi-customized content that optimizes their relationship with patients. These tools also provide an opportunity to test new initiatives and to measure directly target responses. One of the major advances related to these means of communication is the collaborative approach (Schleyer et al., 2008). By mobilizing Internet users in these sharing sites, this actively contributes to the enhancement of information through close integration with other social media (Eysenbach, 2007, 2008b). For health care stakeholders, these spaces also contribute to the sharing of scientific information among researchers. The social network Facebook, for example, can thus be diverted from its initial use to optimize collaboration among scientists (Schleyer et al., 2008).

In the past few years, Sanofi has initiated a new strategy to enhance its ability to innovate by bringing together new co-creators and stakeholders. This approach relies on crowdsourcing techniques incorporating the principles of co-creation and co-participation, showing the company's capacity to innovate through different means and putting the user experience on centre stage. This new method of concept creation enables manufacturers to implement prototypes in a very short time. Starting in 2011, Sanofi has launched various open innovation challenges around the treatment of diabetes. One of the results is an original mobile application (Ginger.io) that collects data to understand the relationship between health status and individual behaviour. This data set is then analysed at the macro level in order to identify the links between certain behaviours and stages of the disease. (Simon and Risch, 2014)

Other similar initiatives have been undertaken by Sanofi, using crowdsourcing methods to encourage regular feedback from patients. They become active players in the creation of healthcare products and services. In this regard, the community "Diabetes Mine" has contributed to producing an application module for blood glucose monitoring. Apple users can download the iBGStar app co-developed by Sanofi and Apple, and may then buy a device they can insert into their iPhone or iPod to measure their blood sugar levels, allowing them to save this information or communicate it remotely. These new approaches to innovation change the role of the patients, who then take an active role in these new products and services (Wright et al., 2009), becoming actual co-developers with companies (often start-ups) and researchers. (Eysenbach, 2007, 2008a).

### **Medical social media are changing the relationship to health**

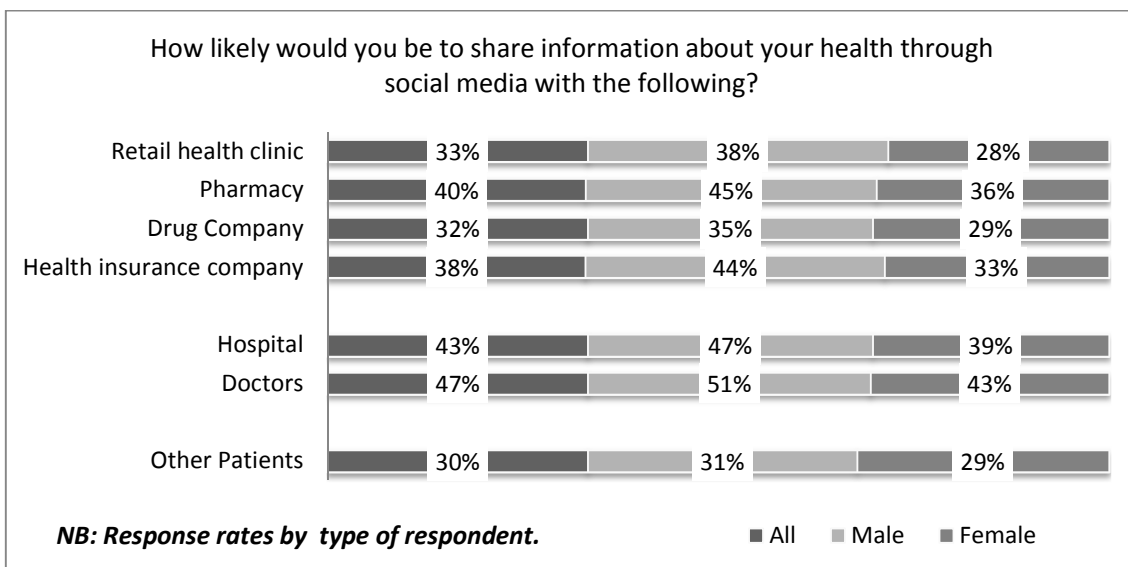
The democratization of the acquisition of medical knowledge made possible by the Internet has generated different behaviours (IMS, 2014). For Dedding et al. (2010) this approach is helping change multiple relationships in healthcare. In some cases, the use of new media complicates the links between practitioners and patients. The development of this participatory medicine generates a redistribution of tasks and responsibilities between patients and physicians, and induces a new balance of power in health (IMS, 2013).

A study by PricewaterhouseCoopers (2012) highlights the effects generated by social media, changing the nature of interactions between individuals and organizations. Four factors contribute to these changes: User-generated content, community and group effects, and the rapid dissemination of open, two-way information. According to the study, 42% of Americans have used social media to consult medical information regarding treatment or for advice on practitioners. Trust is a fundamental component and varies depending on the target of the information. 61% of respondents in this study are likely to give a modicum of trust to health care providers, 41% would be willing to share information with them. However, concerning the pharmaceutical industry, the overall confidence level is found to be lower: 37% of respondents have confidence in information from industry players, and only 28% would be likely to share information with them. The age of users of these social media influences their level of commitment: 80% of respondents in the 18-24 age group are likely to share medical information and 90% of them would be willing to contribute to social networks. By contrast, 45% of 45-64-year-olds would share the same type of information and 56% would consider contributing.



The sharing of information therefore depends on the level of trust by consumers regarding healthcare players. Among all respondents, 47% are willing to share information with doctors. Men (51% of them) are more likely to communicate on social networks with doctors they do not know vs. 43% of women. Exchange between patients is endorsed to a smaller extent whereas the nursing and hospital sector enjoys a high level of trust. In contrast, sharing with the private and commercial sector, including pharmaceutical companies, generates less enthusiasm overall, and even less among women. The following chart shows variation among players with which respondents in this survey would be more likely to share information via social media<sup>13</sup>.

**Chart 1: Information sharing on social media according to the type of player**

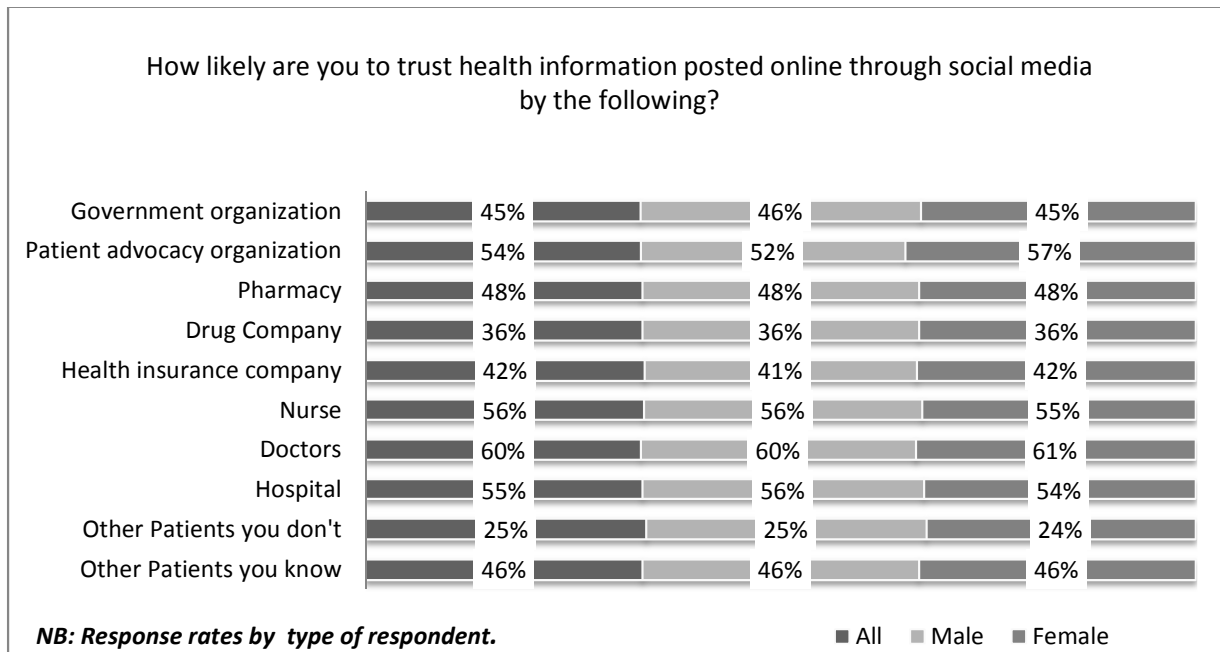


Source: Adapted from PricewaterhouseCoopers (2012)

Regarding the level of confidence in the source of information, opinions are widely shared among respondents. A close relationship with the source is a decisive factor in consumer engagement and confidence; this includes known patients, medical professionals, hospitals. Other sources are deemed trustworthy by respondents, thanks to their possible role in defending patient interests, such as patient associations. However, for third parties not known to the respondents, such as unrelated other patients, some doubt persists as to the information that should be transmitted through social media. The same applies to pharmaceutical companies who face lower credibility. These variations are shown in the graph below.

<sup>13</sup> For more results see appendix 1

**Chart 2: Confidence in medical information based on the source**











Source: adapted from PricewaterhouseCoopers (2012)

Social media are changing modes of communication between doctors and patients. Providers must adapt to a new way of communicating, from a flow with one transmitter to multiple receivers to a dialogue open to all and where the recipients themselves become sources of information. The rapid spread of information is also a new factor to which actors from the health sphere must adapt. Consumer involvement with regard to medical social media is built gradually over time and is part of a long-term relationship approach, that requires significant top-level commitment and investment by healthcare players.

Medical social media have also changed the way consumers view their health, especially in the way they manage a disease or join groups of patients to share their experience. This approach often allows patients to reconnect with the outside world. In many cases, the disease is causing a social breakdown. Social media can help break patients' isolation and positively affect their psychological state. Beyond this positive effect, social media also have an effect on the health literacy of patients. They provide additional information and help open a dialogue among patients themselves or their family, caregivers or health care providers in general. Because of these new exchanges and the accompanying enrichment of knowledge, the level of patient expectations has also risen and generates a need for more sophisticated communications.

In this respect, the experience of the Mayo Clinic is emblematic in many ways, as the hospital demonstrates best practices regarding the use of social networks and new media. Seven media are used to feed informational flows to patients and third parties: Twitter, Facebook, Google+, YouTube, Pinterest, Instagram, LinkedIn and Flickr. With the exception of Mayo's presence on Instagram that began in July 2014, its activity on these channels is extensive, with a large number of consultations and also subscribers (Table 2).

**Table 2: Social media used by the Mayo Clinic**

	Subscribers	Consultations / Tweets	Comments
	831,121	17,323 Tweets	783 photos and videos, 387 favorites and 1,782 subscriptions
	533,116 likes	25,510 visits	Several other pages are linked: Mayo Clinic Diet, Health System, Healthy Living, Proceedings, Transplantation etc...
	297,189	3,483,558 visits	
	12,622	N.A.	21 boards including from 2 to 130 pins, from general health issues to oncology or cardiology (to cite but a few examples)
	48,168	N.A.	Networking and links to other social networks
	20,779	From 686,726 views to fewer than 100 views. 30 playlists including from 4 to 115 videos. Arrayed around pathologies, treatment or patient experience.	Top consultation : 1 video : 686,736 views 7 videos between 300,000 and 400,000 views 9 videos entre 100,000 and 200,000 views
	1,627	N.A.	15 posts but activity on Instagram has only started mid-July 2014 (data are not significant)
	N.A.	N.A.	91 albums with 5,024 photographs

Source: adapted from Mayo Clinic social media - survey in August 2014

YouTube is the most popular in terms of number of hits per video and offers rich content based on conditions, treatments and patient experiences. This way of communicating via the testimonies of patients treated within the institution, positively influences their perception towards the hospital. These videos help lower patients' initial fears and encourage engagement with the Mayo Clinic brand. Other videos fostering the transparency of medical knowledge contribute to establish the legitimacy of the brand through its pedagogical values. All of these techniques reinforce a positive perception towards the brand – which was already broadly favourable, in the case of the Mayo Clinic. The use of social media therefore contributes to increased brand awareness, but also helps shape the brand's meaning and value for patients (Figure 2).

**Figure 2: Mayo Clinic brand**



**Source:** Berry and Steltman (2007)

There are indications that the Mayo multichannel approach is effective. A comparison of share of voice over 12 months across blogs, forums, news and Twitter, showed a 56% share of voice for Mayo (318,598 mentions, i.e. discrete new pieces of content citing "Mayo"); by comparison, Kaiser Permanente reached only 31% (179,105 mentions), and the Massachusetts General Hospital had a 13% share (74,265 mentions)<sup>14</sup>. These results are impressive, given the smaller scale of the Mayo Clinic Health System, with 12 short-term acute-care hospitals, vs. 36 for Kaiser Permanente<sup>15</sup>.

In the past decade, health professionals and especially providers and hospitals were among the first to invest in social media. Their use of digital communication has been more comprehensive than that of the pharmaceutical industry. The Mayo Clinic is one of the best examples of the deployment of an integrated, multichannel strategy, which was able to link efficiently researchers, providers and patient advocates through digital health. In addition to their positive effects on the brand equity of the institution, these media establish a new way to communicate with patients by being closer to their concerns, recognizing their unmet needs and speaking their language. As noted earlier, the trust granted by patients to their physicians and medical institutions appears to be generally much higher than their confidence in the pharmaceutical industry, which makes their engagement on social media much easier.

The proper use of social media cannot simply consist of feeding a flow of information on these channels, but should also help stimulate debate, generate new ideas and facilitate crowdsourcing for players in the field. Beyond these immediate achievements, the ultimate goal is to support a new model of personalized medicine and a new way of defining the doctor-patient relationship. Patients are becoming better educated and have greater autonomy to make informed decisions, but the use of these new technologies also has mixed consequences. In the majority of cases, the increased knowledge of non-professionals improves their relationship with practitioners and

<sup>14</sup> Analysis of 409.3 billion documents from November 1, 2013 to November 1, 2014, by Sysomos Database Search Engine; <http://www.sysomos.com>, accessed Nov.1, 2014.

<sup>15</sup> Molly Gamble, "15 Largest Nonprofit Health Systems 2014", June 23, 2014; <http://www.beckerhospitalreview.com/lists/30-largest-nonprofit-healthsystems-2014.html>, accessed on Nov. 1, 2014.

understanding of the disease. However, for some very proactive, wellness-oriented patient segments, these relationships can be disturbed by multiple information sources (CMA, 2013).

### **Limitations and future research**

The limitations of this study are linked to the fact that many initiatives in this emerging field are small, fragmented and subject to significant barriers; these include consumer privacy concerns, the lack of technology integration between hospital systems, physician offices and patient mobile apps, as well as country-specific and fast-changing regulation.

In addition, although several existing databases can track some metrics for healthcare social media, there is not sufficient evidence to link them to marketing effectiveness and return on investment for manufacturers and service providers.

The objective of this article was to identify opportunities and challenges for firms and major stakeholders. The development of a new personalized medicine model will support the increasing worldwide use of digital health, including telemedicine and social media. Future research directions may reflect the progress of technology integration from hospital systems to mobile devices, and the standardization of regulation across major markets.

### **Conclusion**

Broader access to information, greater transparency, the dissemination of medical knowledge and new media resources have profoundly transformed healthcare behaviour. Through social media, the health sector is facing radical changes in the way it communicates or connects with patients, but it still lags behind other business sectors such as consumer goods. Extensive regulation, but also the harm that some healthcare players may suffer from an inappropriate use of social media leads them to exercise caution, especially in the case of biopharmaceutical companies.

Hospitals and medical institutions have so far taken the best advantage of digital media. The trust level they enjoy is more favourable than that of the pharmaceutical industry and supports their wide use of new channels. These allow a personalized dialogue with patients and change the dynamics of medical relationships. In particular, they reinforce the overall brand image of these institutions by bringing them closer to their customers and giving patients a voice to be heard and respected.

For healthcare players, this new approach provides the opportunity to take patient requests and their unmet needs more seriously. Social media are therefore helping challenge established principles of medical innovation, and enabling biopharmaceutical companies to leverage this potential crowdsourcing, paving the way for a true co-creation process, from research and development to disease awareness, product diffusion and service optimization.

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## Appendix 1

### Appendix 1A

How likely would you be to share information about your health through social media with the following?

	Other Patients	Doctor	Hospital	Health insurance company	Drug Company	Pharmacy	Retail health clinic
<i>All</i>	30%	47%	43%	38%	32%	40%	33%
<i>Male</i>	31%	51%	47%	44%	35%	45%	38%
<i>Female</i>	29%	43%	39%	33%	29%	36%	28%
<i>18-24</i>	56%	65%	58%	59%	53%	59%	54%
<i>25-34</i>	45%	54%	52%	46%	42%	52%	42%
<i>35-44</i>	31%	47%	44%	35%	28%	36%	33%
<i>45-54</i>	21%	42%	35%	30%	25%	33%	25%
<i>55-64</i>	15%	35%	32%	28%	23%	33%	21%
<i>65 +</i>	14%	41%	37%	36%	25%	34%	23%

### Annexe 1B

How likely are you to trust health information posted online through social media by the following?

	Other Patients you know	Other Patients you don't	Hospital	Doctors	Nurse	Health insurance company	Drug Company	Pharmacy	Patient advocacy organization	Government organization
<i>All</i>	46%	25%	55%	60%	56%	42%	36%	48%	54%	45%
<i>Male</i>	46%	25%	56%	60%	56%	41%	36%	48%	52%	46%
<i>Female</i>	46%	24%	54%	61%	55%	42%	36%	48%	57%	45%
<i>18-24</i>	58%	35%	67%	70%	67%	52%	44%	56%	67%	48%
<i>25-34</i>	53%	31%	53%	60%	52%	37%	35%	48%	62%	53%
<i>35-44</i>	48%	29%	57%	62%	59%	42%	37%	50%	59%	50%
<i>45-54</i>	45%	21%	54%	60%	55%	46%	35%	49%	35%	43%
<i>55-64</i>	31%	12%	42%	51%	42%	33%	31%	35%	41%	31%
<i>65 +</i>	38%	9%	56%	69%	60%	49%	42%	51%	56%	42%

Source: Pricewaterhouse Coopers (2012)