

# Decoding Twitter

## *Understanding the History, Instruments, and Techniques for Success*

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How do we, as surgeons, communicate with one another, share ideas, and advance our profession? Traditionally, this has been accomplished through peer-reviewed publications and society meetings. A significant limitation of these methods is that they do not allow for timely and interactive dialogue. They also restrict participation to those whose writing passes the editorial process or who can afford conference expenses. Social media overcomes these barriers of time delay and restrictive participation. Its benefits should be underscored and in today's era, some even argue, "social media is a necessary component of the practice of surgery."<sup>1</sup> Yet for surgeons who are social media-naïve, the rationale to embrace its use may not be readily apparent. Social media is a tool, which must be learned. Just as in surgery, it is essential to understand its history and instrumentation, so that one can master the art.

### HISTORY: WORLD WIDE WEB AND WEB 2.0

In the 1990s, the World Wide Web transformed medical, surgical, and continuing education, allowing instant access to millions of published resources, and the ability to query based on key words and search terms. A decade later, Web 2.0 moved beyond static web pages, emphasizing interactive, user-generated content such as blogs, wikis, and social media like YouTube, Facebook, and Twitter. Web 2.0 sites encourage users to interact, collaborate, and create dialogue within a virtual community. This became a powerful tool for disseminating research, developments, and commentary. Indeed Eysenbach<sup>2</sup> demonstrated that tweets can "predict highly cited articles within the first 3 days of article publication." Today, most academic journals have Twitter accounts to publicize their articles (Table 1). Many offer data from Altmetrics, which include downloads and social media mentions tabulated in real time.<sup>3</sup> Thus, social media has evolved into an important strategy and metric to gauge the relevance of a publication before citations accrue.

### THE INSTRUMENT: UNDERSTANDING TWITTER FUNCTIONALITY AND APPLICATIONS

Given the ubiquity of Facebook (used by 71% of online Americans), many people unknowingly limit themselves by assuming all social media platforms are similar.<sup>4</sup> However, the functionality and applications of each are quite diverse and inherently designed for different applications. For most, Facebook is used in the context of relative privacy, as it allows for information sharing among an established network of personal contacts, that is, "friends." In stark contrast, Twitter is not limited to a preapproved

network (with the exception of "private" Twitter accounts). Knowing every post is public can make one inherently mindful to be professional at all times. In fact, of the 5000 physician tweets analyzed by Chretien et al,<sup>5</sup> only 3% contained unprofessional material. Although newer social media platforms have been introduced, many of their purported strengths are ill fitted to the unique needs of surgeons. For example, Health Insurance Portability and Accountability Act (HIPAA) negates the utility of platforms emphasizing photos and videography, and the transient nature of apps such as Snapchat makes them less useful to scientists.

Tweets are brief messages limited to 140 characters. Links, photos, or images may be added to convey further information. The content of your Twitter "stream" is populated with tweets from those you choose to follow. Your profile and the content you choose to share influences who decides to follow you, be it surgeons, other medical professionals, patients, family, or friends. Irrespective of who is following whom, any tweet can be retweeted or searched, with the potential to be seen by anyone. Users interact with one another by retweeting, quoting tweets, liking, or replying to tweets. Conversations can occur either in real time or asynchronously, among few or many. This asynchronicity is ideal for busy surgical schedules and international collaborations across time zones. The complex interplay between tweets and follower populations results in an open forum for learning, sharing, and engagement catered to the user's preferences. Hashtags placed before key words or phrases (without spaces) allow a tweet to be more readily found within a Twitter search (Table 2, Figs. 1 and 2). To measure the impact of hashtags, "total impressions" are often used, calculated by the number of Twitter streams the hashtag appears in.

### CONTRAINDICATIONS, SIDE EFFECTS, AND COMPLICATIONS

Just as the astute surgeon knows operations cannot be performed without risking complications, tweeting as a surgeon requires an awareness of the potential pitfalls. In addition to being public, tweets are time stamped and, if desired, the user's location can be noted. Given their increased scrutiny, health care professionals must be particularly mindful of when and where social media communications are posted. A 2016 survey suggests concerns of unsolicited patient interactions are likely unfounded, as 97% of respondents were unwilling to discuss health goals on social media.<sup>6</sup> There also exists the fear that one poorly phrased message can cause severe side effects. Although these events are often sensationalized in the media, their actual incidence has not been studied and likely represents a small proportion of those posting on social media. Yet their existence reinforces the need to consider every message posted. Similar to how one anticipates and scrutinizes the consequences of each intraoperative move, so too should surgeons conduct themselves on social media.

### TECHNIQUE: "SEE ONE. DO ONE. TEACH ONE."

Once one decides to participate, it is best to do so with a real photo and complete profile. The first time you log in, upload a profile picture,

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**TABLE 1.** Popular Surgery Health Care Hashtags

Category	Hashtag	Description	Participants	Tweets	Impressions
Tweet chats*	#BCSM	Breast Cancer Social Media; Monday at 9 PM ET (US) @BCSMChat	13,269	103,589	455,103,392
	#HCLDR	Healthcare Leadership; Tuesday at 8:30 PM ET (US) @hcldr	12,760	145,445	1,000,401,208
	#HCSM	Healthcare Communications & Social Media; Sunday 8 PM–9 PM CT (US) @HealthSocMed	46,931	260,381	1,551,835,480
	#LCSM	Lung Cancer Social Media; Every other Thursday 8 PM ET (US) @lcschat	10,934	75,290	246,837,703
	#MedEd	Medical Education; Thursday 9 PM (UK) and 9 PM ET (US) @MedEdChat	64,820	277,277	2,571,885,446
Journal clubs*	#EASTjc	Eastern Association for the Surgery of Trauma Monthly @EASTjournalclub	232	2357	1,798,684
	#IGSJC	International General Surgery Journal Club; Monthly 1st Monday to Wednesday @igsjc	394	3518	6,998,220
	#UroJC	International Urology Journal Club; Monthly 1st Sunday/Monday @iurojc	558	3092	5,288,105
Conferences <sup>#</sup>	#ACSCC15	American College of Surgeons Clinical Congress October 4–8, 2015, Chicago, IL	2777	13,879	48,332,566
	#ASC2016	11th Academic Surgical Congress of Association of Academic Surgery & Society of University Surgeons; February 2–4, 2016, Jacksonville, FL	1271	7085	19,502,436
	#eAPSA2015	46th American Pediatric Surgical Association Meeting; April 30–May 3, 2015, Ft Lauderdale, FL	196	996	1,240,880
	#CPTBolivia2015	XXVIII Panamerican Trauma Congress; November 11–14, 2016, Santa Cruz, Bolivia	52	591	552,418
	#EAST2016	29th Eastern Association for the Surgery of Trauma Annual Scientific Assembly; January 12–16, 2016, San Antonio, TX	1044	4607	6,869,726
	#SAGES2016	Society of American Gastrointestinal & Endoscopic Surgeons annual meeting; March 16–19, 2016, Boston, MA	741	3222	12,109,123
Other*	#GlobalSurgery	Global health, surgery, humanitarianism	3813	19,005	34,845,443
	#ILookLikeASurgeon	Diversity, inclusion, challenging stereotypes, community support	12,018	66,099	224,434,630
	#SurgTweeting	General surgery, networking	2136	8970	27,742,694

\*From January 1, 2015 12:00 AM to December 31, 2015 11:59 PM.

<sup>#</sup>±7 days from conference dates.

Source: Symplur, a health care social media analytics company.

share your geographic location, and, at a minimum, state you are a surgeon in your biography. You are going to be tweeting professionally; a well-rounded profile ascribes you credit for your contributions.

## Learn

By following leaders in your field and those who tweet high-yield content, you can read articles they find pertinent and interesting, and gain insight from their commentary. You can also learn from conferences from afar by following their designated hashtag (Fig. 2). However, it is important to read with a critical eye. Although tweets are not peer-reviewed, many contain links with further data and references to support the statements being made. If you question a shared comment or “fact,” simply reply to the tweet and ask for clarification and citation.

## Network. Lead. Connect

Take advantage of Twitter’s global network by following liberally. Do not hesitate to interact. If you like or agree with a tweet, retweet it. Become a thought leader through content curation—share with others what fascinates you. If you find an article interesting or inspiring, chances are your followers will

as well. Tweet to congratulate, compliment, and showcase others’ work.

## Join a Live Conversation

A tweet chat is a live Twitter discussion filtered by a hashtag and moderated at a set time on a specific topic. Twitter journal clubs are also conducted in a chat format (usually over the course of a few days). See Table 2 for popular health care tweet chats and journal clubs. This format is a powerful tool for learning and networking.<sup>7</sup>

## Educate Patients

Patients rely on digital media for education on health and disease.<sup>8</sup> Although tweets are not HIPAA-compliant and Twitter should never be used for individualized advice or direct patient-surgeon communication, the opportunity for surgeons to educate patients via Twitter is unprecedented. Thus surgeons have taken to Twitter to provide accurate and timely information on surgical pathologies and procedures.

## Mentor and Be Mentored

The ease with which digital natives navigate social media provides a rare opportunity for “reverse mentoring” in which those

**TABLE 2.** Twitter Accounts of Select Medical Journals and Surgical Organizations

Category	Name	Handle	Followers	Created	
Journal	<i>Annals of Surgery</i>	@AnnalsofSurgery	11,512	October 2011	
	<i>Annals of Surgical Oncology</i>	@AnnSurgOncol	1259	March 2014	
	<i>Annals of Thoracic Surgery</i>	@annalsthorsurg	727	February 2015	
	<i>ANZ Journal of Surgery</i>	@ANZJSurg	765	March 2010	
	<i>BJS</i>	@BJSurgery	6795	March 2011	
	<i>International Journal of Surgery</i>	@IJSurgery	2159	March 2013	
	<i>JAMA</i>	@JAMA_current	161,711	May 2009	
	<i>JAMA Surgery</i>	@JAMASurgery	12,980	July 2009	
	<i>Journal of Surgical Education</i>	@JSurgEduc	128	April 2016	
	<i>Journal of Surgical Research</i>	@JSurgRes	819	June 2015	
	<i>Journal of the American College of Surgeons</i>	@JAmCollSurg	2625	April 2013	
	<i>Journal of Trauma and Acute Care Surgery</i>	@JTraumAcuteSurg	6455	June 2011	
	<i>New England Journal of Medicine</i>	@NEJM	331,411	March 2009	
	<i>Plastic and Reconstructive Surgery; PRS Global Open Surgery</i>	@prsjournal	8013	April 2009	
	<i>The American Journal of Surgery</i>	@SurgJournal	540	May 2015	
	<i>The Lancet</i>	@AmJSurgery	448	April 2015	
	<i>World Journal of Surgery</i>	@TheLancet	225,142	March 2009	
	Organization/Society	<i>American Academy of Orthopedic Surgeons</i>	@worldjsurg	667	October 2014
		<i>American Academy of Otolaryngology—Head and Neck Surgery</i>	@AAOS1	28,846	April 2009
<i>American Association of Neurological Surgeons</i>		@AAOHNS	6176	March 2009	
<i>American College of Surgeons</i>		@AANSNeuro	5299	August 2011	
<i>American Pediatric Surgical Association</i>		@AmCollSurgeons	26,742	September 2009	
<i>American Society of Colon and Rectal Surgeons</i>		@APSA Surgeons	1283	January 2013	
<i>American Society of Plastic Surgeons</i>		@fascrs_updates	2089	July 2013	
<i>American Society of Transplant Surgeons</i>		@ASPS_News	13,978	July 2009	
<i>American Thoracic Society</i>		@ASTSChimera	178	November 2014	
<i>American Urological Association</i>		@atscommunity	11,109	June 2009	
<i>Association of Academic Surgery</i>		@AmerUrological	11,039	March 2009	
<i>Association of Women Surgeons</i>		@AcademicSurgery	6330	October 2009	
<i>College of Surgeons of East Central and Southern Africa</i>		@WomenSurgeons	8428	December 2011	
<i>Eastern Association for the Surgery of Trauma</i>		@cosecsa	262	August 2015	
<i>Indian American Surgical Association</i>		@EAST_TRAUMA	2455	April 2009	
<i>Panamerican Trauma Society</i>		@IndoAmSurgAssoc	17	June 2015	
<i>Royal Australasian College of Surgeons</i>		@Panamtrauma	267	August 2011	
<i>Royal College of Physicians and Surgeons of Canada</i>		@RACSurgeons	2566	April 2013	
<i>Royal College of Surgeons of Edinburgh</i>		@Royal_College	9630	April 2011	
<i>Royal College of Surgeons of England</i>		@RCSEd	7898	June 2010	
<i>Society of American Gastrointestinal and Endoscopic Surgeons</i>		@RCSEd	25,865	June 2009	
<i>Society of Asian Academic Surgeons</i>		@SAGES_Updates	6928	May 2009	
<i>Society of Surgical Oncology</i>		@AsianAcadSurg	100	November 2015	
<i>Spanish Surgical Association</i>		@SocSurgOnc	3889	December 2011	
<i>Surgical Infection Society</i>		@aecirujanos	2975	August 2011	
<i>The American Association for the Surgery of Trauma</i>		@SurgInfxSoc	239	May 2013	
<i>The Society of Black Academic Surgeons</i>		@traumadoctors	4300	June 2009	
<i>The Society of Thoracic Surgeons</i>		@societyofBAS	539	March 2014	
		@STS_CTSurgery	3416	February 2011	

Source: Twitter.

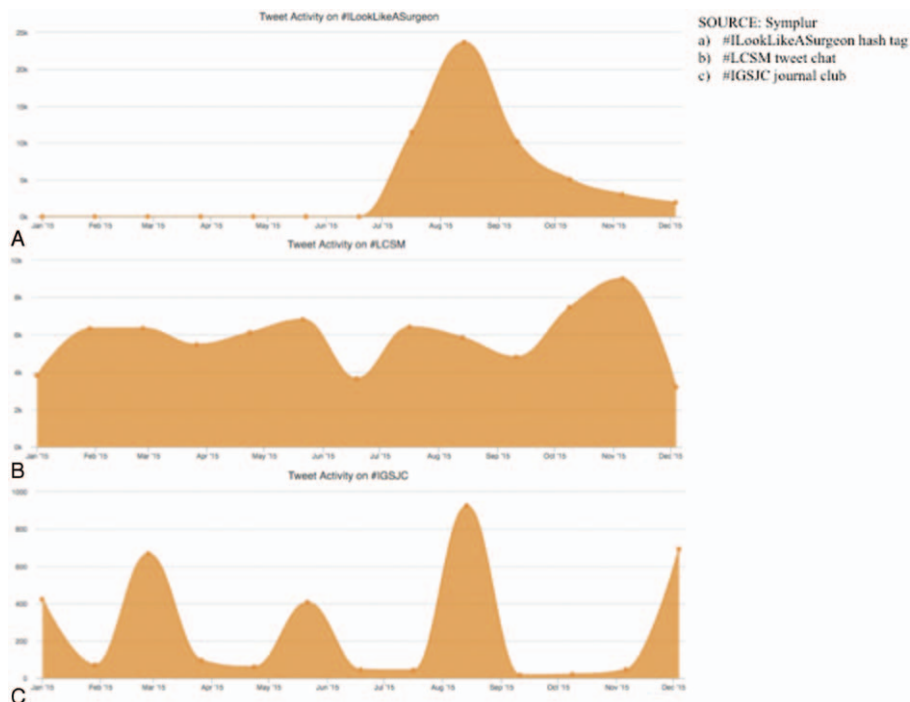
traditionally in the role of “mentee”—medical students, residents, and junior faculty—are able to guide those senior to them. Furthermore Twitter’s 140-character limit and level playing field irrespective of rank and degree enables all voices to be heard. This can lessen perceived hierarchical communication barriers, making experts in the field more approachable to those junior to them.

### THE OPERATION: BRINGING IT ALL TOGETHER

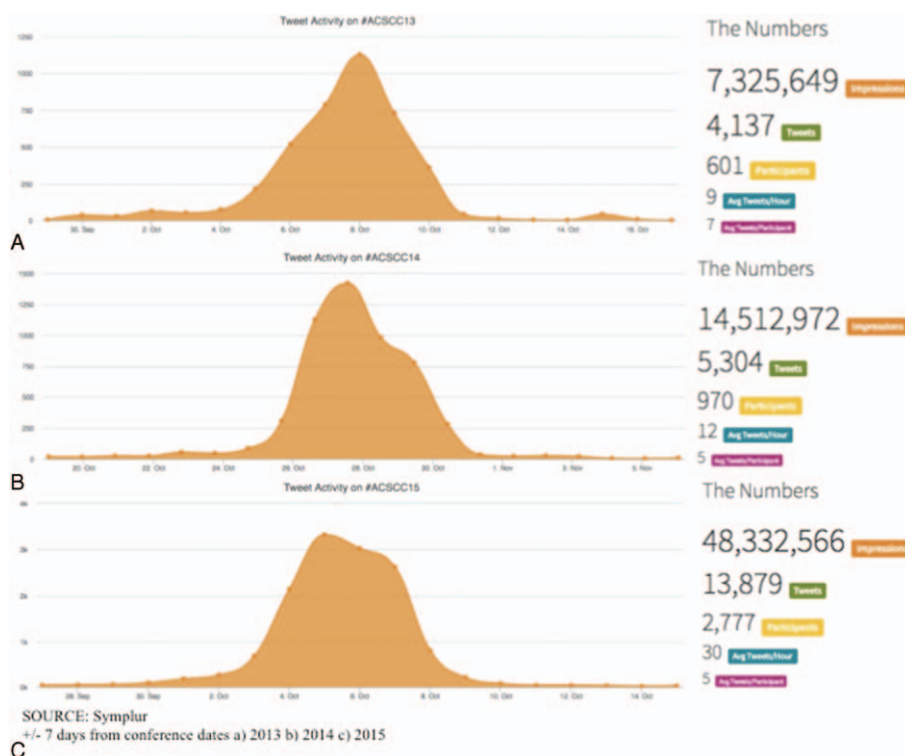
An illustrative example of the power of social media to unite surgeons is the #ILookLikeASurgeon movement (Figs. 3 and 4). This hashtag, while initially a viral phenomenon celebrating women and diversity in surgery, rapidly evolved to an established global community with a strong message: today’s surgeon might be an athlete, a

parent, a leader, a person of any ethnicity, and, yes, a woman as well.<sup>9</sup> Empowered to shape the portrayal of the profession, the hashtag drew in surgeons previously inactive on social media. The tweeted images inspired blog posts, videos, and commentary by patients, premedical students, practicing surgeons, and the lay press alike. To date there have been over 65,000 tweets containing the #ILookLikeASurgeon hashtag by over 12,000 participants, making nearly 225 million impressions worldwide.<sup>10</sup>

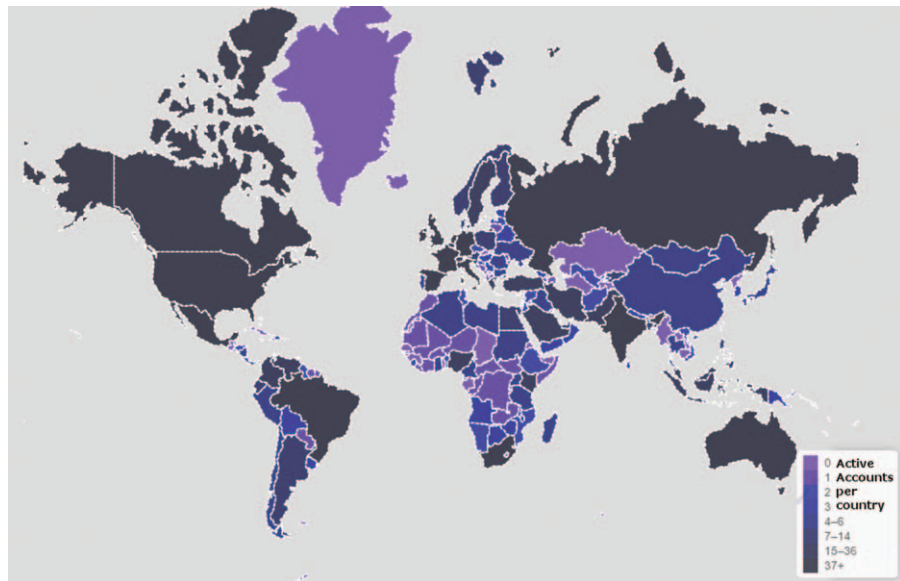
For many, participation in the #ILookLikeASurgeon conversation was their first social media “operation;” the first time they realized the value of Twitter-based communication. #ILookLikeASurgeon sparked a disruptive dialogue within the surgical community, and realized the potential of surgeons to unite globally to advance the profession. The impact of social media on the evolution



**FIGURE 1.** Tweet activity patterns across different categories of hashtags in 2015. Source: Symplur, a health care social media analytics company.



**FIGURE 2.** Twitter engagement at the American College of Surgeons Clinical Congress: 2013–2015. Source: Symplur, a health care social media analytics company.



**FIGURE 3.** Unique users tweeting #ILookLikeASurgeon from August 5, 2015 to May 1, 2016. Source: Matt “Mookie” Thayer - Presentation Management Systems.



**FIGURE 4.** Word cloud of frequently used words in tweet containing #ILookLikeASurgeon from August 5, 2015 to May 1, 2016. Source: Matt “Mookie” Thayer - Presentation Management Systems.

of surgical discourse lies not within the technology, but rather within us as we generate the content and govern its quality. Ultimately, it is the surgeon-user who must find the facility to decode network media so as to learn its tools and techniques, and, in turn, apply them to perfect the art of the operation.

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**REFERENCES**

1. Steele SR, Arshad S, Bush R, et al. Social media is a necessary component of surgery practice. *Surgery*. 2015;158:857–862.
2. Eysenbach G. Can tweets predict citations? Metrics of social impact based on Twitter and correlation with traditional metrics of scientific impact. *J Med Internet Res*. 2011;13:e123.
3. About Altmetrics on The JAMA Network. Available at: <http://sites.jamanetwork.com/altmetric/>. Accessed May 2, 2016.
4. Pew Research Center. Social Networking Fact Sheet. Available at: <http://www.pewinternet.org/fact-sheets/social-networking-fact-sheet/>. Published 2013. Accessed May 2, 2016.
5. Chretien KC, Azar J, Kind T. Physicians on Twitter. *JAMA*. 2011;305:566–568.
6. Jansen BP, Mitra N, Shah A, et al. Using digital technology to engage and communicate with patients: a survey of patient attitudes. *J Gen Intern Med*. 2016;31:85–92.
7. Roberts MJ, Perera M, Lawrentschuk N, et al. Globalization of continuing professional development by journal clubs via microblogging: a systematic review. *J Med Internet Res*. 2015;17:e103.
8. Pew Research Center. Health Fact Sheet. Available at: <http://www.pewinternet.org/fact-sheets/health-fact-sheet/#>. Published 2013. Accessed May 2, 2016.
9. Hughes KA. #ILookLikeASurgeon goes viral: How it happened. *Bull Am Coll Surg*. 2015; 100(11):10-16. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/26677529>. Accessed May 2, 2016.
10. #ILookLikeASurgeon—Healthcare Social Media Analytics and Transcripts. Available at: <http://www.symplur.com/healthcare-hashtags/looklikeasurgeon/>. Accessed May 2, 2016.