Published in final edited form as:

Curr Anesthesiol Rep. 2017 June ; 7(2): 238–245. doi:10.1007/s40140-017-0213-x.

How Social Media is Changing the Practice of Regional Anesthesiology

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Abstract

Purpose of Review—This review summarizes the current applications of social media in regional anesthesiology, describes ways that specific platforms may promote growth, and briefly discusses limitations and future directions.

Recent findings—Although Facebook users outnumber Twitter users, the latter has been better studied in regional anesthesiology and may have the advantages of speed and expansion of reach. Highly tweeted publications are more likely to be cited in the medical literature, and twitter-enhanced journal clubs facilitate communication regarding important articles with international colleagues. In both the United States and internationally, Twitter has been shown to enhance the anesthesiology conference experience, changing communication among attendees and non-attendees. YouTube and podcasts are quickly finding a niche in regional anesthesiology for just-in-time training and continuing professional development.

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Compliance with Ethics Guidelines

Conflict of Interest

Eric S. Schwenk declares that he has no conflict of interest.

Larry F. Chu declares that he has no conflict of interest.

Rajnish K. Gupta declares that he has no conflict of interest.

Edward R. Mariano has received unrestricted funding for educational programs paid to his institution from Halyard Health (Alpharetta, GA) and B. Braun (Bethlehem, PA).

These companies had absolutely no input into any aspect of manuscript preparation.

Human and Animal Rights and Informed Consent

This article does not contain any studies with human or animal subjects performed by any of the authors.

Summary—Social media use is rapidly growing in regional anesthesiology, and benefits include global interaction and knowledge translation within the specialty and with the general public.

Keywords

social media; regional anesthesia; anesthesiology; medical education; continuing education; professional development; Twitter; Facebook; YouTube; podcast

Introduction

Although social media may be defined in various ways in different settings, the Oxford Dictionary defines it as “websites and applications that enable users to create and share content or to participate in social networking” [1]. In medicine, the ability to rapidly announce the newest results of randomized controlled trials, highlight medical society guidelines, educate patients, and showcase real-time online medical conference discussions are just a few of the advantages that social media provides over traditional communication methods. In the specialty of general surgery, for example, it has been found that social media dissemination of a published article by blogging results in a substantial increase in views of the article on the publisher’s website [2]. Researchers in colorectal surgery have noted that social media has helped to celebrate diversity in this specialty by encouraging surgeons to post photos of themselves and their families in a campaign driven by trainees [3]. Regional anesthesiology, a subspecialty of anesthesiology dedicated to the science and practice of selectively anesthetizing discrete regions of the body and providing targeted pain relief by interrupting painful nerve transmission, has been transformed by emerging technology and is particularly well suited for this new age of information dissemination. In this review we will focus on the sharing of content and expanding the reach of that content enabled by social media for the subspecialty of regional anesthesia. The wide adoption of ultrasound guidance has made it a very visually oriented specialty [4], and the images, links, and educational pearls now common in regional anesthesia teaching are ideally suited for dissemination through most social media platforms.

There are many social media platforms and applications; however, those most relevant and frequently used in regional anesthesia include Twitter, Facebook, YouTube, and podcasts. Each of these has unique advantages and disadvantages and will be discussed separately here. Commonly used social media terminology is described in Table 1 [1,5,6,7]. The goals of this review are to summarize the purposes of social media use in regional anesthesia, describe ways in which specific platforms may promote the growth of regional anesthesia, and briefly discuss limitations and future directions.

Applications of Social Media in Regional Anesthesiology

An advanced search of PubMed for articles published in 2016 with the key words “regional anesthesia,” “regional anaesthesia,” or “nerve block” yields over a thousand articles. In the distant past, it was less difficult for physicians specializing in regional anesthesia to keep up with the latest print issues of their scientific journals. Today, the number of print and online journals has increased dramatically, and online reading of journal articles has surpassed traditional print reading due to user preference [8]. There are likely multiple reasons for this,

and a thorough discussion is beyond the scope of this review; however, given this fact it becomes clear that the distribution and availability of an online article play a larger role in how many readers in the target audience actually see the article. Although several social media platforms can aid in increasing the distribution of a scientific article, Twitter may be the most effective due to its succinct 140-character “micro-blog” format that facilitates sharing to hundreds or thousands of people with the click of a button. These short messages can be shared through multiple levels within the social network (e.g., a user’s followers and those followers’ followers and so on), thereby exponentially increasing the visibility of that content. The most popular Tweets can “go viral” in this manner. Regional anesthesiologists can and should extend the reach of their recently published articles via Twitter. In fact, highly tweeted articles are much more likely to be cited than articles not highly tweeted [9,10]. Thus, one of the most important purposes of social media for all physicians, including regional anesthesiologists, is the dissemination of research findings. An article cannot provide education nor can it influence clinical practice if no one ever reads it. Social media communities can provide effective content curation for individual users.

The benefits of a social media presence in increasing the reach of journal articles apply not just to individual investigators but to scientific journals themselves. In a recent article by Duffy and colleagues [11], the authors report that journals with a “highly performing Twitter account” were much more likely to have an increase in impact factor than those without. Regional Anesthesia and Pain Medicine (RAPM), the official journal for the American Society of Regional Anesthesia and Pain Medicine (ASRA), has had a Twitter account since 2011. Although not a prolific Twitter account by most standards (to date less than 3000 tweets since its inception), the RAPM account has highlighted many recently published studies by tweeting out links to them before the printed edition has been mailed to subscribers (see Figure 1 for an example). This represents an opportunity for growth.

A second purpose of social media in regional anesthesia is the advancement and education of other healthcare professionals, particularly anesthesiologists and other anesthesia trainees at all levels. This is also commonly referred to as lifelong learning and continuing professional development and is facilitated by social media in several ways. For regional anesthesiologists on Twitter, one application is the use of common hashtags, such as #regionalanesthesia (for regional anesthesia topics) and #anesjc (for anesthesia journal club). The use of hashtags allows for conversations to proliferate around mutually interesting topics that defy the barriers of institutions, geographical locations, time zones, and educational backgrounds. For example, several anesthesia-related online journal clubs have occurred using the #anesjc hashtag. Udani and colleagues from Duke University describe their experience developing a Twitter-driven journal club using #anesjc; participants were from 3 different countries, and the Duke anesthesiology residents expressed willingness to continue using Twitter for their education after participating [12]. A glance through the Twitter feed using a search for #regionalanesthesia reveals a wide variety of topics that include questions about human anatomy for nerve blocks, promotions for regional anesthesia workshops, short regional anesthesia quizzes, and photos from lectures at the 2016 annual meeting of the American Society of Anesthesiologists. At this time, there is no single hashtag that unites tweets in the regional anesthesia world, but this may be a goal worth pursuing in the future.

Another way that social media has improved education in regional anesthesia is through the sharing of videos and images. Facebook groups such as the Regional Anesthesia public group (6,091 members as of February 2017) have provided a forum where interesting videos, usually demonstrating an ultrasound-guided nerve block, may be shared for the purpose of educating other group members. Dozens of videos and screen shots of ultrasound images are freely available to all group members, often with audio commentary. These may be particularly useful for newer procedures that have not yet been included in textbooks, such as the Pecs 1 and 2 block described by Blanco and colleagues [13] or the alternative technique to the infraclavicular block recently described by Li [14]. The well-known regional anesthesia organization New York School of Regional Anesthesia (NYSORA) has a Facebook page with thousands of followers (12,967 likes as of February 2017). Short video clips from their sponsored international meetings as well as presentations demonstrating the performance of several blocks are featured on the page. Although not a substitute for textbooks and clinical training, these resources are becoming a bigger part of the education for both novice and experienced regional anesthesiologists, perhaps due to the collaborative nature of social media in this setting.

YouTube, a website created in 2005 by three employees of the company PayPal for the purpose of video sharing [15] and owned by Google, provides a forum for posting of regional anesthesiology educational videos. YouTube has had a significant impact on the ability of regional anesthesiologists to share such videos. This will be discussed in more detail in a separate section.

The third purpose of social media in regional anesthesiology is enhancement of the scientific conference experience. Several authors have published their findings and shared their experiences with social media in annual meetings of anesthesiologists, most notably McKendrick et al [16] and Schwenk et al [17]. McKendrick et al compared Twitter activity at the 2011 and 2012 winter meetings of the Association of Anaesthetists of Great Britain and Ireland and noted that the 2012 meeting saw a 530% increase in number of Tweets from 2011. They also reported that most tweets were “notes and learning points” [16]. More recently for regional anesthesiology and acute pain medicine specifically, Schwenk et al described Twitter activity at ASRA’s 2015 and 2016 Spring meetings and, much like McKendrick et al, noted a large increase in tweets between years with the majority of tweets being scientific. They expanded upon the results of McKendrick et al and reported that tweets with pictures were more likely to be retweeted, participants who contributed solely with retweets were more likely to be non-attendees, and that tweets by anesthesia trainees saw a larger increase than other groups. In addition, multiple conversations on specific topics were observed between conference attendees and non-attendees, demonstrating a new and promising form of engagement both within the membership of a medical society and between members and the general public online. Schwenk et al suggested that a focused social media campaign prior to the 2016 meeting may have contributed to the substantial jump in Twitter activity at that meeting [17]. Although these results have not yet been confirmed by others, they point to the increased attention that social media has been given in regional anesthesiology. It is no longer simply a casual social activity used for fun; it has become a complementary part of ongoing professional education and development.

Twitter

In the authors' opinion, the inherent brevity of a 140-character "micro-blog" and the ability for messages to spread like wildfire through retweeting arguably gives Twitter an edge over the other platforms when rapid and wide information dissemination is the goal. The exception may be for exclusive sharing of video content, in which case YouTube holds some advantages. Dr. Marjorie Stiegler, a vocal physician advocate of social media in medicine, lists five reasons doctors should use social media: 1) networking; 2) controlling your "digital footprint"; 3) learning; 4) advising patients; and 5) expanding your brand [18]. Undoubtedly, many physicians may disagree with some of these, especially advising patients. In fact, many physicians include in their Twitter profiles a disclaimer that "Tweets are not medical advice" or something similar. Nevertheless, some of these reasons apply directly to regional anesthesiologists. Specifically, networking, learning, and expanding your brand are relevant to both individual anesthesiologists and anesthesiology groups who specialize in regional anesthesiology. Connections between anesthesiologists in different countries have been made possible through Twitter-based journal clubs as discussed earlier [12] and international conversations about specific topics in regional anesthesiology take place on Twitter under #regionalanesthesia and #kneereplacement, for example.

As previously discussed, live Twitter conversations during conferences ("tweeting the meeting") have become popular as a way of enhancing the experience of attendees and non-attendees alike. Once again, the structure and organization that Twitter facilitates through conference hashtags (e.g. #ASRASpring17) seems to be a natural fit for the back-and-forth nature of posting that is typically seen during a major scientific meeting.

Users of Twitter are able to group their tweets about a topic together with others on that topic by simply using the appropriate hashtag, a feature that has become so popular that other social media platforms (e.g., Instagram, Facebook) have adopted the nomenclature and function. Anyone searching for a specific topic can find all the related tweets grouped together by clicking on the hashtag included in a particular post. In this sense, hashtags may be thought of as keywords for social media, allowing both medical professionals and the public to search for topics of interest.

One of the biggest disadvantages of Twitter is also one of its primary advantages, namely, its character limit. This sometimes forces users to abbreviate or omit words, leading to potentially confusing statements. Including other additional users' Twitter handles, hashtags, or relevant websites further limits the number of characters available for the message although in a recent change media attachments and quoted tweets no longer count towards the character limit. Of some concern amongst users of Twitter is identity verification. Although there is an identity verification process, it is not mandatory; therefore, a user may or may not be the person whom he or she claims to be, making the evaluation of content quality and accuracy difficult and potentially harmful [19].

Facebook

Facebook, given the longevity and worldwide popularity of the platform, has well-described applications for education which are not specific to medicine [19]. Interacting through Facebook may improve student-teacher interactions and facilitate a teacher's ability to make group announcements. Some of these Facebook educational tools are shown in Table 2. As of February 2016, Facebook had five times the number of users that Twitter had in addition to a much greater revenue stream [21]. Yet those numbers do not tell the entire story when it comes to physician users. A survey of radiologists revealed that while Facebook was the most popular social networking site for general purposes, Twitter was the preferred site for professional use in the United States [22]. Regional anesthesiology is admittedly a different field with different goals, but those observations are worth noting. A comparison of advantages and disadvantages of various social media platforms is shown in Table 3. Nevertheless, Facebook remains a major component of the social media presence in the field of regional anesthesiology. One of the most effective ways that Facebook is used in this specialty is with group pages which may be open (public) or closed (not public). Anyone with a Facebook account can simply "like" the group page if it is set up as a medical company or organization of some type or request to be added as a member if the page is set up as a group page. Once you are a part of the group you are able to receive updates any time a new post is added. When links to new articles or techniques are posted or a new video is added, group members can receive notifications. The Regional Anesthesia open public group (<https://www.facebook.com/groups/nerveblock/>) may be joined by request but has publicly viewable posts while the Regional Anesthesia Guided by US is a closed group (<https://www.facebook.com/groups/regionalanesthesia/>) and is not publicly viewable but may be joined by request. The NYSORA Facebook page (<https://www.facebook.com/nysora/>) is actually registered as a medical company, so to receive their updates one must simply click "like" on their page. Although the focus of these groups varies somewhat, all appear to promote the specialty of regional anesthesiology and its many benefits. This is by no means an exhaustive list of Facebook resources but is a mere sampling of some of the larger group pages that exist to promote regional anesthesiology.

YouTube

YouTube is a collection of online videos on millions of topics that makes finding a video of interest very simple. Anyone with internet access can register for a free account and then post videos. Viewing videos does not require an account. The program also provides the ability to "subscribe" to various YouTube "channels," which is analogous to "following" someone on Twitter or "liking" a group's Facebook page. Once you subscribe to a user's channel, you can elect to receive a notification any time that user uploads a video. As the popularity of YouTube has exploded for general purposes, regional anesthesiology has followed that trend. A search for the phrase "ultrasound-guided nerve block" yielded more than 15,000 results, while searching for the phrase "regional anesthesia" produced 18,600 results (accessed February 27, 2017). Quantity, however, does not inherently mean quality. As with all social media, content must be viewed cautiously, with careful consideration of the source and the claims being made. With that being said, there is a wealth of high-quality videos posted on YouTube from fairly reliable sources. Numerous hospitals, such as the

Hospital for Special Surgery in New York, have posted videos about specific regional anesthesiology procedures as well as an overview of differences between regional and general anesthesia. Other well-known and trustworthy sources, such as NYSORA, have posted numerous procedural videos demonstrating proper techniques for various blocks.

Although many high-quality regional anesthesiology videos have been produced and posted on YouTube, a healthy skepticism should be maintained. A study of YouTube videos depicting lumbar punctures and neuraxial blocks from 2012 concluded that sterility violations and misleading information were present in greater than 10% of videos [23]. Furthermore, YouTube is a commercial entity and may be used to promote “unscientific” (i.e., unproven or off-label) treatments, and the search terms used greatly affect the quality of information retrieved [24]. Information that contradicts established evidence should be viewed suspiciously, and videos that violate published guidelines, regulations, and laws or in any way put patient safety at risk can be reported to YouTube.

Podcasts

Podcasts are audio or video recordings that are published online via RSS (really simple syndication) feeds to the web, podcast distribution channels (e.g., iTunes), and directly to mobile devices. Amongst the general population, podcasts have become increasingly popular for education and entertainment with the advent and rapid adoption of the smartphone [25]. Smartphones are ubiquitous amongst personnel in the medical field and can serve as a convenient and accessible platform to distribute podcast media. Through podcasts, content creators can present additional material that can take the place of or enhance print and online text content and occasionally enhance this with multimedia elements as well. For example, journals are using podcasts for interviews with authors, commentary, debate, and education related to recent publications to engage their audiences and provide value beyond the printed article. In the specialty of anesthesiology, the journal *Anesthesiology* has a podcast hosted by the editor-in-chief that discusses a selected newsworthy article from a recent journal issue or other topics with an author (<http://anesthesiology.pubs.asahq.org/Podcast.aspx>). *Anesthesia & Analgesia* has partnered with OpenAnesthesia.org (<http://openanesthesia.libsyn.com>) to create a podcast that has more directed educational material, “ask the expert” forums, and case report discussions. This concept extends to national societies that wish to have an additional platform to share the work of and topics relevant to its members. ASRA supports a more conversational podcast called ASRA RAPP (regional anesthesia and pain podcast) (<https://www.asra.com/page/290/asra-rapp-podcast-series>) where topics spanning from outcomes after regional anesthesia for joint replacement surgery to the economics of practice management for the acute pain physician are discussed.

One of the primary appeals of podcasts is the concept of the flipped classroom, [26,27] in which information is provided to the learner before a face-to-face session so that learning within the classroom or formal educational environments can be more analytical and centered on critical thinking. The advantages of podcasts are that they are often succinct, conveniently stored on electronic media, and digestible in non-classroom environments (e.g., while exercising, travelling, etc.) [28]. This educational material can be paused, rewound,

and reviewed multiple times at the learner's discretion. In addition, high-quality content can be presented to a broad audience using a distribution method that is very inexpensive. Sharing this type of content by traditional media would be expensive and therefore limited. Podcasts can be shared globally and can be stored for future use with little effort or technical ability. In regional anesthesiology, audio podcasts discussing recent publications, debate regarding current topics and new trends, and conversational sessions with thought leaders are all valuable additions to current spectrum of educational offerings. Video podcasts expand the possibilities of teaching the very visual field of regional anesthesiology techniques, similar to YouTube. With the simplification of content creation and distribution and the increased popularity of the medium, podcasts are becoming an invaluable tool in modern medical education. As more and more user-friendly features lead to improved ease of access to podcasts, they will become a bigger part of modern education.

Limitations of Social Media

As with virtually all shared information, the reliability of the source is of utmost importance. This is the biggest limitation of using social media in regional anesthesiology as well as in medicine in general. The general public and prospective patients who have to navigate the complicated healthcare system are the most vulnerable. Determining which users of social media can be trusted and which cannot for quality education is not an easy or straightforward process. Anytime an article is retweeted or posted on a social media site by someone, even if the user is a physician, confirmation of the authenticity of the original source is advisable. There is typically no screening process for the quality of articles, images, and videos on most social media sites, so it is a "user beware" situation.

Another potential limitation of social media is the difficulty in interpreting analytics. The field of social media analytics is its own industry and is in high demand due to the applications in marketing and business decision-making. In medicine, free analytics by companies such as Symplur (the "Healthcare Hashtag Project") may be useful in understanding the global reach of certain topics, conferences, or Twitter chats. However, interpreting the numbers can be difficult. The "impressions" metric (Table 1) can be significantly influenced by the engagement of a few Twitter users with a large number of followers, so this measurement may not accurately represent the social media engagement of conference attendees, for example, and makes comparison between two events very difficult. In addition, some experts suggest that almost a third of Twitter accounts are inactive, throwing into question the actual value and impact of the number of followers in terms of measuring reach [30]. The bottom line is that while social media is certainly gaining popularity and becoming a bigger part of the regional anesthesiology community, context is critical, and other metrics that estimate reach, such as journal citations, article reads, and lecture views should not be ignored.

In the authors' opinion, measuring metrics of active engagement, such as replies and retweets, may represent more meaningful data. To gauge the early impact of new research articles some medical journals are beginning to track alternative metrics or "altmetrics," which are counts of citation or mentions in specific social web pages [29]. Altmetrics include retweets, mentions on Facebook, appearances in Google+, blogs, traditional media

outlets, and more and combine them into a summary score. The correlation of altmetrics to traditional metrics must still be established [29]. It is worth noting that the concept of “altmetrics” should be distinguished from the company, Altmetric (<https://www.altmetric.com/>), which provides reports on altmetrics for a fee to publishers, researchers, and other organizations.

Conclusions

Social media has transformed interpersonal communication, and the medical community has begun to integrate social media tools for various purposes. For regional anesthesiologists, social media can facilitate global interactions, content curation and lifelong learning, research dissemination, and enhancement of the traditional conference experience. Although not a comprehensive list, this review provides an overview of a few social media platforms that regional anesthesiologists are currently using for personal and professional development.

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Figure 1.

Screen shot of a sample tweet by Regional Anesthesia and Pain Medicine, the journal for the American Society of Regional Anesthesia and Pain Medicine.

Table 1

Social media terminology

Term, phrase, or symbol	Definition	Platform(s)	Example
Hashtag (#)	"A word or phrase preceded by a hash sign (#), used on social media websites and applications, especially Twitter, to identify messages on a specific topic." ¹	Facebook, Instagram, Twitter	#ASRASpring15 – the official meeting hashtag for the annual Spring meeting of the American Society of Regional Anesthesia and Pain Medicine.
Handle or Nametag (@)	"A person's username on an online forum or social media site." ^{1,5} A handle is indicated by the @ symbol.	Instagram, Twitter	@ESchwenkMD – the Twitter handle for one of the authors of this review.
Tweet	"A message, image, etc. posted on Twitter." ¹	Twitter	Tweet by @ASRA_Society on February 14, 2017: "Join Jeff Gadsden for lunch and PBLD-05: The Parturient with Implanted Spinal Cord Stimulator. #ASRASpring17 http://ow.ly/UXfp308Xvq5 "
Retweet	"A reposted or forwarded message on Twitter." ¹	Twitter	@Neuro_Kellie retweeted the following: "Mixing Opioids and Alcohol May Increase Likelihood of Dangerous Respiratory Complication, Especially in the Elderly: http://ow.ly/gmkt308M53B "
Like	"An act of showing that you think something is good by clicking a button." ⁶	Facebook, Instagram, Twitter, YouTube	The Facebook page for ASRA has 4,356 "likes" as of February 15, 2017.
Impressions	A calculated number that describes the number of people exposed to a tweet or group of tweets. It is determined by calculating the "number of tweets per participant and multiplying it with the number of followers that participant currently has." ⁷	Twitter	The Fall 2016 ASRA Pain Meeting had 1,860,656 impressions according to Symplur.

Table 2

Potential applications of Facebook for educational purposes.

• Teachers can create a list of students and manage groups using custom topics related to courses
• Information can be shared through links, photos or multimedia content related to specific subjects
• Surveys can be created and deployed on Facebook to gather feedback about the educational experience
• Facebook messenger enables direct communication between students and teachers
• Group announcements can be published on tests, exams or face to face meetings
• Facebook posts can include links to other services (like Google docs)
• Facebook may be used as a complement to an eLearning platform and may engage learners not yet enrolled in a course

Table 3

Comparison of various social media platforms frequently used in regional anesthesia

Platform	Advantages	Disadvantages
Facebook	Largest social media site with greatest number of users; no character limit; group pages can be a great marketing tool for individuals or group practices	Lack of limit on length of posts and replies can be distracting; began as a social website and still seen that way by many; patients must become “friends” with a physician to follow him or her unless a page is created for that physician, potentially creating an awkward position; platform allows for group pages with identical names which can lead to confusion
Podcasts	Portable; can be started and stopped any time; promotes critical thinking; learning can be at any pace	No ability for listeners to be active participants
Twitter	Rapid spread of content; succinct messages increase readability patients can “follow” a physician without becoming personally involved	Character limit can lead to poor grammar and errors in communication; up to 40% of accounts may be inactive, making the significance of number of “followers” uncertain ²⁹
YouTube	Videos are viewable regardless of account status	Only contains video content; content typically relies on other social media platforms for publicity