Social Media in Radiology

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Authors: E. R. Ranschaert; 'S-Hertogenbosch/NL
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Learning objectives

• To be informed about the on-going evolution in social media and its impact on social networking and communication
• To be informed about the value of social media in the field of radiology
• To get an overview of the most popular and useful social media platforms
• To be aware of both the possibilities and potential risks of using social media as radiologist
• To obtain practical information on how to use and where to find relevant social media
Background

The popularity of online social networking is growing and social media are becoming a common means for people to interact. Medical professionals, including radiologists, are also increasingly using social media. This poster tries to give an overview of the current possibilities and risks when using social media, and also provides some tips on how to handle them safely and efficiently.
Findings and procedure details

Introduction

Social media are defined as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content"[1]. With the transition from the "read-only" Internet 1.0 version to the more "wildly read-write" Internet 2.0 in 2006, it became possible for many Internet users to generate content on the Web themselves. This shift in Internet technology was one of the main triggers for the development of social media. The main idea behind launching Internet 2.0 however, was to facilitate communication and exchange of large datasets and images, instead of facilitating the development of online social networking (OSN) (Ratib O., The role of social media in radiology, Social media networks in communication between radiologists, non-radiologists and patients. Presentation at ECR 2014, A-302). According to the PeW Research Center the rise of social media and social networking is one of the three major technological revolutions that took place in the new century, the two others being the rise of (Internet) broadband connections and the mobile connectivity. [2] The rise in popularity of online social networks such as Facebook, Twitter and LinkedIn has been impressive and greatly affects the way people communicate, not only with their friends but also with organizations, communities and individuals. With these changes in the way people communicate, the increase in availability of information, and the general increase in personal responsibility for healthcare, this new "disruptive" technology is changing how healthcare is operating. However, the technology is still in an early stage of development and needs further exploration by researchers and policy makers. [3]

Figure 1 shows the evolution of usage of social media between 2006 and 2014. In figure 2 it is demonstrated that currently Facebook, LinkedIn, Pinterest, Twitter and Instagram are the most popular social media sites and that their success is still growing. According to the PewResearch Internet Project currently 71% of online adults use Facebook, 22% use LinkedIn, 21% use Pinterest, 19% use Twitter and 17% use Instagram [4]. In Table 1 the effects and consequences of social media are summarized. In Table 2 the most important benefits and pitfalls/dangers of social media for radiologists are displayed.

Effects and consequences of presence of social media

Their presence affects all patients and medical professionals worldwide.
They have the potential to become a huge (collective) "digital brain."
They increasingly allow to transmit, share, crowd source, and store pieces of medical information.
Digital medical communication is a potentially powerful tool, but balance is needed.
Doctors have to be trained to be ready for the digital era.

Table 1: Meaningful use of social media (from Bertalan Mesko)

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Pitfalls and dangers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional engagement with social media can be useful for improving radiologists's visibility, increasing interaction with clinicians and patients, for education and research</td>
<td>Legal issues (liability), protection of personal data</td>
</tr>
<tr>
<td>World-wide interaction with other radiologists</td>
<td>Insufficient separation of personal and professional data</td>
</tr>
<tr>
<td>Exchange of professional information/ experience with social media users</td>
<td>Insufficient privacy settings (who can see/ read what I post)?</td>
</tr>
<tr>
<td>Online publication of interesting cases</td>
<td>Insufficient protection of patient privacy/ identity</td>
</tr>
<tr>
<td>Second/expert opinions</td>
<td>Posting of documents (images) with patient identity</td>
</tr>
<tr>
<td>Possibility to discuss digital images</td>
<td>What is appropriate to say and what is not?</td>
</tr>
</tbody>
</table>

Table 2: Benefits and pitfalls/dangers of social media for radiologists

Online Social Networking of physicians and radiologists

Health professionals’ engagement with social media can be personal, professional, or both. According to a 2012 study, 61% of physicians scan social media for medical information, while another 46% contribute to that information on a weekly basis [5]. A 2014 study from the MedData Group revealed that 56% of the physicians are using social media for professional purposes. A study from PowerDMS published in 2012, showed that the most popular platform among physicians is Facebook, which is used by 61% of all physicians for private purposes, and in 15% for professional use [6]. A 2014 survey among Australian physicians showed similar figures: the most commonly used platform was Facebook (60%), but most physicians (78.6%) only used social media during non-work hours [7]. The majority of physicians uses social media to keep up with the latest developments in their discipline and to exchange information with peers. Other major reasons are the opportunity to market their practice and to establish themselves as thought leaders with a high impact factor. [8] Online social channels even seem to have an impact on clinical decisions. According to a Manhattan Research study, 39% of doctors say that the information they receive from social channels is influential on their clinical decisions [9]. Social media also have an increasing importance in collaboration, education and training. In a recent article in the Journal of the American
College of Radiologists (JACR) the authors concluded that the 30% increase in the use of the Twitter microblogging platform during the 2011 and 2012 RSNA annual meetings, is an opportunity for leveraging this technology to engage meeting attendees, improve scientific sessions, and increase collaboration at national radiology meetings [11]. Physicians including radiologists have to understand these new developments and need to be aware of both the advantages and potential limitations or disadvantages of using social media. They shouldn’t only be informed about how to leverage the use of social media for professional purposes, but also about how to avoid the pitfalls and uphold their professional values [10]. In Table 3, the reasons for radiologists to engage in OSN are summarized.

**To Build, develop and maintain a professional network**

- Contact with colleagues from local or personal network
- Contact with other colleagues around the world
- New relationships based upon common interests & experience

**To discover new career, research or business opportunities**

- Discover new opportunities (unpublished) through network
- Establish research collaborations
- Develop business relationships, new ventures

**To remove barriers for improved collaboration**

- Share media in all kinds of formats
- Discuss latest radiology news, articles, conferences
- Seek help or consults from a community of experts
- Learn from other radiologists with common clinical interests/expertise

**To make themselves more visible for the public, a virtual "Face of Radiology"**

- Inform the public about radiology, discussion of imaging-related topics

**Education and research**

- Subscription to radiological societies' pages and case presentations
Online Social Networking and Patients

An increasing number of patients are using social media, also for seeking online health information. Results from a 2014 European survey show that a majority of European citizens (59%) is using the Internet to search for health-related information. [12] According to the Health Online 2013 study, 59% of U.S. adults are looking for online health information. Many users (35%) is using the Internet to try to figure out what medical condition they or another may have (so-called "online diagnosers") [13]. According to the Eurobarometer 411 on Patient Safety and Quality of Care, social media or Internet platforms are the third main source of information on healthcare quality for European patients (26%), preceded by general practitioners or specialists (57%) and family or friends (41%) [12].

Privacy and security

One of the major challenges of using social media is ensuring that digital communication is secure. The benefits afforded by an open and accessible online platform can threaten the privacy of the user. Radiologists wanting to participate in social media may have valid concerns about the protection of their personal information. Uncertainty about privacy and legal issues can drive their reluctance to participate more fully in social media. Similar concerns have been uttered by physicians in several countries, despite the development of guidelines for social media published by professional organisations. [7]

Patient privacy breaches could potentially cause more harm when occurring online than when face-to-face given the potential wide reach of social media and the permanency of digital information [14] Patients who desire to communicate with their healthcare provider via social media should be made aware of the privacy protections put in place by their physician or physician's practice and should provide consent to participate. At this moment there is no overt guidance from the leading regulatory agencies, the Food and Drug Administration (FDA) in the U.S., and the European Medicines Agency (EMA) in Europe yet [15]. In the past European rules have been established to ensure that personal data enjoy a high standard of protection. However, the current EU Data Protection Directive 95/46/EC does not consider important aspects like globalization and technological developments like social networks and cloud computing sufficiently. The EU's European Council aims for adoption of a reform on the EU Data Protection Directive in the first half of 2015 and the regulation is planned to take effect after a transition period of two years.

More information on this topic can be found on these websites:
Practical information

An excellent platform to learn more about social media as radiologist is the Webicina.com website, founded by the medical futurist Bertalan Meskó. The website accurately selects the most relevant and reliable medical social media resources from blogs, Facebook groups, Twitter users and YouTube channels. For radiologists in particular, several types of social media are available. These social media can have different formats and purposes, such as:

- Provide news and Information on radiology
- Social & Professional networking (Facebook, LinkedIn)
- Scientific networking (ResearchGate, BiomedExperts)
- Blogs (WordPress, Blogger, Tumblr)
- Microblogs (e.g. Twitter)
- Radiology Podcasts & interviews, video’s (e.g. Youtube, iTunes)
- Community applications (e.g. Wikipedia, Facebook/LinkedIn groups, Forums)
- Social bookmarking in Radiology (for marking & sharing interesting documents, e.g. Pinterest)
- Clinical cases and images (e.g. Facebook quizzes and crowd advise, Crowdmed)
- Slideshows and provision of information and educational material (e.g. SlideShare)

Radiological societies are increasingly profiling themselves on Social Media, mainly by using Facebook and Twitter (Table 4). [16] [17] [10]

<table>
<thead>
<tr>
<th></th>
<th>myESR</th>
<th>RSNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Facebook fans</td>
<td>164000</td>
<td>50000</td>
</tr>
<tr>
<td>Number of Twitter followers</td>
<td>3667</td>
<td>15000</td>
</tr>
</tbody>
</table>

Table 4: Radiological societies and social media

The ESR social media channels have the purpose of connecting with radiologists on a global scale. The ESR uses social media to communicate with the members and people interested in the ESR, to facilitate members communicating with each other, to promote both the ESR and ECR (including their services and projects), and to provide an additional service channel. The ESR is monitoring and evaluating when, where and how the current channels are being used in order to further optimize its services.
### Table 5: the main ESR social media channels
(Source: ESR perspective on social media, Andreas Diesenreiter - MIR Annual Meeting, 2 Oct. 2014 Bologna)

<table>
<thead>
<tr>
<th>Social Network</th>
<th>Name</th>
<th>Number of fans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>myESR</td>
<td>164000</td>
</tr>
<tr>
<td></td>
<td>ESR Rising Stars</td>
<td>2900</td>
</tr>
<tr>
<td></td>
<td>European Radiology</td>
<td>4400</td>
</tr>
<tr>
<td></td>
<td>Insights into Imaging</td>
<td>1700</td>
</tr>
<tr>
<td></td>
<td>European School of Radiology</td>
<td>1500</td>
</tr>
<tr>
<td></td>
<td>European Diploma in Radiology</td>
<td>2300</td>
</tr>
<tr>
<td></td>
<td>International Day of Radiology</td>
<td>8400</td>
</tr>
<tr>
<td>Google</td>
<td>myESR Google page</td>
<td>71</td>
</tr>
<tr>
<td>YouTube</td>
<td>myESR YouTube channel</td>
<td>426</td>
</tr>
<tr>
<td>Twitter</td>
<td>myESR Twitter</td>
<td>3667</td>
</tr>
<tr>
<td>Blog</td>
<td>myESR Blog</td>
<td>7000 monthly visits</td>
</tr>
<tr>
<td>Pinterest</td>
<td>myESR Pinterest</td>
<td>177</td>
</tr>
</tbody>
</table>

**Most popular social media for radiologists:**

**1. Facebook:**

Facebook is the most popular platform among physicians. The educational opportunities of social media and networking are progressively migrating to sites such as Facebook. On the myESR Facebook page a widespread array of topics is addressed: news related to radiology and medical science, news regarding the ECR and ESR, entertaining news, referrals to other ESR channels. Activities are being announced such as the ECR, EDiR, etc. In Figure 3 an example is shown of a Facebook message on myESR. In Table 5 the main ESR channels are mentioned.

The easiest way to find radiology-related information on Facebook is by typing "Radiology" in the search bar (see figure 4). Besides several radiological organizations (ESR, ACR and RSNA) and scientific journals many educational pages can be found, such as Radiopaedia, Radiology Signs, CTisus etc. In figure 5 an example of Facebook message from the RSNA is shown. Often cases are presented in contest format such as the Society of Abdominal Radiology's Gettable case of the week, the Radiopaedia.org's daily cases and the weekly cases of the BIDMC Division of body MRI. In figures 6 and
7 examples are shown of such case presentations. In figure 8 an example is shown of a discussion on Facebook on a radiological topic.

2. Twitter and microblogging

Twitter is the most prominent example of microblogging. It enables users to send and read messages up to 140 characters, which are direct and short communications. It currently has more than 284 million monthly active users, about 500 million Tweets are sent per day. Twitter allows its users to follow professional (radiological) journals, organizations, and radiologists with high impact factor. By choosing a good mix of these medical profiles, especially those that tweet links to high-yield content, radiologists are able to create an individually tailored and constantly updated curated source of medical information, freely available at any time. There are also other microblogging platforms available, such as Friendfeed or Tumblr. All these platforms feature medical pages, but most users focusing on medicine and healthcare are on Twitter. [1] The myESR Twitter account has about 3600 followers. The latest news and information from the ESR (e.g. deadlines, congress information) are distributed. The number of users has its peak during ECR via the Social Media wall, through which many congress attendees communicate on diverse topics related to the meeting. Compared with Facebook the topics addressed are similar, but Twitter has a higher interaction rate and more active engagement of users. A recent study showed that there is a great potential to leverage the Twitter technology to engage meeting attendees, improve scientific sessions and promote improved collaboration at national radiology meetings. [10] In figure 9 an example is shown of a Tweet distributed during a scientific session of a radiological meeting.

In Table 6 the advantages of Twitter are summarized and in table 7 some reasons for radiologists to use Twitter are mentioned.

Advantages of Twitter

- Rapid communication and real-time information sharing
- Useful for obtaining latest news
- Fastest way to distribute and/or find information on the web
- Useful for a busy professional or clinician who does not have as much time to spend on other social networking sites

Table 6: advantages of Twitter

Reasons for radiologists to use Twitter

- Search out the "radiology influencers", educational meetings and conferences. Look for the hash tags they are using to aggregate relevant information (e.g; #radiology or #ECR).
Follow people with same interests, educational leaders, scientific journals and professional (radiology) organisations to be able to quickly scan the latest news and literature

Engage with peers

Become a curator of information. Patients want to know where you stand on topics, and social media can help mould their opinions in a positive way.

Increase the visibility of radiologists, both for patients and other medical professionals

Engage as medical imaging expert in social media for medical professionals

Table 7: Reasons for radiologists to use Twitter

3. Blogs

The Internet 2.0 made it possible for its users to contribute content to websites and one of the first platforms that made this possible was called a blog. A blog is a website consisting of regular "entries" (posts), which typically are displayed in reverse chronological order (most recent post comes first). Medical professionals and radiologists are able to express opinions or commentaries for which they would never use an official or scientific channel. Several websites can be used for writing blogs, such as Blogger.com, Wordpress, About Me etc.

<table>
<thead>
<tr>
<th>Name</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sumer's Radiology Blog</td>
<td>Sumer Sethi</td>
</tr>
<tr>
<td>Radiology Blog Radiopaedia</td>
<td>Frank Gaillard and guest bloggers</td>
</tr>
<tr>
<td>Diagnostic Imaging Blog</td>
<td>Guest bloggers</td>
</tr>
<tr>
<td>UCSF Radiology Blog</td>
<td>UCSF Department of Radiology and Biomedical Imaging</td>
</tr>
<tr>
<td>Radrounds blog posts</td>
<td>radRounds Radiology Network team, guest bloggers</td>
</tr>
<tr>
<td>ESR News</td>
<td>Simon Lee</td>
</tr>
<tr>
<td>Dr. Pepe's Diploma Casebook</td>
<td>Staff and members of ESR</td>
</tr>
<tr>
<td>Caceres' corner</td>
<td>Staff and members of ESR</td>
</tr>
<tr>
<td>Musculoskeletal Radiology</td>
<td>Keshav Kulkarni</td>
</tr>
<tr>
<td>medGadget</td>
<td>Editorial team</td>
</tr>
</tbody>
</table>

Table 8: Examples or Radiology blogs
4. YouTube

YouTube is a platform created for sharing video's but also contains numerous 'social' features for sharing and viewing a variety of media such as lectures, case studies, presentations, trailers, teasers, video reports, interviews etc. Radiology organizations & radiologists are also using YouTube for reasons of education and information. The myESR YouTube channel had more than 104800 views in July 2014, counting 424 subscribers [18]. During the ECR meeting video reports are presented on a regular basis for users at home to experience the congress in a vivid visual form. Following the success of the ECR 2013 live session broadcasts, a selection of the lectures was made available via the ESR YouTube channel, and promotion for these videos was made on Facebook and Twitter.

5. Slideshare

Slideshare is a slide hosting service where users can upload presentations and other documents (infographics, documents, videos, PDFs, webinars), which can be viewed publicly or privately. It now consists of more than 15 million uploads from individuals and organizations on topics ranging from technology and business to travel, health, and education. Presentations can be discussed online or distributed through other social media. In 2013 the site averaged 60 million unique visitors a month. Currently it's located among the World's top 10 tools for education & learning. A simple search for "radiology" results in 30.000 presentations.

6. Scientific Networks

Several online professional social networks for researchers and scientists are available, such as: ResearchGate, BiomedExperts, Mendeley and Papers 3. ResearchGate.net currently has more than 3 million members of whom more than 600.000 work in a medical-related field [3]. This platform also allows its users to generate a free Digital Object Identifier (DOI) for research they add to their profile, which makes their work, conference papers and posters more easily traceable and citable. In table 9 some advantages of online research networks are summarized.

Advantages of online research networks:

• Possible to find collaborators from around the globe
• Ability to join, create, or participate in research-specific areas
• Easy access to numerous scientific publications and abstracts,
• Access to jobs in science, networking opportunities in the research arena

Table 9: Advantages of online research networks
Fig. 1: The % of users of social media has steadily risen. As of January 2014, 74% of all online adults use social networking sites. For adults ages 18-29, 89% of them use social networking sites. For adults ages 30-49, 82% of them do, of adults ages 50-64, 65%. For adults ages 65+, 49% of them use social networking sites.

Fig. 2: The most popular social media sites and % of online adults following these websites in 2012 (blue columns) and 2013 (grey columns).

Fig. 3: Demonstration of a posting on the myESR Facebook page, referring to the blog of Dr. Caceres presenting an interesting case. These cases are related to the examination for the European Diploma of Radiology.

© ESR, myESR Facebook, 2015
Fig. 4: In this figure is demonstrated how one should look for Radiological information on Facebook

© Radiology, Jeroen Bosch Ziekenhuis - 'S-Hertogenbosch/NL
**Fig. 5:** Example of message from the RSNA on Facebook, promoting the video of the RSNA 2014 Annual Oration in Diagnostic Radiology.

© RSNA, Facebook, 2015
Fig. 6: Example of Facebook quiz type of case presentation from Radiopaedia.org, including the reactions and answers of the followers

© Radiopaedia.org, Facebook, 2015
Fig. 7: Example of case presentation on Facebook by the Division of Body MRI at BIDMC

© Division of Body MRI at BIDMC, Facebook, 2015
Fig. 8: Example of a Facebook discussion on a radiological topic: "Should radiologists discuss results with patients?"

© KevinMD.com, Facebook, 2015
Fig. 9: Figure 3 is a Tweet using a picture taken at a scientific session of a radiological meeting, used to inform other radiologists interested in this topic.

© ImageAnalysisUK https://twitter.com/ImageAnalysisUK/status/466921786048012288/photo/1
Conclusion

- Radiologists can use social media and new web technologies used for online social networking, in order to enhance collaboration, to improve workflow and communication in clinical practice, and to support education and research. They can also use it to make their profession more visible to the public.

- The permeation of online and social media into everyday life is placing doctors in new situations that they find difficult to navigate, especially regarding privacy and legal aspects. There is a continuing need to improve the online capabilities of doctors and refine online and social media guidelines for both doctors and patients.

- We recommend radiologists to explore social networking/social media websites and to evaluate how these tools can be integrated optimally in their working environment.
References

5. (2012) Understanding the Factors That Influence the Adoption and Meaningful Use of Social Media by Physicians to Share Medical Information. doi: 10.2196/jmir.2138