Resident Assembly Advisory Opinion #1

State Main Purpose/ Title	AAOS Social Media Guidelines for Residents and Fellows

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Are you a Resident Delegate?	**Yes**	**Classification of Proposed AO (To the AAOS, to the RA or Other)**	**AAOS**

WHEREAS:	Social media has become ubiquitous throughout global society as a modality for rapidly disseminating information, views, and services.
WHEREAS:	Orthopaedic Surgeons use social media platforms to inform potential patients about their services, provide public health-relevant advice, educate the general public and to promote the field of medicine as a whole. Such services include the maintenance of social media accounts and profiles, and the launching of specialty-related podcasts. (Berk et al. J Gen Intern Med 2020, EPub ahead of Print) (Earp et al. JAAOS 2020;28(2):e86-91) (Curry et al. Orthop Rev (Pavia) 2014;6(3):5483) (Bosslet et al. J Gen Intern Med 2011; 26(10):1168-1174.), (Farnan et al. Ann Intern Med 2013;158(8):620-627)
WHEREAS:	The unlimited reach of social media can put physicians who use it carelessly at risk of privacy/HIPAA violations, ethical or professional violations, and poor public perception. It may also compromise the doctor/patient relationship. (Bennett et al. Plast Reconstr Surg. 2018;142(3):388e-398e) (Hardouin et al. J Vasc Surg, 2019;67(6):e204)
RESOLVED A:	In conjunction with the Innovation Committee of the Resident Assembly, the AAOS consider development and dissemination of guidelines on the use of social media by residents and fellows. Such should include the following: - The responsible and professional use of social media for in-training residents and fellows, such as use of privacy controls; and - The risks and benefits of social media and its ability to influence, negatively and positively, the doctor/patient relationship and professional relationships; and - Reminders for residents and members to comply with ethical obligations and their institution's policies regarding use of social media within the operating theater, as well as the display of content obtained intraoperatively, as this represents patients when they are most vulnerable; and
RESOLVED B:	Refer to the guidelines to the AAOS Communications Committee for consideration of ways to further these educational efforts, such as - Interactive trainings similar to media training offerings - Online modules similar to the health policy milestones curriculum which include case examples of social media being used appropriately and inappropriately; and

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RESOLVED C:

AAOS consider modifying its existing social media policy to allow the Resident Assembly to use AAOS resident-focused social media accounts with Instagram and Twitter on a pilot basis, with the understanding that any such use would comply with all AAOS social media policies and postings would be reviewed and vetted by AAOS.

The Ethical and Professional Use of Social Media in Surgery: A Systematic Review of the Literature

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Summary: Although certain medical societies have released guidelines on the use of social media, plastic surgery, with its inherent visual nature and potential for sensationalism, could benefit from increasing direction regarding the ethical use of social media. The authors hypothesized that although general platitudes for use exist in the literature, guidelines articulating the boundaries of professional use are nonspecific. Systematic searches of MEDLINE, Embase.com, and Cochrane Central Register of Controlled Trials were completed on January 18, 2017. Searches consisted of a combination of Medical Subject Headings terms and title and abstract keywords for social media and professionalism concepts. In addition, the authors manually searched the three highest impact plastic surgery journals (ending in October of 2017). Two authors screened all titles and abstracts. Studies related to clinical medicine, patient care, and the physician-patient relationship were included for full-text review. Articles related to surgery merited final inclusion. The initial search strategy yielded 954 articles, with 28 selected for inclusion after final review. The authors' manual search yielded nine articles. Of the articles from the search strategy, 10 were published in the urology literature, eight were published in general surgery, six were published in plastic surgery, three were published in orthopedic surgery, and one was published in vascular surgery. Key ethical themes emerged across specialties, although practical recommendations for professional social media behavior were notably absent. In conclusion, social media continue to be a domain with potential professional pitfalls. Appropriate use of social media must extend beyond obtaining consent, and plastic surgeons must adhere to a standard of professionalism far surpassing that of today's media culture. (*Plast. Reconstr. Surg.* 142: 388e, 2018.)

Social media have attained an undeniably significant influence within medicine. Not only do they provide means of networking at professional conferences and discussing the latest scientific papers with colleagues,[1] surgeons also use social media for marketing and branding, educating the public, and communicating directly with patients.[2] Plastic surgeons have led the way in this regard, given the consumer-driven nature of the surgical services offered.[2] Importantly, 59 to 70 percent of plastic surgery patients stated in prior surveys that the Internet functions as a valuable resource for evaluating plastic surgeons and understanding potential surgical procedures.[3] Given the current cultural climate and the expectations of the public, almost 60 percent of surveyed plastic surgeons felt that social media engagement is inevitable and beneficial for the maintenance of a successful practice.[4]

However, the prevalence of social media in the various surgical specialties should give us considerable pause. Breaches of patient confidentiality still occur, and these infractions are not without serious consequences.[5] Even more disquieting is the sensationalism that distinguishes the content of social media posts by a small percentage

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of plastic surgeons. Photographs and videos capturing sensitive anatomy and operative procedures in a sometimes casual manner render these posts potentially unprofessional and disrespectful, which violates the American Society of Plastic Surgeons Code of Ethics mandate to always use respectful language and images. Although the Social Media Task Force was established by the American Society of Plastic Surgeons in 2015 to promote responsible social media use, the American Society of Plastic Surgeons Code of Ethics still does not provide specific guidance on social media. However, the Code of Ethics was written to be a fluid and timeless document, much like the Constitution. As such, terms such as "electronic media" appear in the Code of Ethics, which necessarily includes the realm of social media, instead of referring to specific social media platforms. Furthermore, aside from enumerating social media's many benefits, the plastic surgery literature does not adequately address what constitutes both professional and ethical conduct on social media. As such, we hypothesized that the surgical literature would provide generalized maxims on the appropriate use of social media without specifically defining professional content.

To test our hypothesis, we performed a rigorous review of the literature to assess published recommendations from all surgical specialties for the professional use of social media. Based on our review of included articles, we discuss the potential implementation of professional society guidelines, and strategies for equipping plastic surgeons to use social media effectively, safely, and professionally.

METHODS

We ran comprehensive literature searches in Ovid MEDLINE, Ovid MEDLINE In-Process & Other Non-Indexed Citations, Ovid MEDLINE Epub Ahead of Print, Embase.com, and Cochrane Central Register of Controlled Trials on January 18, 2017. Each search consisted of a combination of controlled terms (Medical Subject Headings in Ovid and Cochrane; Emtree in Embase) and title and abstract keywords for social media and professionalism concepts. A preidentified set of five key articles were used to generate relevant search terms and to test the effectiveness of the searches. To minimize the possibility of missed studies, we supplemented the comprehensive database searches with a manual search of the three highest impact plastic surgery journals over a 10-month period (ending in October of 2017). Duplicates were removed in Endnote X6. The reproducible searches for all databases are available at DOI:10.7302/Z2VH5M1H.

Two authors (K.G.B. and N.L.B.) independently screened all titles and abstracts in DistillerSR. For inclusion, studies had to relate to clinical medicine, direct patient care, and the physician-patient relationship. Studies meeting these criteria underwent full-text review. The same criteria were used for inclusion at this stage, with the addition that each study relates to social media, professionalism, and surgery. Disagreements at both stages were resolved through discussion. The screening questions and decision data are available at DOI:10.7302/Z2VH5M1H.

RESULTS

The search strategy yielded 954 articles (Fig. 1). Title/abstract review was performed using the three selected questions as mentioned in the Methods section. After review and subsequent resolution of conflicts, 353 articles remained. After full-text review and resolution of conflicts, 28 articles were selected for inclusion (Table 1).[1-28] Nine articles were also included from manual review of articles published by plastic surgery journals with the three highest impact factors (*Plastic and Reconstructive Surgery*, *Journal of Plastic, Reconstructive & Aesthetic Surgery*, and *Aesthetic Surgery Journal*) (Table 2).[24,29-36]

Of the articles retrieved by the search strategy, 10 were related to appropriate social media use in urology, eight in general surgery, six in plastic surgery, three in orthopedic surgery, and one in vascular surgery. An additional article was included because of its extensive discussion regarding the ethics of clinical and surgical photography in social media, and is summarized with the plastic surgery literature. All articles were written between 2010 and 2017.

Urology

The urology literature explored both positive and negative aspects of social media use in surgical practice, more so than other specialties. Recommendations included following professional society guidelines (if they exist),[1,6] guarding patient confidentiality,[6,19] declaring conflicts of interest,[1] avoiding direct contact with patients online,[19] considering a potentially infinite audience,[19] and remembering that one's online posts are permanent.[1,6,19] Another article recommended creating separate personal and professional accounts and encouraged the use of disclaimers—that the

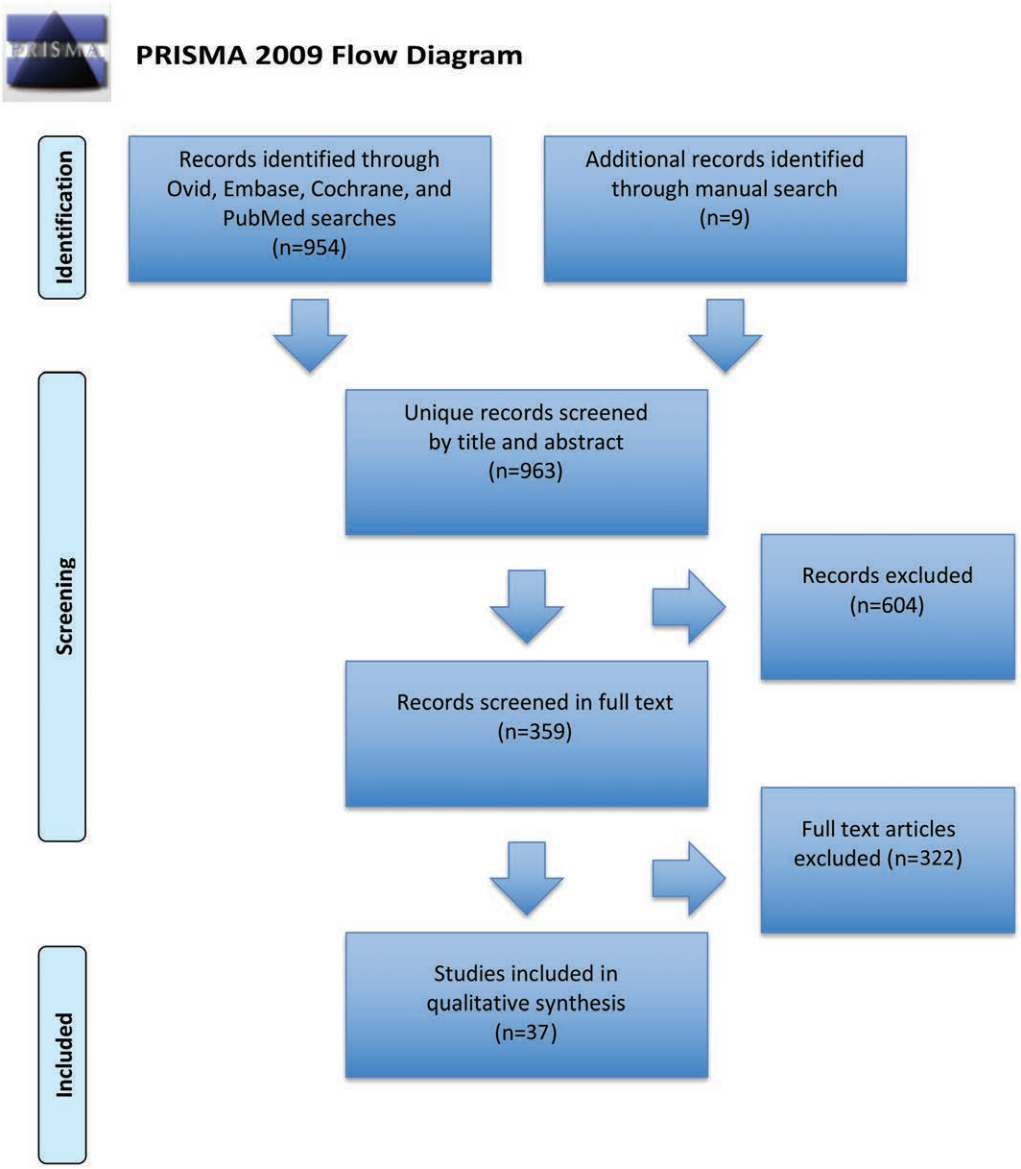

Fig. 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (*PRISMA*) 2009 flow diagram. (From Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Med*. 2009;6:e1000097.)

information provided does not substitute for a surgical consultation.[19] Guidelines provided by the American Urological Association include the following: (1) be professional, (2) protect confidentiality, (3) allow for interaction, (4) be courteous, (5) exercise discretion, (6) support the American Urological Association's identity, and (7) be thoughtful.[36] The European Association of Urology has developed specific guidelines as well, encouraging clinicians to establish a professional identity in line with career goals, assume that anything posted is permanent, maintain clear limits with patients, refrain from self-promotion, and not accept friend requests from patients.[16] The *British Journal of Urology International* also suggests users identify themselves as physicians, state that views are not necessarily those of one's institution, alert colleagues if their posts are inappropriate, and strive for accuracy.[5] Finally, Katz suggests that guidelines alone are likely less effective than actively teaching physicians and trainees what constitutes professional online conduct.[14]

General and Vascular Surgery

Several articles exist in the general surgery literature. A survey study concluded that program

Table 1. Summary of Articles Included in the Literature Review

Reference	Surgical Specialty Discussed	Article Objectives	Journal	Conclusions
Landman et al., 2010	General surgery	To assess use of social media by faculty and residents at one program and to present guidelines	*Journal of Surgical Education*	Understand institutional policies, educate faculty/residents on policies, appoint department representative to manage social media; monitor your online presence, understand privacy settings, remember audience, maintain boundaries, be aware of post permanence
Patel et al., 2011	Plastic surgery	To discuss ethical issues when using social media for marketing	*Plastic and Reconstructive Surgery*	Overlap between work and play can compromise patient-physician relationship
Wong and Gupta, 2011	Plastic surgery	To compare traditional marketing methods with social media in plastic surgery	*Aesthetic Surgery Journal*	Communication with patients on social media never replaces clinical evaluation; PHI must remain private
Azu et al., 2012	General surgery	To discuss impact of Internet use and social media and to provide recommendations for professional use	*The American Surgeon*	Maintaining digital identity is important; physicians need to monitor online presence; profiles should not contain religious or political preferences
Lifchez et al., 2012	Plastic surgery	To review laws governing online communication and to discuss professional behavior online	*Journal of Hand Surgery*	Do not start doctor-patient relationship online; posts may be disseminated without your knowledge; user has full responsibility for posted content; adhere to HIPAA; OCR can investigate in absence of complaint
Vardanian et al., 2012	Plastic surgery	To evaluate trends of social media use among practicing plastic surgeons	*Plastic and Reconstructive Surgery*	One-third of plastic surgeons limit social media use out of concern for patient confidentiality; 25% feel governing bodies should regulate social media content
Devon, 2013	General surgery	To discuss ethics of posting mission trip photos on social media	*Journal of the American Medical Association*	Establish guidelines before mission trips, obtain consent from international patients
Indes et al., 2013	Vascular surgery	To review applications of social media in vascular surgery and limitations of use	*Journal of Vascular Surgery*	Educate patients that social media does not replace phone calls and appointments; avoid inappropriate contact with patients; start with professional website, then provide corresponding link in social media profile; start with only one social media platform; use disclaimers
Workman and Gupta, 2013	Plastic surgery	To evaluate smartphone apps useful to plastic surgeons	*Aesthetic Surgery Journal*	Advancing technology requires scrutiny of new marketing strategies; follow professional society codes of ethics
Katz, 2014	Urology	To discuss the EAU guidelines	*European Urology*	Physicians held to higher standard; guidelines helpful but not as effective as actively teaching trainees online professionalism
Loeb et al., 2014	Urology	To review benefits of social media collaboration and journal clubs	*European Urology*	Remember professional and confidentiality standards; Twitter is open environment seen by anyone; identify yourself as a physician; maintain boundaries
Murphy et al., 2014	Urology	To discuss BJUI social media guidelines	*British Journal of Urology International*	Adherence to proposed guidelines allow for engagement with minimal risk
Roupret et al., 2014	Urology	To discuss benefits and risks of social media and recommendations of the EAU	*European Urology*	Protect doctor-patient relationship, consider context, represent yourself only, use caution if mixing personal and professional, assume permanence of posts, maintain limits with patients, refrain from self-promotion
Adams et al., 2015	General surgery	To use a case study to determine ethical issues surrounding use of social media in health care	*Cambridge Quarterly of Healthcare Ethics*	Be aware of intent and hierarchy of doctor-patient relationship; stay up-to-date on social media platform terms of use
Azoury et al., 2015	General surgery	To review benefits of social media, its potential threat to professionalism, and American Medical Association guidelines	*Bulletin of the American College of Surgeons*	Be aware of potential dangers; use highest privacy settings; establish professional and personal accounts; maintain boundaries with patients; avoid texting/e-mailing patients about medical concerns; actively manage one's online presence; avoiding social media out of fear is not the solution

(*Continued*)

Table 1. (*Continued*)

Reference	Surgical Specialty Discussed	Article Objectives	Journal	Conclusions
Borgmann et al., 2015	Urology	To determine impact of Twitter on practice, research, and activities	*Canadian Urology Association Journal*	Follow professional society (EAU, BJUI) guidelines
Ehlert, 2015	Urology	To review use, risks, and platforms of social media	*Urology Practice*	Online content is permanent, separate accounts does not eliminate risk, audience is infinite, avoid direct contact with patients, use disclaimers
Fuoco and Leveridge, 2015	Urology	To understand practices and attitudes of Canadian urologists regarding social media	*British Journal of Urology International*	Social media should be used for collaboration, not patient interactions
Herron, 2015	Orthopedic surgery	To explore opportunities for social media use and relevant ethical concerns	*Current Reviews in Musculoskeletal Medicine*	Adhere to HIPAA, follow institutional policies, avoid communicating PHI over social media, use disclaimers, do not engage patients in social relationships, consent to publish patient information, separate personal and professional accounts
Kodadek, 2015	General surgery	To discuss risks of social media and consequences of misuse	*Bulletin of the American College of Surgeons*	User has no control over audience, posts are permanent, surgeon use can affect professionalism of entire field
Modgil et al., 2015	Urology	To review the concept of social media, opportunities for use in urology, and responsible use	*Journal of Clinical Urology*	Follow professional society guidelines; recognize posting as public and permanent; declare COI; avoid direct contact with patients on social media
Mohiuddin et al., 2015	General surgery	To measure effectiveness of case-based sessions for training residents in professional use of social media	*Indian Journal of Surgery*	Residents interested in changing specific use of social media after sessions; sessions made residents more aware of social media's impact on career
Palacios-Gonzalez, 2015	Discussed with plastic surgery literature	To determine whether consent required for publication of patient images, whether social media is adequate place for images to be displayed, and whether special considerations should be taken into account for social media	*Medicine, Health Care, and Philosophy*	Informed consent mandatory for publishing clinical images, social media publication only if consent obtained, consent process must disclose permanence of social media posts, providers should moderate comments
Langenfeld et al., 2016	General surgery	To evaluate program directors' approach to teaching online professionalism	*Journal of Surgical Education*	Online information is permanent; program directors should lead by example
Mata et al., 2016	Urology	To discuss goals of social media, ethical considerations, and ways to have a successful online presence	*Urology*	Develop a digital identity before someone else does; follow professional society guidelines; maintain professionalism; guard patient confidentiality; posts are permanent
McLawhorn et al., 2016	Orthopedic surgery	To review state of social media use in orthopedic surgery and unique practice risks	*Current Reviews in Musculoskeletal Medicine*	Keep personal and professional profiles separate; keep medical advice general; always use disclaimers; follow professional society guidelines; monitor online presence; avoid starting doctor-patient relationship online
Rivas et al., 2016	Urology	To review opportunities and appropriate use of social media in urology	*Central European Journal of Urology*	Be aware of risks and follow professional society guidelines
Duymus et al., 2017	Orthopedic surgery	To determine prevalence of social media use among orthopedic surgeons and its effects on physician-patient communication	*Journal of Clinical Orthopaedics and Trauma*	Be aware that content can be found despite privacy settings; distinct difference between medical and social media cultures

PHI, protected health information; HIPAA, Health Insurance Portability and Accountability Act of 1996 ; OCR, Office of Civil Rights; EAU, European Association of Urology; BJUI, *British Journal of Urology International*; COI, conflict of interest.

Table 2. Summary of Articles Included after Manual Search of Top Three Plastic Surgery Journals

Reference	Article Objectives	Journal	Conclusions
Rohrich, 2017	To discuss impact of social media on academic and personal life in addition to risks	*Plastic and Reconstructive Surgery*	Keep professional and personal accounts separate; do not allow patients access to personal profiles; provide a measured responses to inflammatory comments; avoid sensationalism; cite articles to back up posts; consent for any patient video/photograph posted
Gould et al., 2017	To provide overview of social media and tips for use	*Aesthetic Surgery Journal*	Impressions made online may be indelible; protect patient privacy; avoid using as sounding board
Reissis et al., 2017	To discuss misuse of social media among plastic surgeons and future directions	*Aesthetic Surgery Journal*	Avoid glamorization of procedures; follow advertising guidelines for social media use; need clear professional society guidelines for social media activity
Liu, 2017	To discuss "A Primer on Social Media for Plastic Surgeons: What Do I Need to Know about Social Media and How Can It Help My Practice?"	*Aesthetic Surgery Journal*	Clarify inaccuracies online; poor judgment reflects on entire profession
Nazarian, 2017	To discuss "Advertising on Social Media: The Plastic Surgeon's Prerogative"	*Aesthetic Surgery Journal*	Avoiding social media makes us obsolete; harness social media to educate and provide information on training and board certification
Dorfman et al., 2017	To provide an ethical analysis of patient videos on social media and guidelines for appropriate use	*Plastic and Reconstructive Surgery*	Obtain fully informed consent, recognizing evolving social media platform policies and permanence of online content; promote patient beneficence over surgeon's interests
Furnas, 2017	To discuss "The Ethics of Sharing Plastic Surgery Videos on Social Media: Systematic Literature Review, Ethical Analysis, and Proposed Guidelines"	*Plastic and Reconstructive Surgery*	Many technological advances met with extreme criticism but later adopted; few unprofessional posts should not ruin potential good of social media
Lu et al., 2017	To discuss "The Ethics of Sharing Plastic Surgery Videos on Social Media: Systematic Literature Review, Ethical Analysis, and Proposed Guidelines"	*Plastic and Reconstructive Surgery*	Raw, graphic videos inappropriate for majority of Snapchat audience; easy to blur professional lines; patient compensation for posts inappropriate
Teven et al., 2017	To review possible negative consequences of posting patient material online and to suggest a specific consent form for social media use	*Plastic and Reconstructive Surgery*	Online content is permanent and difficult to remove; loss of copyright once images/videos posted; patients cannot revoke consent once material is posted; should have separate consent form for social media posts

directors should be well versed in the professional use of social media so as to lead residents and colleagues by example.[25] Adams et al. encouraged awareness of intent when posting, and staying up-to-date on social media platforms' terms of use and privacy settings. They also suggested that patients may feel pressure to consent to online publication of photographs and videos secondary to the power differential inherent in the physician-patient relationship.[17] Repeated themes included the avoidance of undermining the profession's image, blurring patient/physician boundaries, and Health Insurance Portability and Accountability Act (HIPAA) of 1996 violations.[2] Using the highest privacy settings, actively managing one's online presence, knowing institutional policies, remembering potential audiences, and being conscious of posts' permanence were emphasized as well.[2,7,12,22] Azoury et al. reviewed the American Medical Association social media guidelines and purported that avoiding social media entirely was not the solution, especially with current cultural expectations.[2] Consent for both clinical photography and photography on social media was particularly emphasized.[11] The article from the vascular surgery literature warned that patients may rely on social media to communicate with physicians, rather than keeping appointments or returning phone calls. They also suggested starting with one social media platform and expanding according to the needs of one's practice.[12]

Orthopedic Surgery

Literature discussing social media use in orthopedic surgery similarly recommended that clinicians keep personal and professional profiles separate, and provide medical advice of a general nature, not substituting for a clinical encounter.

Following professional society guidelines was advised. McLawhorn et al. also warned that physician-patient relationships are easily initiated online if precautions are not taken, and should be actively avoided.[26] Another article reminded readers that all online content is easily found, and social media users should bear this in mind.[28] Further recommendations included following institutional policies, avoiding communication of protected health information over social media, using disclaimers, avoiding social relationships with patients, obtaining consent, and separating personal and professional accounts.[21]

Plastic Surgery

In the plastic surgery literature, the importance of consent for publication of both identifiable and deidentified material on social media was reiterated.[24,36] Given the unique risks of social media, a consent form specific to social media posts should be developed.[35] In addition, the initiation of doctor-patient relationships on social media was discouraged, as were interactions that could constitute patient care.[3,10] Protecting patient confidentiality, maintaining boundaries, and knowing the potential for limitless dissemination and permanence of content were recurring themes as well.[10,38] Separating professional and personal accounts, avoiding sensationalism, and monitoring one's online presence was advised.[36,39] Advertising guidelines of the American Society of Plastic Surgeons and American Board of Plastic Surgery should be applied to social media use, revisiting these guidelines and amending them with social media in mind as needed.[29]

More recently, Dorfman et al. performed an ethical analysis of posting patient videos on social media, emphasizing the importance of fully informed consent, patient beneficence, and balancing competing interests between the patient and surgeon.[32] An invited discussion by Furnas recalled the rapidity of previous cultural changes and the slower nature of ethical responses. Prior technological advances were met with extreme criticism, similar to some responses to social media, yet were eventually adopted. The few plastic surgeons who "cross ethical lines" should not ruin the potential good of social media for the rest of us.[33] Lu et al. acknowledged the importance of addressing challenging ethical questions brought to light by plastic surgery videos on social media, and both discussions mentioned the development of a consent form specific to social media publication by the American Society of Plastic Surgeons, which is currently underway.[34]

DISCUSSION

With the advent of Facebook in 2004, social media rapidly revolutionized culture and social engagement. Social media use in surgery has similarly allowed instantaneous online connections with colleagues, facilitating collaboration and propagation of important research findings.[12,27] Surgeons across specialties use social media to educate patients about living a healthy lifestyle, screening guidelines, and treatment options.[1,21,27] Social media platforms are used for online journal clubs[15] and as channels for advocacy and career development.[18] Vascular surgeons have even touted social media as a way to recruit patients for research studies.[12] Finally, social media have become an important marketing and branding agent for plastic surgeons, who provide cosmetic procedures in an increasingly competitive market.[3,4] A large percentage of patients are online, searching for information about surgeons and other patients' experiences. Some surgeons feel (rightly so) that failing to meet them online renders us obsolete[31] and may lead patients down a path toward less qualified "cosmetic surgeons."[40]

However, the use of social media by clinicians may invite significant risk if not used with caution. As mentioned previously, HIPAA violations still occur, sometimes by the posting of seemingly unidentifiable information.[38,41] In addition, surgeons' posts might be viewed as specific medical advice if appropriate disclaimers are not provided, leading to potentially litigious consequences.[19,28] Surgeons may also begin online communication with patients, inadvertently beginning doctor-patient relationships outside the usual clinical encounter.[3,10] These relationships are easily developed across state lines where physicians are not licensed with real legal implications. Furthermore, surgeons may assume the ear of a specific audience, but social media posts can reach an infinitely large audience with unanticipated views and beliefs.[7,42] A large percentage of this audience is also young and likely immature. Twenty-three percent of SnapChat users are between the ages of 13 and 17 years,[43] and 59 percent of Instagram users fall between the ages of 18 and 25 years.[44] Even more troubling is that posts are irrevocable, with an infinite potential to offend others if we fail to exercise discernment regarding content.[6] However, some social media content disappears after time, rendering activity difficult to regulate. Perhaps more problematic are the frequent attempts to provide content that is titillating and sensational. "Medutainment" was initially coined as a

term for educating medical students in such a way that information is more readily retained.[45,46] In the context of social media, medutainment refers to the use of the surgeon-patient encounter as a source of entertainment for the public under the guise of medical education and degrades the fiduciary responsibility a surgeon has toward his or her patient. For example, a plastic surgeon posting about an intravaginal laser could easily provide information about the procedure and indications for treatment without posting a video of the probe being repeatedly inserted into a patient's vagina. Embracing whatever means necessary to advertise without established standards for policing ourselves results in caveat emptor overriding our fundamental commitment to primum non nocere.

As members of a profession, we submit to a higher standard of behavior, and we have a responsibility both to the profession and to our patients.[48] As the culture evolves, new guidelines become necessary to preserve patients' trust and protect public opinion.[42] The public has already demonstrated poor understanding of plastic surgery,[48] and sensationalist social media content will only serve to cause further confusion. Because other specialties have developed specific guidelines for the use of social media, it may prove beneficial to similarly consider additional recommendations for plastic surgeons engaged with social media.

As we evaluate the current use of social media in plastic surgery and consider the adoption of guidelines, several key principles must be considered. First, consent is necessary but not sufficient. A surgeon who posts a graphic video or photograph of a patient after obtaining consent may not have violated any laws, but this does not qualify the post as professional. One aspect of professionalism is the ability "to communicate and interact in a respectful and productive manner."[49] As such, our social media activity should similarly be "respectful and productive." To further develop the definition of professional social media use, the American Medical Association published guidelines in 2011. The last recommendation says that "physicians must recognize that actions online and content posted may negatively affect their reputations among patients and colleagues, may have consequences for their medical careers, and can undermine public trust in the medical profession."[42] Furthermore, the Federation of State Medical Boards maintains the "authority to discipline physicians for unprofessional behavior relating to the inappropriate use of social networking media," which includes inappropriate communication with patients, derogatory remarks about patients, or "use of the Internet for unprofessional behavior."[40] Unfortunately, certain social media accounts have made it clear that a few plastic surgeons struggle to discern what constitutes respective, productive, and professional content.

As part of our professional duty, we must also recognize the physician-patient power differential. The father of peer review, Henry Beecher, noted that patients consent to almost anything a physician proposes simply out of trust.[50] We must guard against this by facilitating fully informed consent, disclosing that online content is irrevocable and can reach unanticipated audiences. Consent should be obtained for deidentified material as well, since the patient has trusted the surgeon to keep all information surrounding their care private. Furthermore, providing incentives to patients for allowing online publication of photographs and videos should be prohibited, which is in line with the Code of Ethics prohibition of promotions wherein the prize is a surgical procedure.

Notwithstanding the valuable recommendations offered by various surgical specialties, the literature was unable to clarify what defines a post as unprofessional. This may seem like common sense—as Supreme Court Justice Potter Stewart famously said, "I know it when I see it"—but various social media posts would suggest it is not. The standards for photography and advertising set forth by our professional societies should also govern social media activity. Applying these standards to social media content may also serve to distinguish board-certified plastic surgeons from other cosmetic "surgeons" on social media.[51] Furthermore, an emphasis on board certification and its importance could successfully replace sensational social media content while still maintaining a competitive edge. Context must be considered as well, as photographs of breasts or genitalia in a journal are not equivalent to mass viewing on social media. Prudence suggests erring toward a more conservative definition of professionalism on social media given the potentially infinite and impressionable audience. Moving forward, our specialty would benefit from evolving guidelines set forth by our professional societies, and a specific consent form for the publication of material on social media, which is currently being overseen by the American Society of Plastic Surgeons social media task force. Historically, when professionals have failed to self-regulate, it often falls to the attorneys, lawmakers, and governing bodies to intervene on behalf of the public. As a specialty, we would do well to address these issues before outside forces intervene. However,

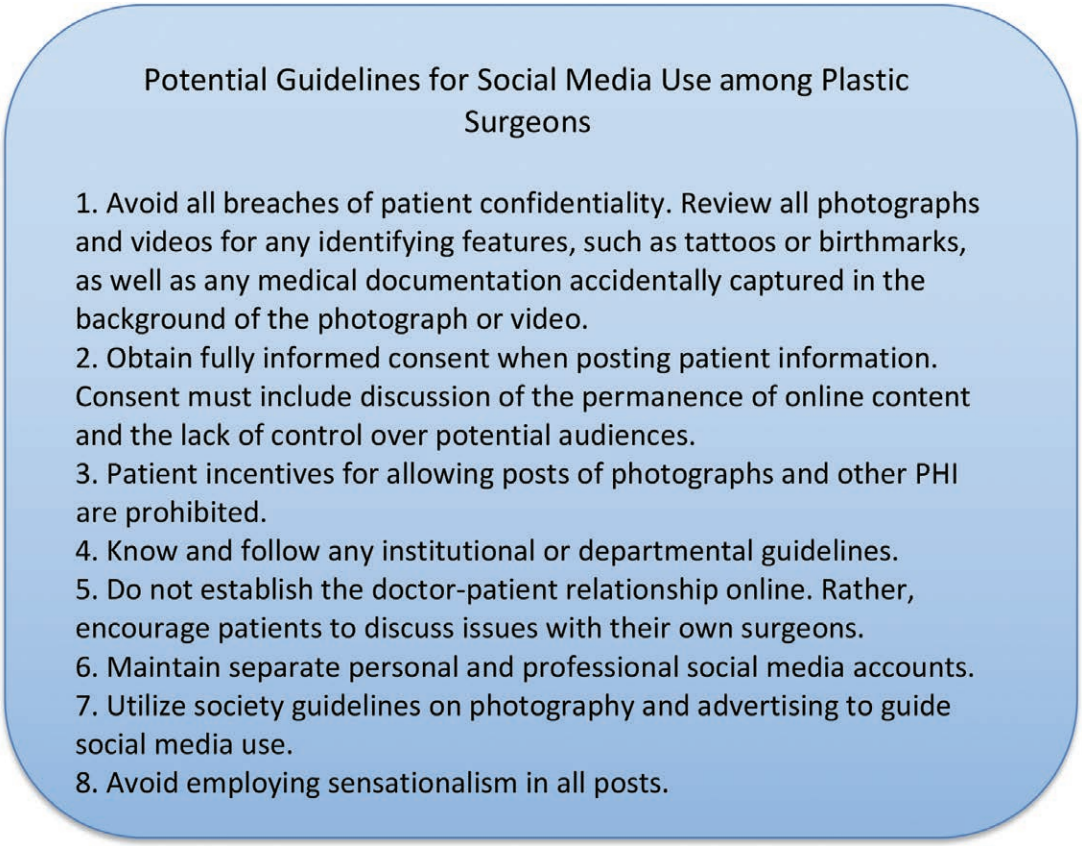

Fig. 2. Potential guidelines for social media use among plastic surgeons. *PHI*, protected health information.

the authors applaud the work that the American Society of Plastic Surgeons has done thus far to curb the small group of plastic surgeons who are using social media unprofessionally, and its commitment to disciplinary action in the Code of Ethics in response to unprofessional conduct.

While there are negative aspects of social media, it is imperative to adapt as the culture evolves to remain relevant to our patients and provide accurate information about plastic surgery procedures. Creating an online culture of transparency in surgery is possible while still maintaining professionalism, but we must provide clearer direction on how to accomplish this (Fig. 2). While maintaining relevance through professional social media activity, we must also protect patients from inaccurate information and false advertising. Board-certified plastic surgeons are woefully underrepresented in plastic surgery–related content on social media, which renders it difficult for patients to find credible resources and qualified surgeons and makes our online presence all the more critical.[52] If we do not engage with patients online, the only available information will be from non–core practitioners. Therefore, the purpose of this article is not to discourage participation in social media but rather to subscribe to a higher standard of online professionalism.

Although our study's strengths lie in its comprehensive search of the surgical literature, it is not without limitations. Given that ethical codes and guidelines are often found in professional society newsletters or other non–peer-reviewed publications, it is possible that more specific recommendations regarding professional social media use were missed. However, given the extensive body of literature on the use of social media and its recent uptake by surgeons, it is more likely that specific guidelines have yet to be developed.

CONCLUSIONS

Social media use is indispensable for many plastic surgeons.[8] The various social media platforms offer tremendous opportunities for educating patients, collaborating with colleagues, advertising, and disseminating research findings. However, merely avoiding HIPAA violations is an infinitesimally small part of maintaining online professionalism. The recommendations provided must function as the beginning of a vitally

important discussion, and one that must continue to evolve as technology and social media platforms change. It is critical for leaders in plastic surgery to proactively work toward a more concrete definition of online professionalism to maintain our reputation and effectiveness long term.

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The Patient–Doctor Relationship and Online Social Networks: Results of a National Survey

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BACKGROUND: The use of online social networks (OSNs) among physicians and physicians-in-training, the extent of patient–doctor interactions within OSNs, and attitudes among these groups toward use of OSNs is not well described.

OBJECTIVE: To quantify the use of OSNs, patient interactions within OSNs, and attitudes toward OSNs among medical students (MS), resident physicians (RP), and practicing physicians (PP) in the United States.

DESIGN/SETTING: A random, stratified mail survey was sent to 1004 MS, 1004 RP, and 1004 PP between February and May 2010.

MEASUREMENTS: Percentage of respondents reporting OSN use, the nature and frequency of use; percentage of respondents reporting friend requests by patients or patients' family members, frequency of these requests, and whether or not they were accepted; attitudes toward physician use of OSNs and online patient interactions.

RESULTS: The overall response rate was 16.0% (19.8% MS, 14.3% RP, 14.1% PP). 93.5% of MS, 79.4% of RP, and 41.6% of PP reported usage of OSNs. PP were more likely to report having visited the profile of a patient or patient's family member (MS 2.3%, RP 3.9%, PP 15.5%), and were more likely to have received friend requests from patients or their family members (MS 1.2%, RP 7.8%, PP 34.5%). A majority did not think it ethically acceptable to interact with patients within OSNs for either social (68.3%) or patient-care (68.0%) reasons. Almost half of respondents (48.7%) were pessimistic about the potential for OSNs to improve patient–doctor communication, and a majority (79%) expressed concerns about maintaining patient confidentiality.

CONCLUSION: Personal OSN use among physicians and physicians-in-training mirrors that of the general population. Patient–doctor interactions take place within OSNs, and are more typically initiated by patients than by physicians or physicians-in-training. A majority of respondents view these online interactions as ethically problematic.

KEY WORDS: doctor–patient relations; computer communication networks; professionalism; Internet; bioethics.
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INTRODUCTION

Online social networks (OSNs) are "spaces in the internet where users can create a profile and connect that profile to others (individuals or entities) to create a personal network."[1] There are multiple online social networks, but some of the most popular include Facebook, Twitter, MySpace, Friendster, and LinkedIn. Over the past several years, the rise in popularity of these networks has been dramatic. Facebook, the most popular online social network, boasts over 500 million users since its inception in 2004,[2] and it recently surpassed Google as the most popular site on the internet.[3] Among internet users aged 18–24, 75% of those online had profiles on OSNs as of 2008.[1] The Pew Internet and American Life Project found that the use of social network sites among those age 18 or greater has increased from 8% of internet users in 2005 to 46% in 2009.[4]

OSNs are a new potential medium for interactions between physicians and patients that may present both opportunities and problems for patient–doctor communication.[5] OSNs provide a forum within which a new form of purported professional indiscretions may take place, and a recent report suggested that OSNs have been a forum for lapses of professionalism among medical students.[6] Among United States medical schools, 60% reported incidents of students posting unprofessional content online, and 38% of schools had developed disciplinary policies for handling inappropriate online content posted by students. Additionally, several recent reports have described patient–doctor interactions within OSNs.[7–9] The ambiguous status of OSNs as they relate to medical interactions and the potential they present for altering fundamental aspects of the patient–doctor relationship have also prompted the formulation of proposed guidelines for physicians using OSNs.[10,11]

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Currently, there are no studies that quantify the incidence of patient–doctor interactions within OSNs by practicing physicians and medical trainees. The goals of this study were to quantify the utilization patterns of OSNs by physicians, resident physicians, and medical students; to describe the frequency of patient–doctor interactions within these networks; and to evaluate attitudes toward such interactions among physicians and physicians-in-training.

METHODS

Study Sample

We conducted a random, stratified mail survey of a cohort of practicing physicians (PP), resident physicians (RP), and medical students (MS) in the United States. The source population list was obtained from a licensee of the American Medical Association (AMA) Masterfile (Direct Medical Data, Des Plaines, IL). The AMA Masterfile is recognized as one of the most complete source lists of licensed physicians and medical students in the United States. We utilized the mail survey format because the list of mailing addresses for potential participants is the most accurate and complete contact data contained in the AMA Masterfile. Additionally, we wanted to capture the attitudes of both users and nonusers of online technologies. Because the utilization rates of OSNs and patient interaction data for these populations has not been previously studied, there were no existing data with which to perform power calculations. Based upon previously published data regarding physician response rates to surveys,[12] the expected response rate was 25%. It was felt that this would provide sufficient data for reasonable estimates of proportions, based on the survey responses. This study was approved by the joint Indiana University–Purdue University Indianapolis/Clarian Health System institutional review board.

Survey

The survey was designed by the study team based on the existing literature[13] and guided by research questions. The survey instrument was then piloted among ten resident and practicing physicians, and underwent iterative revision by members of the study team.

The survey instrument examined four content areas: attitudes toward online social networks, personal utilization patterns of online social networks, patient interaction experiences within online social networks, and demographic data (the full survey is available as an appendix online). Most response options were categorical. Questions regarding physician attitudes toward OSNs and their role in the patient–doctor relationship utilized a 5-point Likert scale (strongly disagree, disagree, neutral, agree, strongly agree).

Demographic data collected included age, year of medical school graduation (or anticipated medical school graduation), medical specialty, self-reported practice type (academic, private practice, mixed), self-reported practice setting (urban, rural, suburban), and gender.

Utilization data included whether or not the respondent used or had ever used OSNs, the frequency of use, which OSNs were used, type of use (personal vs. professional), and privacy settings of respondents' own personal OSN profile.

The survey was designed to assess experiences of online patient interactions. It included questions regarding whether or not participants had visited the personal OSN profile of a patient and the reason for any visits, and whether they had been aware of patients viewing their personal profile. Additionally, respondents were asked whether they had ever asked for or received friend requests from patients or a patient's family member within OSNs, how frequently, and whether or not these requests were accepted.

Additional questions were designed to assess attitudes toward OSN use and patient interactions. Participants were asked to describe the extent of their agreement with statements describing attitudes toward the ethical acceptability of visiting patient profiles, interacting with patients as part of patient care, and interacting with patients for social reasons. These questions also assessed respondents' views of the potential of OSNs to improve patient–doctor communication, and the perceived likelihood that OSNs could be utilized without compromising patient confidentiality.

Data Collection

The survey questionnaire was sent to study subjects along with an addressed, stamped envelope in three sequential mailings. Surveys were completed anonymously, but were coded in order to track responses. Data collection took place from February through May of 2010. No incentives were offered for survey completion.

Statistical Methods

All demographic variables and questionnaire responses were summarized by professional status (medical student, resident physician, or practicing physician) using descriptive statistics (mean and standard deviation for continuous measures; count and percent for categorical measures). Comparisons across groups were performed using analysis of variance (ANOVA) and Fisher's exact tests. Pairwise comparisons between groups were also performed using Fisher's exact tests, using the Bonferroni correction to adjust significance levels for multiple post hoc comparisons. For these comparisons, p values < 0.017 were considered significant. For the summary of age for both OSN users and non-users the mean and corresponding 95% confidence interval was calculated.

RESULTS

Respondent Characteristics

Surveys were sent to 1004 subjects within each of the three subgroups, for a total of 3012 subjects queried. Surveys returned as undeliverable were excluded from the analysis (59/1004 for MS, 87/1004 for RP, 30/1004 for PP). There were a total of 455

survey responses out of 2836 delivered surveys (16.0% response rate), with response rates for each subgroup as follows: 187/945 (19.8%) for MS, 131/917 (14.3%) for RP, and 137/974 (14.1%) for PP. Respondents' demographic data are reported in Table 1.

Usage Patterns

The utilization patterns of OSNs for each group of respondents are reported in Table 2. Medical students were more likely to report usage of OSNs than resident or practicing physicians (MS 93.5%, RP 79.4%, PP 41.6%; $p<0.001$ for all pairwise comparisons). Among all OSN users in this survey, Facebook was the most popular site (used by 99.4% of MS users, 96.2% of RP users, and 96.5% of PP users). Forty-six percent of MS, 50.0% of RP, and 50.9% of PP used more than one OSN. Medical students were more likely than practicing physicians to be daily users of OSNs (MS 46.6%, RP 38.8%, PP 24.6%; $p=0.003$ for MS vs. PP). A majority of all three groups reported using OSNs for personal use only (MS 95.9%, RP 97.0%, PP 95.0%), and very few respondents used OSNs for professional purposes (MS 4.1%, RP 3.0%, PP 10.1%). Most respondents reported that their personal OSN privacy status was completely private (MS 63.2%, RP 68.4%, PP 48.1%). Less than half of respondents reported that their personal OSN profile contained only information they would be willing to share with patients (MS 42.4%, RP 41.4%, PP 49.1%). The plot of OSN usage by age, (Figure 1), shows OSN usage decreasing with increasing age in two of the three groups (RP and PP).

Patient–doctor Interactions within Online Social Networks

Practicing physicians were more likely to report having patient interactions within OSNs than either medical students or resident physicians (Table 3). Specifically, they were more likely to have visited the profile of a patient or patient's family member within an OSN than either MS or RP (MS 2.3%, RP 3.9%, PP 15. 5%; $p<0.001$ for MS vs. PP, $p=0.014$ for RP vs. PP). A larger proportion of PP reported being aware of a patient or patient's family member visiting their own personal OSN profile (MS 1.2%, RP 8.3%, PP 28.1%; $p=0.006$ for MS vs. RP, $p<0.001$ for MS vs. PP, $p=0.002$ for RP vs. PP).

Significantly more practicing physicians reported receiving friend requests from patients or family members then either

Table 1. Respondent Characteristics

	Medical students (%)	Resident physicians (%)	Practicing Physicians (%)	All respondents (%)
Number of respondents (response rate)	187 (19.8)	131 (14.3)	137 (14.1)	455 (16.0)
Primary practice type	N/A			
Academic		103 (81.8)	16 (11.8)	119 (44.4)
Private practice		4 (3.2)	90 (66.2)	94 (35.1)
Mix private practice/ academic		13 (10.3)	17 (12.5)	30 (11.2)
Other		6 (4.8)	13 (9.6)	19 (7.0)
Primary Practice Setting	N/A			
Urban		91 (71.7)	48 (35.8)	139 (51.9)
Suburban		31 (24.4)	58 (43.3)	89 (33.2)
Rural		5 (3.9)	28 (20.9)	33 (12.3)
Average Years in practice	N/A	2.6	22.8	13.0
Gender				
Female	99 (53.8)	65 (50.4)	56 (41.2)	220 (48.4)
Male	85 (46.2)	64 (49.6)	80 (58.8)	229 (50.3)
Average age (SD)	25.5 (2.7)	30.2 (3.4)	50.3 (12.7)	34.1 (12.9)

Table 2. Usage Patterns of Online Social Networks

	Medical students (%)	Resident physicians (%)	Practicing physicians (%)	All respondents (%)
Has respondent ever used social networking sites?	*n=186*	*n=131*	*n=137*	*n=454*
Yes	174 (93.5)	104 (79.4)	57 (41.6)	335 (73.8)
No	12 (6.5)	27 (20.6)	80 (58.4)	119 (26.2)
If respondent is a user, which OSNs do they use?	*n=174*	*n=104*	*n=57*	*n=335*
Facebook	173 (99.4)	100 (96.2)	55 (96.5)	328 (97.9)
Twitter	27 (15.5)	10 (9.6)	8 (14.0)	45 (13.4)
MySpace	52 (29.9)	31 (29.8)	6 (10.5)	89 (26.6)
Friendster	13 (7.5)	15 (14.4)	1 (1.8)	29 (8.7)
LinkedIn	20 (11.5)	20 (19.2)	20 (35.1)	60 (17.9)
Other	5 (2.9)	4 (3.8)	3 (5.3)	12 (3.6)
If respondent is a user, how often does respondent use OSNs?	*n=174*	*n=103*	*n=57*	*n=334*
Daily	81 (46.6)	40 (38.8)	14 (24.6)	135 (40.4)
Weekly	70 (40.2)	40 (38.8)	21 (36.8)	131 (39.2)
Type of utilization	*n=172*	*n=99*	*n=54*	*n=325*
Personal use	165 (95.9)	96 (97.0)	48 (88.9)	309 (95.1)
Personal and professional use	7 (4.1)	3 (3.0)	4 (7.4)	14 (4.3)
Professional use	0 (0.0)	0 (0.0)	2 (3.7)	2 (0.6)
Privacy status of personal OSN	*n=171*	*n=98*	*n=52*	*n=321*
Completely public	1 (0.6)	2 (2.0)	2 (3.9)	5 (1.6)
Limited public access	58 (33.9)	26 (26.5)	23 (44.2)	107 (33.3)
Completely private	108 (63.2)	67 (68.4)	25 (48.1)	200 (62.3)
Don't know	2 (1.2)	3 (3.1)	0 (0.0)	5 (1.6)
Other	2 (1.2)	0 (0.0)	2 (3.9)	4 (1.2)
I consider my social networking profile to be located in a public and openly viewable space.	*n=172*	*n=99*	*n=54*	*n=325*
Strongly agree/ agree	78 (45.3)	37 (37.4)	30 (55.6)	145 (44.6)
Neutral	11 (6.4)	4 (4.0)	4 (7.4)	19 (5.8)
Strongly disagree/ disagree	82 (47.7)	56 (56.6)	20 (37.0)	158 (48.6)
My online social networking profile contains only information that I would be willing to share with patients.	*n=172*	*n=99*	*n=53*	*n=324*
Strongly agree/ agree	73 (42.4)	41 (41.4)	26 (49.1)	140 (43.2)
Neutral	17 (9.9)	3 (3.0)	7 (13.2)	27 (8.3)
Strongly disagree/ disagree	80 (46.5)	55 (55.6)	20 (37.7)	155 (47.8)

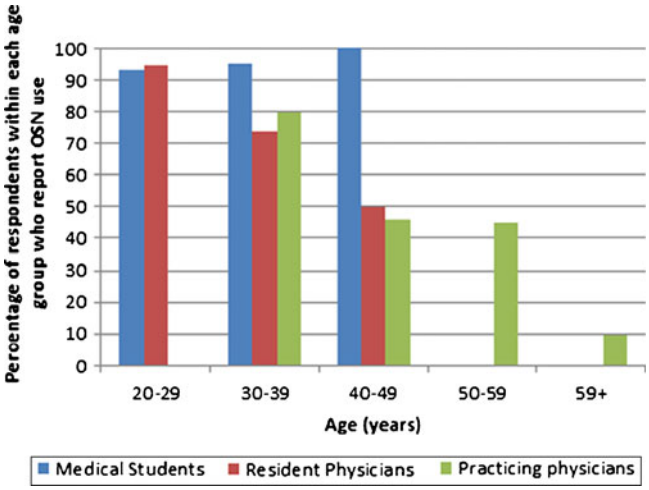

Figure 1. Stratified OSN users by age.

resident physicians or medical students (MS 1.2%, RP 7.8%, PP 34.5%; p=0.007 for MS vs. RP, p< 0.001 for MS vs. PP and RP vs. PP). Of those who had received friend requests, 58% of practicing physicians reported that they always replied "no" to the request, and 42% replied that they accepted them on a case-by-case basis. For those resident physicians who had received friend requests, 57% reported that they never accepted friend requests from patients or their families, and 43% reported that they accepted them on a case-by-case basis. Among medical students who reported having received friend requests from patients or family members of patients, all reported accepting them on a case-by-case basis. No respondents from any group reported that they always accepted friend requests. Very few respondents reported ever requesting friendship of a patient or patient's family member (MS 0%, RP 1.0%, PP 5.3%; p=0.015 for MS vs. PP). Overall, patients were more likely to request friendship with physicians within OSNs than vice versa (patient-initiated request 9.0%, physician-initiated request 1.2%; p<0.001).

Data for patient-initiated friend requests categorized by specialty is reported in Figure 2. Forty two percent of family practitioners who use OSNs, 38% of obstetricians who use OSNs, and 27% of pediatricians who use OSNs had received friend requests from either a patient or a patient's family member.

Table 3. Physician-patient Interactions within Online Social Networks

	Medical students (%)	Resident physicians (%)	Practicing physicians (%)	All respondents (%)
Ever visited the profile of a patient or family member?	*n=174*	*n=103*	*n=58*	*n=335*
Yes	4 (2.3)	4 (3.9)	9 (15.5)	17 (5.1)
No	170 (97.7)	99 (96.1)	49 (84.5)	318 (94.9)
Ever been aware of a patient or family member visiting your personal site?	*n=168*	*n=97*	*n=57*	*n=322*
Yes	2 (1.2)	8 (8.2)	16 (28.1)	26 (8.1)
No	166 (98.8)	89 (91.8)	41 (71.9)	296 (91.9)
Ever received a "friend" request from a patient or patient's family member?	*n=173*	*n=103*	*n=58*	*n=334*
Yes	2 (1.2)	8 (7.8)	20 (34.5)	30 (9.0)
No	171 (98.8)	95 (92.2)	38 (65.5)	304 (91.0)
Ever requested to be a "friend" with a patient or a patient's family member?	*n=172*	*n=102*	*n=57*	*n=331*
Yes	0 (0)	1 (1.0)	3 (5.3)	4 (1.2)
No	172 (100)	101 (99)	54 (94.7)	327 (98.8)

Attitudes Toward OSNs

All survey respondents, whether or not they reported using OSNs, were asked questions about their attitudes toward physician use of OSNs (Table 4). There were no statistically significant differences among the three groups for any of the responses. More than half of the respondents (57.9%) found it ethically unacceptable to visit the profiles of patients on OSNs. Additionally, a majority did not agree that it was ethically acceptable to interact with patients on OSNs, either for social (68.3%) or patient-care (68.0%) reasons. Almost half of respondents (48.7%) reported that they did not think OSNs had potential for improving patient–doctor communication; 26.4% of respondents agreed that OSNs did have potential to improve patient–doctor communication; and 20.5% of respondents were neutral on this question. A majority of respondents (79.0%) did not think that communication with patients within OSNs could be safely accomplished without compromising patient confidentiality.

DISCUSSION

The meteoric increase in the use of online social networks has led to a great deal of media and other coverage of the ways in which such online tools are changing human interaction, and several have focused on patient–doctor interactions.[14–16] These anecdotal reports tend to speculate as to the frequency with which these exchanges are taking place and the positive and negative consequences of such interactions. Several

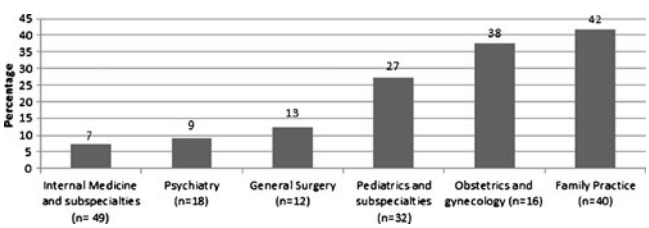

Figure 2. Percentage of users who had received friend requests by specialty.*The following specialties had no users receive patient or family friend requests: anesthesiology, emergency medicine, surgical subspecialties, radiology, dermatology, pathology.

Table 4. Attitudes Toward Online Social Networks

	Medical Students (%)	Resident Physicians (%)	Practicing Physicians (%)	All respondents (%)
It is ethically acceptable for physicians to visit the online profiles of patients within personal online social networking sites.	*n=186*	*n=131*	*n=137*	*N=454*
Strongly agree/agree	44 (23.7)	25 (19.1)	30 (21.9)	99 (21.8)
Neutral	35 (18.8)	18 (13.7)	26 (19.0)	79 (17.4)
Strongly disagree/disagree	103 (55.4)	86 (65.6)	74 (54.0)	263 (57.9)
It is ethically acceptable for physicians to interact (e.g. exchange personal tmessages) with patients within personal online social networking sites for social reasons.	*n=186*	*n=131*	*n=137*	*N=454*
Strongly agree/agree	36 (19.4)	16 (12.2)	21 (15.3)	73 (16.1)
Neutral	31 (16.7)	16 (12.2)	15 (11.0)	62 (13.7)
Strongly disagree/disagree	117 (62.9)	97 (74.0)	96 (70.1)	310 (68.3)
It is ethically acceptable for physicians to interact with patients within online social networking sites as part of patient care.	*n=186*	*n=131*	*n=136*	*N=453*
Strongly agree/agree	37 (19.9)	29 (22.1)	22 (16.2)	88 (19.4)
Neutral	22 (11.8)	17 (13.0)	6 (4.4)	45 (9.9)
Strongly disagree/disagree	121 (65.0)	85 (64.9)	102 (74.5)	308 (68.0)
Online social networking sites have potential for improving doctor-patient communication.	*n=186*	*n=131*	*n=137*	*N=454*
Strongly agree/agree	52 (28.0)	39 (29.8)	29 (21.2)	120 (26.4)
Neutral	40 (21.5)	31 (23.7)	22 (16.1)	93 (20.5)
Strongly disagree/disagree	85 (45.7)	59 (45.0)	77 (56.2)	221 (48.7)
Communication with patients within online social networking sites can be safely accomplished without compromising patient confidentiality.	*n=186*	*n=131*	*n=136*	*N=453*
Strongly agree/agree	24 (12.9)	18 (13.7)	8 (5.9)	50 (11.0)
Neutral	20 (10.8)	13 (9.9)	13 (9.6)	46 (10.2)
Strongly disagree/disagree	127 (68.3)	94 (74.0)	100 (73.0)	321 (70.9)

published case reports have described patient–doctor interactions within OSNs in the medical literature.[7–9,17] To our knowledge, this is the first attempt to quantify on a national level physician and medical student use of OSNs and patient interactions therein. Although the sample size was low and limits the generalizability of findings, it provides novel information about the use of OSNs by medical professionals.

Our findings demonstrate that physicians and physicians-in-training use OSNs as much or more often than the general population. Additionally, medical students and resident physicians are more likely to use OSNs than practicing physicians, although this may simply be artifact of the lower age among students and resident physicians. The frequency of patient–doctor interactions among practicing physicians is noteworthy. And finally, most physicians and physicians-in-training think it ethically unacceptable to interact with patients on OSNs, and are doubtful that such interactions could occur without compromising patient confidentiality.

Several recent studies have attempted to quantify medical student and resident use of OSNs. Thompson et al. describe that 44.5% of medical students and resident physicians at a single public medical school and its affiliated hospital use OSNs.[13] MacDonald et al. reported that 65% of recent medical school graduates in New Zealand reported using Facebook.[18] Most recently, Moubarak et al. reported that 73% of residents and fellows utilize Facebook.[9] Findings from the present study suggest that a significantly higher proportion of U.S. medical students (94%) report using OSNs for personal use than is suggested by these prior studies, although the percentage of resident users of OSNs (79.4%) is comparable to the Moubarak data.[9] There are at least three possible explanations for the higher rates of use reported in this study. First, as noted above, the low response rate of our study leaves a potential for selection bias which may have skewed the responses in favor of users. However, both of the comparative studies were carried out in 2008, and usage of OSNs was likely less common at that time. Data from the Pew Internet & American Life Project demonstrate that usage of OSNs grew from 61% of aged 18–29 internet users in 2008 to 83% of internet users in January, 2010.[4,19] Additionally, both of these studies estimated usage rates by cross-referencing class lists with Facebook pages, leaving the possibility that usage rates were underestimated.

The difference among the specialties with regards to the percentage of users who had received friend requests is interesting. Those specialties that are seen as having a more longitudinal interaction with patients, often revolving around the care of children (FP, OB/GYN, and pediatrics), were those with the most friend requests. While the low response rate precluded a comparison between the different specialties regarding their attitudes toward these interactions, this finding generates questions regarding whether or not there are differences in each of these specialties' attitudes toward patient interactions within OSNs.

Several commentators have written from a theoretical perspective about the effects of the Internet and Web 2.0 technologies on the medical profession. For the most part, these have focused on the preponderance of easily searchable data on the Internet,[20] professionalism,[21] and the posting of potentially inappropriate material on various types of Web 2.0 formats, including YouTube,[22] weblogs,[23] and Twitter.[24] The structure of OSNs are such that they can dramatically blur the line between public and private spaces.[25] The relatively permanent nature of postings on such sites means that the control over information dissemination, once posted, differs significantly from a fleeting and local interaction within the hospital or outpatient office. Our study raises further questions about the nature of patient–doctor boundaries in the digital age. Physical disconnection may allow patients to

pursue virtual dual relationships with their physicians more readily than they would pursue real ones. The fact that 34% of practicing physicians in our sample report having received friend requests from patients supports the idea that many patients feel comfortable approaching with their physicians within OSNs.

Even among this self-selected sample of physician users of OSN's, our data suggest that most physicians do not feel comfortable interacting with patients within OSNs. While over one-third of practicing physicians had received a friend request from a patient, only 1.2% of respondents had initiated a friend request. Additionally, a substantial majority of physicians see patient interactions within OSNs, for any reason, as ethically unacceptable. Respondents also tended to be negative regarding the potential for OSNs to improve patient–doctor communication, and a great majority thought that interactions with patients in these venues posed significant risks to patient confidentiality.

Although a majority of respondents did not view patient–doctor interactions within OSNs as ethically acceptable, just over a third of respondents were either neutral or thought these interactions were ethically appropriate, and almost half (46.9%) were either neutral or thought that OSNs had potential for improving patient–doctor communication. This range of attitudes toward acceptability of these interactions highlights a lack of consensus regarding the normative stance that physicians and physicians-in-training hold toward such contact.

Since this survey was completed, the AMA has issued a policy statement entitled, "Professionalism in the use of social media."[11] This statement gives guidance regarding physician privacy, maintaining appropriate boundaries with patients within OSNs, the potential for real-life consequences regarding online professional lapses, and the responsibility to report unprofessional online actions of fellow physicians. Our study underscores the importance of these guidelines and demonstrates the need to separate personal use of OSNs from professional obligations and fiduciary duties. Given the frequency with which practicing physicians experience patient interactions within OSNs and the fact that there are a plurality of views regarding the ethical standing of such exchanges, there are three tangible recommendations for clinicians from our study. First, clinicians who utilize OSNs for interaction with patients should clearly delineate their professional from their social "digital footprint."[26] For this group, consistency in the policy toward these interactions will be imperative in order to avoid the impression of favoritism amongst patients. Second, clinicians who maintain a personal presence in OSNs should be cognizant that it is a forum for potential patient interaction and lapses in professional integrity.[6] Finally, for those who feel compelled to share access with patients, closely policing one's privacy status and profile content is imperative.

There are several limitations to this study. First, it is common that surveys of medical professionals frequently yield low response rates,[12,27] and, as noted above, the response rate in this study significantly limits the generalizability of study findings. This limitation exposes the results to the possibility of self-selection bias. That is, users of OSNs may have responded to the survey at a higher rate than those who do not use them out of interest in the topic. This is especially possible given the remarkably high usage rates of medical student respondents. However, the usage rates of practicing physicians and training physicians are consistent with data from other recent polling.[9,19] Additionally, the lack of literature and previous studies of this topic meant that a validated survey tool did not previously exist, and had to be created in order to study this topic in this population. Because the survey tool did not undergo formal psychometric validation, we cannot be absolutely sure of the validity and reliability of the findings.

This study generates several questions that are worthy of further evaluation. First, replication of these results within a study with a more robust response rate will help in determining the generalizability of the results. Second, understanding how patients feel about physician interactions within OSNs would complement these findings and may help physicians to understand patients' motivations behind these interactions. Additionally, study of any negative consequences that may have come from such interactions would provide outcomes data to help justify any substantive normative attitudes toward these interactions.

In summary, data from this study support and add to the growing literature suggesting that OSNs create a new forum for potential dual relationships between physicians, medical students and patients. OSNs may lead to new kinds of patient–doctor interactions, raising questions about appropriate professional boundaries.[6,18,20,22,28] Physicians and physicians-in-training descriptively hold a variety of views regarding the ethical acceptability of such interactions, and the normative stance by medical professionals toward these interactions remains to be codified.[17] The nature of professional boundaries in the digital age is worthy of further reflection and investigation.

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Prevalence of Internet and social media usage in orthopedic surgery

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Abstract

Prior studies in other specialties have shown that social networking and Internet usage has become an increasingly important means of patient communication and referral. The purpose of this study is to evaluate the prevalence of Internet or social media usage in new patients referred to a major academic orthopedics center and to identify new avenues to optimize patient recruitment and communication. New patients were surveyed (n=752) between December 2012 to January 2013 in a major academic orthopaedic center to complete a 15-item questionnaire including social media and Internet usage information. Data was collected for all orthopaedic sub-specialties and statistical analysis was performed. Fifty percent of patients use social networking sites, such as Facebook. Sports medicine patients tend to be higher social networking users (35.9%) relative to other services (9.8-17.9%) and was statistically higher when compared to the joints/tumor service (P<0.0001). Younger age was the biggest indicator predicting the use of social media. Patients that travelled between 120 to 180 miles from the hospital for their visits were significantly more likely to be social media users, as were patients that did research on their condition prior to their new patient appointment. We conclude that orthopedic patients who use social media/Internet are more likely to be younger, researched their condition prior to their appointment and undergo a longer average day's travel (120-180 miles) to see a physician. In an increasingly competitive market, surgeons with younger patient populations will need to utilize social networking and the Internet to capture new patient referrals.

Introduction

Social media and social networking on the Internet has revolutionized healthcare over the past ten years. There are over one billion Facebook users and 500 million members of Twitter worldwide.[1] In the United States, 244 million people or about 80% of the population use the Internet for either work or social networking with approximately 158 million users of Facebook.[2,3] Of this particular group, the average age is 37 years old and 61% are over the age of 35.[4] A recent publication on social networking showed an increase of 43% in user membership from 2009 to 2010 and an average user spends 6.5 hours per week on social media site per week.[5] In addition to social media, many innovative tools based on the Internet are used in hospitals, medical schools, and private clinics. These include patient education modules, online medical courses, electronic medical records, monitoring of patients status in the Intensive Care Unit (ICU),[6-8] and other online resources to assist in the education of medical students and physicians.[1] Historically, patients learned about physicians through primary care referrals and word of mouth; however, paths to physician identification today are much more widespread since the advent of the internet and the spike in social media outlets.[5,9] Furthermore, communications between patients and physician have also shifted from the traditional telephone calls to emails, blogs, and internet-based methods.

While patients are known to research their own medical maladies, they also research their own physicians. The advent of websites like *rateMD.com*, *healthgrades.com* and *vitals.com* make physician searches and reviews easy. A negative patient review may be detrimental to a physician's reputation and their overall ability to recruit new patients to the practice. Other medical specialties have investigated the impact of social media on patient recruitment, education and communication.[1,8-18] Previous studies in orthopaedic surgery have looked at the use of Internet in patient education and communication, but no study has investigated the Internet and social media's role on physician selection by patients and stratified by orthopaedic specialty.

Since many areas in the United States are becoming highly saturated markets for orthopaedic surgeons and the competition for new patients are intense, we investigated specific reasons why patients arrive at a single academic center and how internet or social media usage may play a role in the process. We believe that in certain specialties, primary care referral is no longer the main reason why individuals arrive in clinic. This study intends to analyze the means by which new patients select their orthopaedic surgeon and the prevalence of social media/internet usage among orthopaedic patients. Through capitalizing upon popular avenues of physician selection, patients will have access to a greater array of physician options and accessible contact information. Our main objective is to determine the prevalence of social media and Internet usage in orthopaedic patients presenting for an initial visit. We hypothesized that social media and Internet usage will differ between the different orthopaedic specialties and patient ages. Furthermore, Internet and social media may influence a patient's decision in their selection of orthopaedic surgeons.

Materials and Methods

All new patients seeing an orthopaedic surgeon at a single major tertiary referral academic institution were prospectively recruited from three clinic locations that are affiliated with the same major academic institution. Clinic settings included a hospital in a city set-

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ting, one ambulatory care center in a town setting and one outpatient facility in a suburban city location. Orthopedic surgeon specialties included: foot and ankle, hand, joints, oncology, shoulder and elbow, spine, sports medicine and trauma. Patients were not recruited if they were under the age of 18 or non-English speaking All new patients were given the option to complete the 15-item voluntary questionnaire and no personal health information was recorded (Appedix). No randomization took place. Patients were recruited for a period of two months (December 2012 to January 2013).

Overall summary statistics were calculated in terms of means and standard deviations for continuous variables and frequencies and percentages for categorical. Group differences among continuous variables were evaluated using independent samples t-tests. Group differences for discrete variables were evaluated using chi-square or Fisher's Exact Test. Unadjusted odds ratios (OR) and their respective 95% confidence intervals (95% CI) were calculated to assess the magnitude of the association.

A multivariable binary logistic regression model was then created to evaluate the adjusted associations of each potential explanatory variable and the likelihood of patients using social networking websites. Variables with a univariate significance level of 0.25 or less or those variables that were deemed to be relevant were eligible for inclusion in the analysis. Using a forward stepwise procedure, variables that failed to achieve a P value of 0.15 or below were removed from the final model. Because of the explanatory nature of the analyses, 0.15 was chosen as the threshold for retention in the final model; however, statistical significance was still set at $P \leq 0.05$. For all regression models, adjusted odds (aOR) and their subsequent 95% confidence intervals were reported. All analyses were done using SPSS version 20.0 (SPSS Inc., Chicago, IL, USA).

Table 1. Demographics information of the patient population surveyed in our study (total number of responses 752).

Information	N. (%)
Age	
Under 18	12 (1.6)
19-29	105 (14.0)
30-39	70 (9.3)
40-49	149 (19.8)
50-59	190 (25.3)
60-69	140 (18.6)
70+	86 (11.4)
Sex	
Male	271 (34)
Female	481 (66)
Level of education	
Elementary school or junior high	14 (1.9)
High school	207 (27.5)
College graduate	283 (37.6)
Professional/graduate school	206 (27.4)
MD, DO, DDS, DMD, PhD	42 (5.6)
Distance traveled to new patient appointment	
Less than 30 miles	502 (66.8)
30-60 miles	147 (19.5)
60-120 miles	76 (10.1)
120-180 miles	13 (1.7)
180-240 miles	4 (0.53)
Greater than 240 miles	9 (1.2)
Orthopedic surgery service	
Foot and ankle	129 (17.2)
Hand	142 (18.9)
Joints/tumor	95 (12.6)
Sports medicine	303 (40.3)
Trauma	83 (11.0)

Results

Of the 752 responses, there were 66% female and 34% male responses (Table 1). Responses were obtained from hand (142), sports medicine (303), foot and ankle (129), joints/tumor (95) and trauma (83) services (Figure 1A). Overall, 51% of all patients surveyed report using social networking sites such as Facebook or Twitter (Figure 1B). Of the patients that report not using social network sites, 92% are over the age of 40. Joints/tumor patients most commonly had seen another orthopaedic surgeon prior to their visit (59%) and had prior surgery (42%). Most patients traveled under 60 miles and were referred by their primary care physicians. Between 18-26% of all patients used a physician review website before consultation. However, only 2% of all surveyed patients have actually posted a review onto a Physician Review website. Majority of the patients prefer communicating with their physician via the phone (68%) compared to email (32%). Independent associations found that sports medicine patients tend to be higher social networking users (35.9%) relative to other services (9.8-17.9%) and was statistically higher when compared to the joints/tumor service ($P<0.0001$) (Table 2).

The multivariate logistic regression model showed that the sports service was generally more likely to have social networking users with the exception of the foot/ankle service, however these differences were not statistically significant. The biggest indicator predicting social media usage in the orthopaedic population was age. The older the patient population, the less likely patients will use social networking sites (Table 3). Non-doctorate patients were more likely to be social media users compared to doctorate level individuals, but was not statistically significant. Patients that lived from 120 to 180 miles from the hospital were significantly more likely to be social media users, as were patients that did research on their condition prior to their new patient appointment.

Discussion

Overall, orthopaedic patients who use social media are more likely to be younger, researched their condition prior to their appointment and undergo an average day's travel (120-180 miles) to see the orthopaedic physician. Our age findings support those of prior studies, which conclude that Internet and social networking users tend to be younger patients.[19,20] Understanding patient population demographics is crucial for marketing optimization in the social networking and Internet realm. In particular, our study found that sports medicine patients tend to be the most computer savvy, which may in part be due to younger patient age. Physicians with younger

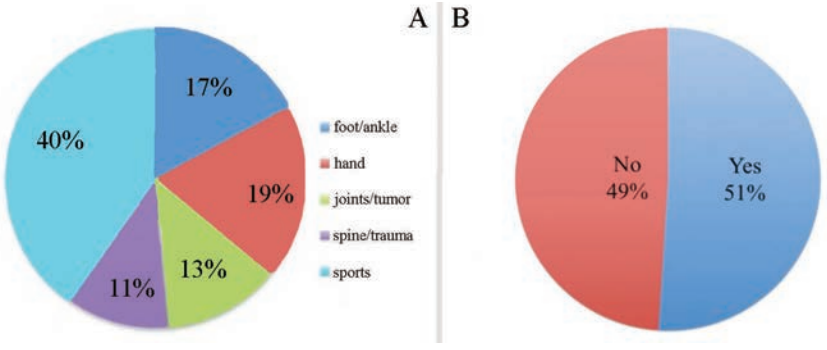

Figure 1. A) Percentage of services surveyed within the orthopaedic department. B) Overall social media use in the entire patient population surveyed.

patient populations should take advantage of the numerous social media avenues to increase practice accessibility. Common methods of increasing Internet presence includes, the creation of a personal website, Facebook page, Twitter account, blogs and YouTube videos. In contrast, we found that joints patients, who had a higher average age, were significantly less involved with social networking sites. Arthroplasty surgeons in particular should continue to rely on word of mouth, primary care physician and insurance referrals to build a rigorous practice.

Increased access to medical education resources online is known to alter patient care due to the prevalence of unregulated medical information that is often inaccurate.[21,22] Approximately 80% of patients will utilize the internet to obtain health information within their lifetime.[5] Furthermore, Danquah *et al*. found that 85% of surgeons have experienced a patient bringing information to an appointment from the internet.[14] In our study, patients that researched their condition prior to their appointment were also social media users. Surgeons should consider including a *patient information and education* section on a personal website or social networking page as a way to provide accurate, concise and easy to understand information about services offered by the physician and orthopaedic practice. Referencing a website with controlled information is one simple way to increase patient education and reduce time spent re-educating patients about a particular diagnosis or postoperative course on subsequent office visits.

Since patients are already known to research their condition prior to their appointment, there is also a growing trend for patients to research their surgeon prior to their appointment. The newest trend is in the use of physician rating websites (PRW) on the Internet. The primary objective of these sites is to allow patients an opportunity to discuss the physician's quality of care and overall satisfaction using user-generated data. The advantage with these online rating systems is the ease of usage, availability, and the information maybe easier to understand for patients as this information is generated peer to peer. Up to 26% of our patients utilized a PRW prior to selecting their orthopaedic surgeon for a new patient appointment. However, less than 2% of the patients surveyed actually personally posted a review onto these Physician Review sites. In an analysis of online evaluation of physician rating websites in Germany, 107,148 patients performed 127,192 ratings of 53,585 physicians. Thirty-seven percent of all physicians were rated on the website by a patient population majority of females (60%). Female physicians had a significantly better rating than their male colleagues and older patients tend to give better ratings than younger patients. Furthermore, patients that had private insurance had much better ratings of physicians than the statutory health insurance.[23] The authors concluded that due to the differences regarding the sociodemographic characteristics of both the patient and physician, it remains unclear if the ratings on the Internet from these PRW realistically reflect the quality of care delivered by the physician. Thus, with the highly unregulated nature of patient posts on various physician review websites, physicians must be cognizant of Internet content posted that is related to their name on a Google search. Creating a personal website with patient testimonials is a good example of a way to increase regulation of your personal *reviews* from patients on the Internet. Physicians can also recommend that patients post comments on physician review websites about their good experience with their appointment, surgery and office staff.

Patients who traveled 120-180 miles, which would be considered an average day's travel to see their physician, were also social media users. In the major US cities, such as Boston, New York City or Los Angeles, that are highly saturated with many reputable hospitals, generating a patient population that extends beyond the immediate vicinity can be a crucial asset to a physician's practice. Targeting a national and international patient population is made easy through the use of social media (Facebook, Twitter or YouTube) and other Internet tools (personal website). Physician marketing that focuses on specializing in a few primary surgeries will target specific patient populations, which may encourage patients to travel longer distances for an *expert* opinion.

Despite technological advances that enable patients' access to endless information at their fingertips, most still prefer to communicate with the physician over the phone, instead of e-mail. This finding should remind us that patients most prefer a personalized approach to medicine, where a direct verbal communication between patient and physician exists. This type of personalized medicine cannot be achieved solely through the use of e-mail communication and value still remains in communication with patients directly. In a national survey evaluating the use of Internet to com-

Table 2. Independent associations for patients that utilize social networking sites compared to those that do not (Do you use social networking websites such as Facebook or Twitter?).

	No		Yes		P
	N.	Mean (%)	N.	Mean (%)	
Service					
Foot/ankle	52	14.1	77	20.1	0.535
Hand	72	9.8	70	18.2	0.161
Joints/tumor	66	17.9	29	7.6	0.000
Spine/trauma	46	12.5	37	9.6	0.057
Sports	132	35.9	171	44.5	Reference
Age					
<18	2	0.5	10	2.6	0.000
18-29	9	2.4	96	25.0	0.000
30-39	15	4.1	55	14.3	0.000
40-49	65	17.7	84	21.9	0.000
50-59	106	0.0	84	21.9	0.000
60-69	101	27.4	39	10.2	0.118
>70	70	19.0	16	4.2	Reference
Female sex	228	62.0	253	65.9	0.262
Education					
Less than High school	9	2.4	5	1.3	1.000
High school	103	14.1	104	27.1	0.047
College graduate	131	35.6	152	39.6	0.014
Professional/graduate school	97	26.4	109	28.4	0.022
MD, DO, DDS, DMD, PhD	28	7.6	14	3.6	Reference
Distance traveled					
Greater than 240 miles	3	0.8	6	1.6	0.693
180-240 miles	2	0.5	2	0.5	1.000
120-180 miles	3	0.8	10	2.6	0.175
60-120 miles	47	12.8	29	7.6	0.010
30-60 miles	82	22.3	65	16.9	0.034
Less than 30 miles	230	62.7	272	70.8	Reference
Did prior research	121	32.9	199	51.8	<0.001
Total	368	48.9	384	51.1	-

municate with health care providers, there was an increase from 7% of internet users to 10% between 2003 to 2005, respectively. Users that used internet to communicate with their health care providers had higher education, lived in a metro area, and reported poorer health status.[24] Despite the large percentage of Internet users in the United States, most patients still communicate with their physicians through other means than the Internet. Furthermore, Hesse *et al*.[25] reported that 62.4% of all patients in a national survey trusted their physicians for health information. However, only 10.9% of patients actually went to a physician to get health-related information while 48.6% went to the Internet first to research their conditions before seeing a physician. This further emphasizes the importance of posting accurate medical information onto the Internet that is supported with scientific evidence for patient education. The disadvantage of Internet or email communication is the risk of misinterpretations. All conversations should be documented in the patient's electronic medical records. Furthermore, it is essential not to share identifiable patient information over the internet or social media which will violate HIPPA policies.

There are several limitations to our study. First, this study surveyed patients only in a major tertiary referral academic medical center in a large urban city setting. If the location of the hospitals were to change to a rural setting or community medical center, our results may have been different. Second, different social medial outlets were grouped together (Facebook, Twitter, Linkedin, *etc*.) as an indicator of social media usage. However, each of these sites has different purposes and is utilized differently by patients. We did not specifically ask each patient how each site influenced their overall decision in their visit to the orthopaedic surgeon. Instead, our study provides a general idea of how many patients seen in a major orthopaedic center use social media as part of their daily routine.

Conclusions

Over 50% of all orthopaedic patients use social media or Internet for work or personal communication and up to 26% of all patients have seen or used a physician review site prior to their initial visit. Orthopedic patients who use social media/Internet are more likely to be younger, researched their condition prior to their appointment and undergo a longer average day's travel (120-180 miles) to see a physician. Despite the increased social media usage, most orthopaedic patients still prefer telephone communication with their physicians. Overall, given the high prevalence of social media and Internet usage in young patients, orthopaedic surgeons with younger patient populations (Sports Medicine) may need to utilize social networking and the Internet to capture new patient referrals.

Table 3. Regression model based on patients that use social networking sites (Do you use social networking websites such as Facebook or Twitter?).

	Adjusted OR	Lower 95% CI	Upper 95% CI	P
Constant	0.08			0.000
Service				
Foot/ankle	1.29			
Hand	0.98	0.79	2.10	0.306
Joints/tumor	0.77	0.61	1.60	0.950
Spine/trauma	0.87	0.43	1.36	0.362
Sports	Reference	0.48	1.57	0.635
Age				
<18	33.15	6.08	180.66	0.000
18-29	46.86	18.70	117.40	0.000
30-39	14.87	6.47	34.19	0.000
40-49	4.78	2.42	9.42	0.000
50-59	2.76	1.43	5.31	0.000
60-69	1.51	0.76	3.01	0.002
>70	Reference	-	-	0.237
Female sex	1.88	1.29	2.73	0.001
Education				
Less than High school	1.85	0.39	8.78	0.438
High school	1.72	0.75	3.95	0.199
College graduate	1.84	0.83	4.05	0.131
Professional/graduate school	2.14	0.96	4.79	0.064
MD, DO, DDS, DMD, PhD	Reference	-	-	-
Distance traveled				
Greater than 240 miles	1.03	0.18	5.94	0.98
180-240 miles	0.46	0.05	4.43	0.50
120-180 miles	4.08	0.96	17.29	0.06
60-120 miles	0.57	0.32	1.04	0.07
30-60 miles	0.61	0.39	0.96	0.03
Less than 30 miles	Reference	-	-	-
Did prior research	2.18	1.52 3.13	0.000	

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Research Article

Evaluating the Online Presence of Orthopaedic Surgeons

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Abstract

Purpose: The objective of this study was to evaluate and characterize the professional and educational information provided online by US orthopaedic surgeons.

Methods: The American Academy of Orthopaedic Surgeons (AAOS) membership directory was used to randomly select 1% of physicians from each state. Name, sex, state, and date of membership were recorded from the AAOS online public membership directory.
A Google search was conducted for each member of this cohort. Specific data gathered from each website included practice type, physician subspecialty, website focus (commercial or educational), and the quality of patient education presented were evaluated.

Results: The cohort consisted of 246 orthopaedic surgeons, including 93.1% men and 6.9% women. The AAOS membership duration was less than 10 years for 48.0% of surgeons, 11 to 20 years for 28.9% of surgeons, and greater than 20 years for 23.2% of surgeons. At least one online profile was found for 94.3% of orthopaedic surgeons. Most surgeons, 66.8%, were identified as belonging to a group or solo private practice, although nearly half (48.7%) of all surgeons were also based out of a hospital. Most website profiles, 62.5%, were found to have an intermediate level of educational content, whereas 18.1% of website profiles did not provide any.

Discussion: The clear majority of US-based orthopaedic surgeons have a professional presence online. Focus on social media or educational content differs regionally, but not based on years in practice.

Level of Evidence: Level V, prognostic

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It is estimated by the United Nations that in 2016, 76% of the US population (total of 245 million individuals) had internet access, which provides opportunity for medical professionals to represent themselves professionally and provide education for patients.[1]

Online physician-patient interaction has significant potential to benefit patients and doctors. This allows consumers to educate themselves about their medical conditions from reliable sources. Patients may choose to review the professional qualifications of multiple healthcare providers before an initial in-person consultation. Although the ultimate diagnosis and management of the patient's condition depends on an evaluation in the physician's office, having information easily accessible on the Internet for reference both before and after the office visit, may increase patient compliance, satisfaction, and shared decision-making.

In addition, websites provide a platform for physicians to present their professional qualifications and patient testimonials for marketing purposes.[2]

However, very little has been published on the professional online presence of orthopaedic surgeons.[3-5] The objective of this study was to (1) evaluate and characterize the professional and educational information provided online by US orthopaedic surgeons and (2) evaluate the differences in provider online presence based on demographics. Our null hypothesis was that no differences were observed in the online presence or content among different groups of orthopaedic surgeons.

Methods

The American Academy of Orthopaedic Surgeons (AAOS) online public membership directory was used to identify the physician cohort. For each of the 50 US states, as well as the District of Columbia, 1% of the AAOS members were randomly selected using a random number generator. Emeritus members and international members were excluded from this study.

Information was gathered from each selected physician's profile on the AAOS online public membership directory. Name, sex, zip code, membership category (active, candidate, or associate), and date of initial membership were recorded, with years of AAOS membership acting as a proxy for years in practice. Website links listed in each AAOS surgeon's membership entry were also recorded.

In June and July of 2017, the Internet presence of the selected physicians was evaluated using two methods. First, the AAOS membership directory entry was searched for links to AAOS-sponsored websites or other professional websites. Second, an online Google search was conducted for each member of our orthopaedic surgeon cohort through the search terms, "First name Last name MD." If a profile pertaining to the appropriate surgeon was not identified within the first two pages of the Google search results, the keyword "orthopaedic" was added, followed by the state in which the surgeon practiced. If a website for that physician was still not found, the physician was deemed not to have a professional website. For every selected orthopaedic surgeon, the data on each website were examined and characterized by the parameters below. If one physician had multiple professional websites, the content was consolidated as a composite description of the surgeon's online profile; however, only the first three listed professional websites were included.

Specific data gathered from each website included practice type (eg, hospital, group, or solo practice), physician subspecialty, residency program, and completion year. The presence or absence of information regarding board certification, memberships in professional societies, awards, publications, presentations, patient testimonials, and disclosure of financial conflicts of interest was determined. For surgeons who had more than one subspecialty, their primary subspecialty was used in the analysis. The educational content of the website and ability to contact the healthcare providers online through the website or linked social media pages was also recorded. The quality of patient education presented on each website was scored from 0 to 3 with a de novo categorical classification. This classification was based on the presence or absence of detailed descriptions of common injuries, printable PDFs with exercises or explanations about common conditions, videos explaining conditions or management of these conditions, or provision of website links to other resources for more medical information. The highest score for patient education achieved was recorded for surgeons with multiple professional websites. Website focus, either commercial or commercial-educational combination, was classified using the criteria described in Table 1.

Table 1

Website-type Criteria and Designation

Criteria	Designation
Contact information or appointment scheduling is present, but patient education is zero or 1	Commercial only
Contact information or appointment scheduling is present, and patient education is 2 or 3	Hybrid

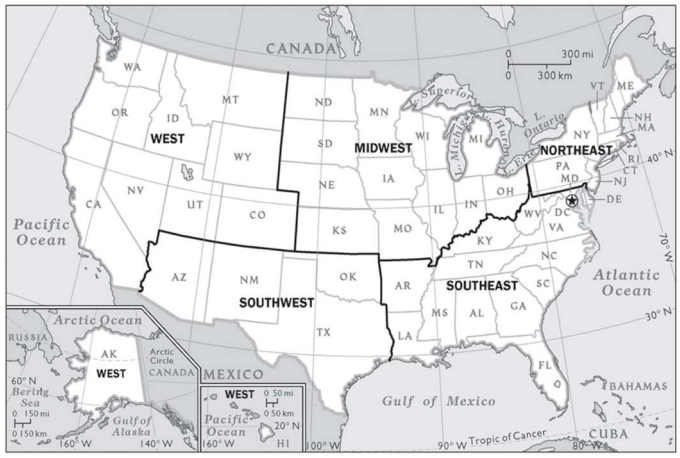
To better analyze regional differences among orthopaedic surgeons, the country was divided into five geographic regions as delineated by the National Geographic Society: Northeast, Southeast, Southwest, Midwest, and West[6] (Figure 1, A).

Results

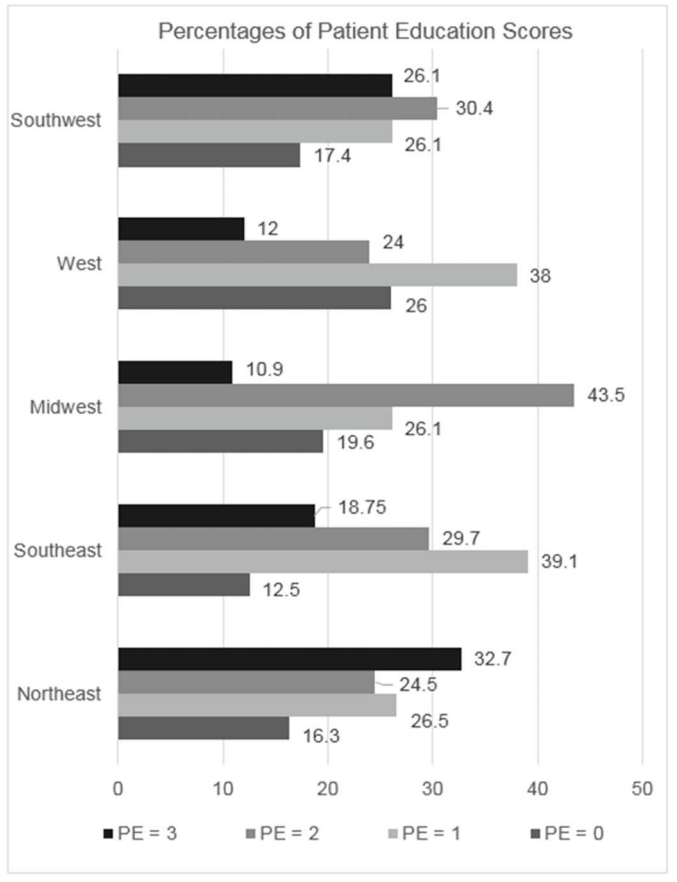
Demographics

Our cohort consisted of 246 orthopaedic surgeons, including 229 (93.1%) men and 17 (6.9%) women, comparable with the 2016 AAOS census distribution.[7] There were 211 (85.8%) active AAOS members, 29 (11.8%) candidate members, and 6 (2.4%) associate members. Geographic, subspecialty, age, and sex distributions are shown in Supplemental Table 1 (Supplemental Digital Content 1, http://links.lww.com/JAAOS/A350). Overall, 13 surgeons

Figure 1



A



B

A, Map showing the geographic areas of the United States that were used to regionally define the online presence of orthopaedic surgeons. **B**, Chart showing the patient education score (PE) distribution by geographic region. This figure illustrates the distribution of patient education scores by geographic regions defined in (**A**).

(5.2%) reported having two subspecialties. For analysis, the primary subspecialty was used.

Orthopaedic Surgeon Professional Profile Content

In total, 321 websites for 232 surgeons were identified and evaluated. At least one online profile was found for 232 (94.3%) orthopaedic surgeons. The vast majority (92.7%) of orthopaedic surgeons had one or more non-AAOS sites appear in Google search results. Few orthopaedic surgeons (26.8%) included direct links to either an independent or AAOS site through their AAOS membership directory entry. Of the 66 who did, 45 (68.2%) provided a link to their AAOS profile, 27 (40.9%) provided a link to an independent website and 11 (16.7%) provided both. Table 1 shows the categorization of the websites surveyed according to our classification. Most surgeons (155, 66.8%) self-identified as belonging to a group or solo private practice, and nearly half (113, 48.7%) of all surgeons reported a hospital affiliation (Figure 2).

Content of Online Presence

The content of physicians' online presence was assessed (Table 2). Feedback or appointment requests were possible on 77.2% of websites. Links to professional social media accounts were found on 195 (84.1%) website profiles, almost exclusively group or hospital accounts; only 9 of the 321 examined websites were linked to multiple individual professional social media pages (Figure 3). Regionally, social media links for surgeons were present in 74% of profiles in the West and in 90.6% of profiles in the Southeast. By subspecialty training, all pediatric and oncologic surgeons, 93.8% of trauma surgeons, and 76.2% of spine surgeons included a link to at least one active social media site. All female surgeons included a social media link

to their profile, whereas 82.8% of male profiles contained an active social media link.

Website Educational Focus

Educational content in nearly half of website profiles received a score of two or higher (Table 3).

Ninety-nine surgeons (42.7%) provided educational videos, and 16 (6.9%) surgeons provided rehabilitation protocols. We assessed educational content across several demographic variables. For years in practice, more than 45% of profiles in each age bracket received patient education scores of 2 or 3. In each geographic region, 45% of profiles included educational videos, except for the West, where 64% of profiles received a score of 1 or lower (Figure 1, B). Subspecialties had some variation; spine surgeons had the highest percentage of profiles that achieved an educational score of 3 (38.1%), followed by hand and upper extremity surgeons (30.8%). Female surgeons' website profiles had higher educational scores than male surgeons' profiles, where more than 50% scored 2 or higher. Female surgeons' profiles also included more educational videos than their male counterparts (75% compared with 40.3%).

Figure 2

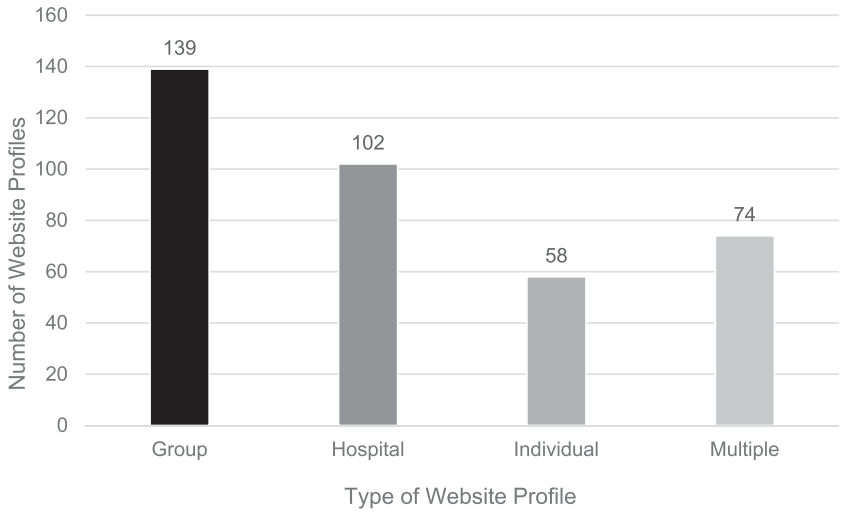


Chart showing website profile distribution (n = 174). This figure shows the number of surgeons who have a group, hospital, or individual website profile, or multiple website profiles.

Table 2

Content of Online Profiles

Component of Website Profile	No. of Surgeon Profiles With Component (Percentage)
Residency program	222 (95.7)
Fellowship program	174 (75.0)
Professional society membership	138 (59.5)
Professional awards	61 (26.3)
Authorship/publications	52 (22.4)
Patient testimonials	86 (37.1)

Occurrence of different components of a physician's website profile.

Discussion

Patients increasingly rely on the Internet and social media to obtain information and make decisions about their health care.[8] Duymus et al[9] found that Internet usage affected the choice of hospital in 50.9% and choice of physician in 39.4%. The Internet and social media not only provide opportunities for marketing of practices but also are valuable tools for providing accurate educational content.[10] Like other areas of medical care, musculoskeletal health information available online is frequently lacking validation or accuracy. Our data indicate that there has been a change in the educational content available on both physician and hospital orthopaedic websites.

From 2000 to 2004, several articles investigated the content and accuracy of websites of interest to orthopaedic patients. Rozental et al[5] examined existing websites of 113 departments of orthopaedic surgery accredited for resident education and found that only 13 sites (11.5%) contained information on common orthopaedic conditions. In another study in 2004, Rozental et al[4] compared the websites of academic orthopaedic surgery departments and private practices regarding the information present on common orthopaedic conditions, finding that only 11.5% of academic sites and 52% of private practice sites list information on these orthopaedic conditions. Beredjiklian et al[3] evaluated the educational quality of websites and found that the search phrase "carpal tunnel syndrome" resulted in only 23% of sites authored by a physician

Figure 3

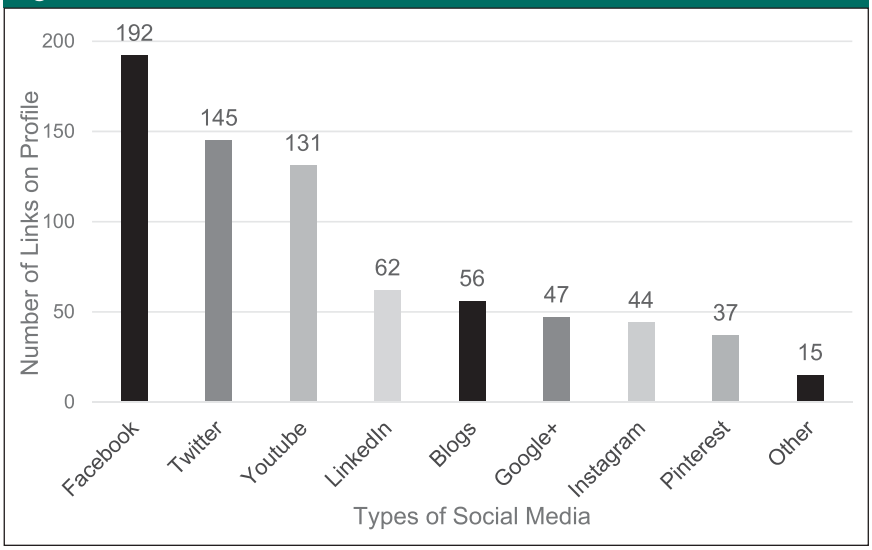


Chart showing social media links present on surgeon website profiles (n = 321). The chart shows the number of active social media links that occur on a surgeon's profile; Facebook, Twitter, and YouTube are the most commonly used social media by orthopaedic surgeons.

Table 3

Patient Education Criteria

Patient Education Criteria	Score	No. of Sites (Percentage)
No information provided on common injuries or treatment	0	42 (18.1)
One of the following four: detailed descriptions of common injuries, printable PDFs, videos explaining treatments or conditions, and links to find out more about the condition or basic description of common injuries and treatment with about a paragraph per injury	1	75 (32.3)
Two of the following four: detailed descriptions of common injuries, printable PDFs, videos explaining treatments or conditions, and links to find out more about the condition	2	70 (30.2)
At least three of the following four: detailed descriptions of common injuries, printable PDFs, videos explaining treatments or conditions, and links to find out more about the condition	3	45 (19.4)

or academic organization, whereas another 23% offered misleading or unconventional information. Our data demonstrate that significant change has occurred over the past decade, with an increasing prevalence of educational information on both hospital and private practice sites. In total, 212 private practice sites (group or personal) were examined, with only 42 (19.8%) of these not including information on common orthopaedic conditions. Of the 109 hospital sites considered, 71.6% provided at least one online method for patients to educate themselves about their conditions. Our study indicates that there is variation based on subspecialty, region and surgeon sex.

Overall, group practices and hospitals were much more likely to link to social media platforms compared with profiles on individual professional websites. Individual professional social media accounts were scarce (2.8%), but when present, they often came from a non-AAOS website. Many reasons have been previously reported for surgeons' lack of professional social media presence. In a study on plastic surgeons published in 2011, Wheeler reported that many professionals did not think social media had business value (34%) or found it too complicated (11%), and half of the surveyed surgeons chose not to use social media because they considered it too time consuming to maintain.[11] A study on emergency medicine specialists similarly showed that 41% of study subjects were not interested in professional use of social media.[12] Other barriers previously cited include concerns about privacy, professional boundaries, and legal and/or ethical implications.[12,13] Multiple studies indicate that younger physicians (ie, residents or early career physicians) use social media more frequently, and particularly for personal purposes.[12-14] In addition, orthopaedic patients who are younger and with higher level of education are more likely to engage with their providers on social media.[10] Further study may elucidate the barriers to use of social media among orthopaedic surgeons.

In comparison with other specialties, orthopaedic surgeons have been shown to use social media less

frequently. In two studies specifically examining orthopaedic surgeons' use of professional social media, websites were by far the most common with 82% to 95% of respondents maintaining a professional site.[15,16] Although LinkedIn was the most popular social media site for professional profiles, social media use overall was highest on Facebook, followed by Twitter, Instagram, and then LinkedIn when also considering personal usage.[17]

It is important to note, however, that most of the US population uses social media and many patients may search online for health information.[9] Multiple studies have shown that people trust information received from health providers over other possible sources, indicating that there is a place and need for physician presence online.[13,18] Moreover, increasing online presence can be beneficial for physicians; accurate health information has been shown to increase motivation and adherence to a treatment plan among patients.[8,10,18] Other possible benefits include communicating with patients or other doctors, improving their reputation by increasing the amount of physician-controllable content online, and even enhancing clinical research.[18]

This study has several limitations. First, all demographic information collected from each surgeon's professional internet profiles was self-reported, including subspecialty. Second, although the AAOS provided information that was not self-reported, it is possible that years of membership in the AAOS may not be representative of years in practice but was chosen because of a lack of publicly available information on years in practice. Third, because most websites are managed by groups or hospitals, individual physicians may have limited control over their own profile and website content and links. Fourth, some surgeons with multiple websites may have had some of their content excluded because only the top three Google-identified, professional websites were reviewed. Fifth, this study is based on a convenience sample of the AAOS orthopaedic surgeons, and therefore, we cannot definitively state that our results are completely representative of the population as a whole.

Although there has been an increase in the online presence of orthopaedic surgeons over the past decade, there remains variability based on geography, subspecialty and surgeon sex. Further opportunities exist for the use of the Internet and social media to improve surgeon-patient interactions, educational content, and marketing.

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Position Paper | Annals of Internal Medicine

Online Medical Professionalism: Patient and Public Relationships: Policy Statement From the American College of Physicians and the Federation of State Medical Boards

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User-created content and communications on Web-based applications, such as networking sites, media sharing sites, or blog platforms, have dramatically increased in popularity over the past several years, but there has been little policy or guidance on the best practices to inform standards for the professional conduct of physicians in the digital environment. Areas of specific concern include the use of such media for nonclinical purposes, implications for confidentiality, the use of social media in patient education, and how all of this affects the public's trust in physicians as patient–physician interactions extend into the digital environment. Opportunities afforded by online applications represent a new frontier in medicine as physicians and patients become more connected. This position paper from the American College of Physicians and the Federation of State Medical Boards examines and provides recommendations about the influence of social media on the patient–physician relationship, the role of these media in public perception of physician behaviors, and strategies for physician–physician communication that preserve confidentiality while best using these technologies.

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Because of the creation and use of information online and the widespread use of the Internet and Web 2.0 platforms, physicians and others are increasingly required to consider how best to protect patient interests and apply principles of professionalism to new settings (1). As new technologies and practices, such as social networking, are embraced, it is paramount to maintain the privacy and confidentiality of patient information, demonstrate respect for patients, ensure trust in physicians and in the medical profession, and establish appropriate boundaries (2). To protect patients and the public and promote quality health care, it is critical to strike the proper balance to harness opportunities while being aware of inherent challenges in using technology. But as others have pointed out, "Connectivity need not come at the expense of professionalism" (3).

Organizational statements addressing these issues are starting to appear, but they may not provide specific guidance to deal with and anticipate concerns. Innovations often bring benefits, but rapid introduction of technology sometimes outpaces existing policies, laws, and guidelines. This article provides a framework for analyzing medical ethics and professionalism issues in online postings and interactions, including the use of electronic resources for clinical or direct patient care involving patient information outside of the electronic health record, and the nonclinical or personal use of these media. It presents the implications of online activities for patients, physicians, the profession, and society and contains recommendations (**Table**) that address online communication with patients, the use of social media sites to gather and share information about patients, physician-produced blogs, physician posting of personal information that patients can access, and communications among colleagues about patient care.

Here, "online" or "digital" refers to the electronic posting of information and its exchange using computers and phones. "Web 2.0" refers to those resources in which self-created content by users is made and posted for public dissemination by means of media sharing platforms. This article provides guidance for practitioners, trainees, and medical students in navigating the digital world, including the use of social networking, blogging, online forums, media sharing sites, cell phone photography, electronic searching, texting, and e-mailing. It does not examine issues of

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Table. **Online Physician Activities: Benefits, Pitfalls, and Recommended Safeguards**

Activity	Potential Benefits	Potential Pitfalls	Recommended Safeguards
Communications with patients using e-mail, text, and instant messaging	Greater accessibility Immediate answers to nonurgent issues	Confidentiality concerns Replacement of face-to-face or telephone interaction Ambiguity or misinterpretation of digital interactions	Establish guidelines for types of issues appropriate for digital communication Reserve digital communication only for patients who maintain face-to-face follow-up
Use of social media sites to gather information about patients	Observe and counsel patients on risk-taking or health-averse behaviors Intervene in an emergency	Sensitivity to source of information Threaten trust in patient–physician relationship	Consider intent of search and application of findings Consider implications for ongoing care
Use of online educational resources and related information with patients	Encourage patient empowerment through self-education Supplement resource-poor environments	Non–peer-reviewed materials may provide inaccurate information Scam "patient" sites that misrepresent therapies and outcomes	Vet information to ensure accuracy of content Refer patients only to reputable sites and sources
Physician-produced blogs, microblogs, and physician posting of comments by others	Advocacy and public health enhancement Introduction of physician "voice" into such conversations	Negative online content, such as "venting" or ranting, that disparages patients and colleagues	"Pause before posting" Consider the content and the message it sends about a physician as an individual and the profession
Physician posting of physician personal information on public social media sites	Networking and communications	Blurring of professional and personal boundaries Impact on representation of the individual and the profession	Maintain separate personas, personal and professional, for online social behavior Scrutinize material available for public consumption
Physician use of digital venues (e.g., text and Web) for communicating with colleagues about patient care	Ease of communication with colleagues	Confidentiality concerns Unsecured networks and accessibility of protected health information	Implement health information technology solutions for secure messaging and information sharing Follow institutional practice and policy for remote and mobile access of protected health information

telemedicine (the care of a patient in an area remote from the consulting physician using the transmission of imaging and health data from 1 site to another), the use of electronic resources to prescribe medicine or diagnose illnesses, social networking resources for patients' therapeutic benefit, or general issues about the electronic health record.

Methods

This position statement was authored on behalf of the American College of Physicians (ACP) Ethics, Professionalism, and Human Rights Committee, the ACP Council of Associates, and the Federation of State Medical Boards (FSMB) Special Committee on Ethics and Professionalism. They and the authors developed the statement between May 2011 and October 2012. After literature reviews and an environmental assessment to determine the scope of issues, drafts were debated, and a consensus was reached on issues through facilitated discussion. A draft then underwent external peer review and review by the College and FSMB committees, councils, and leadership, as well as journal peer review. After revisions based on those comments, the position paper was reviewed and approved by the committees and the FSMB Board of Directors and ACP Board of Regents. The position paper is official ACP and FSMB policy.

Positions

Position 1: Use of online media can bring significant educational benefits to patients and physicians, but may also pose ethical challenges. Maintaining trust in the profession and in patient–physician relationships requires that physicians consistently apply ethical principles for preserving the relationship, confidentiality, privacy, and respect for persons to online settings and communications.

The Patient–Physician Relationship

Standards for professional interactions should be consistent across all forms of communication between the patient and physician, whether in person or online. Encounters between patients and physicians should only occur within the bounds of an established patient–physician relationship, which entails rights and obligations for both parties. As stated in the ACP Ethics Manual, physicians "must be careful to extend standards for maintaining professional relationships and confidentiality from the clinic to the online setting" (4). E-mail and other electronic means of communication can supplement, but not replace, face-to-face encounters.

Establishing positive patient–physician relationships and maintaining professional decorum are core elements of training that should be fostered from medical school through all stages of professional development. Online professionalism can pose challenges because of the ambiguity of written language without the context of body language or lack of awareness of the potential abuses of such media (5). The ease of use and immediacy of social media tools—especially if users do not engage in "pausing before posting"—can lead to unintended outcomes or messages.

Many state medical boards have received reports of violations of online professionalism (6).

The initial decision about whether to extend the patient–physician relationship to the online setting includes the following factors: the intended purpose of the exchange and the content of conversation; the immediacy of electronic media and expectations, including response time; how communication will take place (for example, through social networking sites, microblogging, or professional e-mail on a protected server) while maintaining confidentiality; and how emergency or urgent situations will be managed.

The Patient–Physician Relationship: To Friend (and Google) or Not to Friend (and Google)?

Patients will sometimes initiate online communication. One recent study suggested that many patients extend online "friend" requests to their physicians, although very few physicians reciprocate or respond (7). Organizational policy statements increasingly discourage personal communication between physicians and patients online (8). The FSMB specifically discourages physicians from "interacting with current or past patients on personal social networking sites such as Facebook" (9).

Information exchanged on the Web is at least a 2-way street because it may also be available to the general public. Just as patients may learn about the personal behavior of physicians, physicians may observe patients participating in risk-taking or health-averse behaviors. Information about a patient from online sources may be helpful in the care of that patient, but physicians should be sensitive to the source. They should use clinical judgment in determining whether and how to reveal it during their management of the patient.

This online practice, known as patient-targeted Googling, has been described in many settings, including an attempt to identify an unconscious patient in the emergency department. But often, it instead can be linked to "curiosity, voyeurism and habit" (10). Although anecdotal reports highlight some benefit (for example, intervening when a patient is blogging about suicide), real potential exists for blurring professional and personal boundaries. Digitally tracking the personal behaviors of patients, such as determining whether they have indeed quit smoking or are maintaining a healthy diet, may threaten the trust needed for a strong patient–physician relationship (11). Commentators encourage physicians to consider the intent of the search, whether it affects continuing therapy for the patient, and how to appropriately document findings with implications for ongoing care.

Patient and Physician Education

The Internet can be a powerful tool for education. Patients can share and discuss information using illness-specific social networking pages (10). The Pew Internet and American Life Project estimates that 8 in 10 Internet users go online for health information, making it the third most popular activity online among those in Pew Internet surveys (12).

Physicians should consider the quality of online resources they recommend and guide patients to peer-reviewed media and Web sites where the quality control of information can be checked. Using and sharing recommendations from state medical boards or the College may help direct physicians and patients to resources that are more accurate and objective.

Online learning opportunities can be used by patients and physicians. New care delivery models embrace social media, especially for sharing resources in resource-poor environments (13, 14). Online decision aids are growing in popularity among motivated patients seeking health information, and they warrant familiarity by physicians (15). Continuing medical education and faculty development activities are now on the Web, with online learning modules and social media platforms available for specialists and generalists to share experiences and network.

The Internet and social networking can also serve the public health (16). For example, text messaging on a public health level can bring health benefits. But online activities also bring ethical challenges for the profession and individual physicians. Digital media may help to increase physician–physician interaction and education via online discussion communities and similar means; however, it is the responsibility of physicians to ensure to the best of their ability that professional networks are secure and that only verified and registered users have access to shared information. Online postings can also be used to help advocate for public health issues and broadly educate groups of patients on specific conditions and treatment. Clinical vignettes, however, must have all personal identifying information removed, including any revealing references to a patient who serves as the basis for an illustrative narrative. Consent from the patient to use his or her personal story online should be obtained.

Just as with informal in-person discussions among colleagues, the airing of frustrations and "venting" may occur in online forums. The ACP and the FSMB recommend against this practice, even among close contacts, as it may be disrespectful and undermine professionalism. We also caution against this practice in other forums, specifically blog postings or microblog sites, such as Twitter, as the material may present the physician or physician-in-training in an inappropriate or unprofessional light (17). Physicians criticizing late-arriving patients or disparaging patients for not adhering to behavior changes (such as diet and weight loss) can undermine trust in the profession.

Confidentiality

Confidentiality respects patient rights and privacy, and this encourages patients to seek medical care and openly discuss issues. Confidentiality may be hard to maintain given electronic health records, electronic data processing, e-mail, the faxing of patient information, third-party pay-

ment for medical services, and the sharing of patient care and information among several health professionals and institutions; therefore, "Physicians must follow appropriate security protocols for storage and transfer of patient information to maintain confidentiality, adhering to best practices for electronic communication and use of decision making tools" (4). In addition, they should be aware of state and federal legal requirements, including the privacy rule from the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and updates to the rule (18).

In digital environments, the sharing of patient information must always be held to a higher level of security than standard residential Internet connections. Encrypted or virtual proxy network connections in hospital-based information technology systems should be used for all patient information exchange and review to ensure a secure digital environment. Institutional-based policies on home access of the electronic health record should be reviewed before use, specifically maintaining the level of security required for use on personal devices. Many institutions use mobile device management systems for smartphones and tablet devices. This allows for remote monitoring of the hospital's digital "perimeter" and remote disabling of devices that are lost or confiscated.

Because many physicians use mobile devices to help manage their professional careers, mobile solutions are required to ensure confidentiality, especially when such devices or tablet computers are used to access electronic medical records. Digital devices must be configured to protect patient information should the devices be misplaced or stolen; mobile management solutions can help provide such a safety net (19). In addition, the use of public, unsecured wireless networks and cellular device networks is discouraged given their inherent public accessibility and the potential for patient information to be compromised. The recent Imprivata study of text messaging in health care settings echoes these concerns, with 64% of physician respondents classified as very concerned over HIPAA compliance when sending patient health information by text. Nearly 72% believed that secure text messaging solutions would replace standard numerical pagers in current use within 3 years (20). The disposal of old devices with hospital-based connectivity or access to the electronic health record should be managed on the basis of institutional policy.

With respect to more specific use and sharing of digital media, cell phone photography, for example, is still considered a form of photography. Despite its ease of use and ubiquity, it requires obtaining formal written consent from the patient. In taking a patient photograph or radiographic image, the physician is accepting responsibility to protect this information just as for all health records. Deidentification of radiographic images in the context of educational lectures must be ensured (21).

Medicine and Society

Professionalism is the foundation for the social contract between physicians and society (22). In exchange for the privilege of caring for patients, as well as the status, respect, and financial compensation that accompanies that privilege, society expects physicians to practice in a professional and empathetic manner (23) and to self-regulate (4).

The intimate nature of the relationship between physicians and patients results in the expectation of high ethical behavior by physicians (24). Societal expectations often extend beyond professional practice and into the daily activities of the physician. Poor judgment reflects not only on the individual physician but also on the profession. State medical boards have the authority to discipline physicians, including license restriction, suspension, or revocation, for inappropriate uses of social media, such as improper communication with patients (for example, sexual misconduct), unprofessional behavior, and misrepresentation of credentials.

The ACP Ethics Manual requires that "physicians' conduct as professionals and as individuals should merit the respect of the community" (4). Explicit definitions and expectations of physician behaviors, both in and outside the presence of patients, have been defined by organizations, such as the United Kingdom's General Medicine Council (25).

Position 2: The boundaries between professional and social spheres can blur online. Physicians should keep the 2 spheres separate and comport themselves professionally in both.

Role and Representation

The ACP Ethics Manual stresses the importance of maintaining public trust in the medical profession and in patient–physician relationships. To maintain the respect of the community as individuals and as members of a profession, not only should the content of all online postings be considered but also the *role* of the individual posting the information. Are individuals posting material in their role as physicians, or are they merely stating opinions and also happen to practice medicine? Can this distinction be maintained?

The American Medical Association strongly suggests divorcing public and professional digital identities, specifically maintaining separate online sites or identities for the separate roles (16). This underscores the importance of education on the use of digital media and pertinent issues of confidentiality. The ACP Ethics Manual states, "Physicians who use online media, such as social networks, blogs, and video sites, should be aware of the potential to blur social and professional boundaries" (4). Problems occur when individuals post questionable material while identifying themselves as a physician or physician-in-training (26–28).

At times, physicians may be asked or may choose to write online about their professional experiences, or they

may post comments on a Web site as a physician. When doing so, they must disclose their credentials and any conflicts of interest. They should consider the dangers of posting or responding to comments on the Web. Truly anonymous postings do not exist on the Web, and with the increased sophistication of searching and search engines, the ability to link posts or comments to the original contributor has expanded (29). Physicians should be aware that information posted on a social networking site may be disseminated (whether intended or not) to a larger audience, be taken out of context, and remain publicly available or retrievable online in perpetuity. Physicians should follow their institutional policy on digital media (30) and seek guidance from professional societies and state medical boards.

Maintaining Boundaries

The ACP and the FSMB advise against including patients in the physician's personal and social interactions online. Professional distance and privacy are appropriate for both physician and patient. Physicians should not "friend" or contact patients through personal social media. Physicians should familiarize themselves with the privacy settings and terms of agreements for social media platforms to which they subscribe, and they should maintain strict privacy settings on personal accounts. Professional profiles should be constructed with an explicit purpose (such as networking and community outreach).

Public Consumption

Physicians-in-training, who at present are most apt to use social media platforms, agree on the responsibility to represent themselves professionally online and are aware that they, and the profession, are being assessed by their online behaviors (7). Although narrative work has described the psychological benefit of "collective venting toward the process of being doctored" (31), the public availability of online medical class skits, songs, shows, and other material previously intended for sharing in private, physician-only audiences has called into question these traditions.

Although we will not attempt to dissect the implications of such offerings, it is clear that these are experiences that are not generally intended for public consumption and, despite any value to the psyche of the trainees, should be examined more closely by medical educators and not shared online or in other mass media. It is prudent to consider the effect of publicly posting something that initially seems like harmless medical humor. Consideration should be given to how patients and the public would perceive the material and what effect this may have on the individuals involved as well as their institutions and the medical profession. Many institutional policy statements encourage a "pause-before-posting" moment where medical professionals are asked to reflect on how the general public may perceive the content.

Interprofessional Relationships

Another issue requiring consideration is online relationships between physicians of varying levels of training, specifically, attending physicians and their students and residents. Attending physicians frequently receive online "friend" requests from students and residents (32). These digital "relationships" can also blur professional and personal boundaries, especially when the faculty physician is in the role of evaluator. Faculty and trainees should examine the purpose of initiating an online relationship and decide whether it is for ongoing mentorship, research work, or career advice (32). Regardless of intent, the traditional boundaries encouraged in trainee–faculty relationships should apply when those parties interact through social media. These boundaries should also apply with staff, other clinicians, and allied health professionals.

Position 3: E-mail or other electronic communications should only be used by physicians in an established patient–physician relationship and with patient consent. Documentation about patient care communications should be included in the patient's medical record.

Effective communication is a foundation of a strong patient–physician relationship. E-mail or other electronic communications can supplement face-to-face encounters if done under guidelines (4, 33). Using e-mail to provide therapeutic advice is not recommended when a patient–physician relationship has not been previously established. Some state laws (for example, those in Hawaii) do not require a preexisting relationship for e-mail or other electronic consultation between a physician and a patient (that is, the physician has not met or examined the patient) (34); however, the ACP and the FSMB do not support this practice.

Documentation of communications in an established patient–physician relationship, including those done electronically, should be maintained. "Medical records should contain accurate and complete information about all communications, including those done in-person and by telephone, letter or electronic means" (4).

Situations in which a physician is approached by electronic means for clinical advice in the absence of a patient–physician relationship should be handled with careful judgment; they should usually be addressed with encouragement that the individual schedule an office visit or, in the case of an urgent matter, go to the nearest emergency department.

E-Communication and Established Relationships

E-communication between patients and physicians with an existing relationship requires discussion and previous agreement before electronic exchange is initiated. Guidelines exist for interactions with patients via e-mail (33), including the appropriate type of information to share and the expectations about turnaround time. The nature of e-mail communication ensures a written copy of

the exchange, but patient confidentiality must be assured, such as through the use of a hospital-based server. A discussion of the protections in place to ensure patient privacy must also occur.

Documentation of the patient's consent and awareness of the security and risks associated with the use of patient–physician e-mail should be included in the medical record (35). Physicians should not use personal e-mail accounts for these communications but rather encrypted messages over secure network connections. Web-based portals offer messaging through secure accounts on the portal. Physicians must maintain appropriate boundaries (36) and recognize that electronic communication merely supplements face-to-face encounters.

Electronic communication with patients, if done in a systematic and thoughtful way, can improve patient care and outcomes. Studies have demonstrated that in patients with chronic disease management needs, supplemental electronic communication served as a "booster" to physician advice and improved adherence to therapy (37, 38). It may also improve patient and physician satisfaction by increasing the actual or perceived time spent communicating and having questions answered (39). As other Web tools begin to show promise, this communication is often not limited to standard e-mail (40). Physicians and patients should be discouraged from communicating on health matters through social media tools that are publicly viewable, do not ensure patient confidentiality, and are not readily recordable or admissible to the medical record.

Physicians should be aware of legal requirements in their states about these communications and the risk for state medical board violations or other issues if the physician is not licensed in the state in which the electronic communications are received.

"The MD Will BRB [Be Right Back]"

Expectations for immediate access have led to non–Web-based forms of communication by means of multimedia messaging services and short or text messaging services (41). Several large pharmacies and insurers have piloted systems for prescription refills and appointment updates (42); however, these interactions are largely unidirectional (such as update or reminder texts) with several layers of encryption for security. Despite these advances, current technology does not provide adequate security to prevent third-party access to information. Also, text messaging is not analogous to e-mail because of its abbreviated format and the greater possibility of missed messages. Therefore, physicians should not use text messaging for medical interactions with even established patients except with extreme caution and with patient consent.

Position 4: Physicians should consider periodically "self-auditing" to assess the accuracy of information available about them on physician-ranking Web sites and other sources online.

Ranking, feedback, and other Web sites may offer patients insight into physician training and office practices. Physicians and patients should recognize that this information may not be complete or accurate. Physicians may have little recourse in deleting misrepresentations (43–45). Establishing a professional profile so that it "appears" first during a search, instead of a physician-ranking site, can provide some measure of control that the information read by patients before and after the initial encounter is accurate. Physicians should consider doing routine surveillance (46) of their online presence by searching for their names, and they should correct inaccurate information.

Position 5: The reach of the Internet and online communications is far and often permanent. Physicians, trainees, and medical students should be aware that online postings may have future implications for their professional lives.

How one is represented affects public, patient, and peer perceptions. Colleagues may often be superiors or those in an evaluative capacity. The online behaviors an individual displays may harm employability and recruitment, may result in limitations in professional development and advancement, and may reflect poorly on the profession as a whole.

Many institutions have begun to harness the power of digital media to attract patients, new faculty, or trainees, especially in allied health professional education (47). These technologies can be used as recruitment or screening tools. Employers have turned away job applicants on the basis of questionable digital behavior, including provocative or inappropriate photographs or information, content that displays drinking or drug use, and evidence of poor communication skills (48). Anecdotal reports indicate that medical school admissions offices and residency training programs are increasingly using the Web to prescreen candidates. Many trainees may inadvertently harm their future careers by not responsibly posting material or not actively policing their online content. Educational programs stressing a proactive approach to digital image (online reputation) are good forums to introduce these potential repercussions.

The implications for professional life extend beyond being a prospective applicant to career advancement. A physician's digital image can have positive or negative career repercussions. Several very public missteps have been documented, including physicians taking digital photographs during surgery (49), posing with weapons and alcohol (in some instances during humanitarian work) (50), and unprofessional microblog posts (for example, "tweets") (51) that may ultimately harm both the individual and the profession. One's digital image should be actively managed beyond training by maintaining the separation of professional and personal images and the clinical and nonclinical use of social media. Being proactive by controlling posted content, using privacy settings, and limiting access to per-

sonal information is in the best interest of both the profession and the individual physician.

Conclusion

Online technologies present both opportunities and challenges to professionalism. They offer innovative ways for physicians to interact with patients and positively affect the health of communities, but the tenets of professionalism and of the patient–physician relationship should govern these interactions. Institutions should have policies in place on the uses of digital media. Education about the ethical and professional use of these tools is critical to maintaining a respectful and safe environment for patients, the public, and physicians. As patients continue to turn to the Web for health care advice, physicians should maintain a professional presence and direct patients to reputable sources of information.

Digital media use for nonclinical purposes may affect societal perceptions of the profession, especially when questionable content is posted by physicians in their personal use of the Web. Maintaining separate personal and professional identities in Web postings may help to avoid blurring boundaries in interactions with patients and colleagues.

The ACP and the FSMB recognize that emerging technology and societal trends will continue to change the landscape of social media and social networking and how Web sites are used by patients and physicians will evolve over time. These guidelines are meant to be a starting point, and they will need to be modified and adapted as technology advances and best practices emerge. Physicians are encouraged to take a proactive approach to managing digital identity by routinely performing surveillance of publicly available material and maintaining strict privacy settings about their information. Physicians also need to familiarize themselves with these technologies to guide themselves, and their patients, as they navigate the online terrain.

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Table. Applicant experience: number of positions, applicants per position as well as number and percentage of programs applied to by applicants over the history of the vascular integrated match

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. of residency positions available	9	19	22	30	41	46	51	57	56	60
No. of applicants per position (U.S. and Canadian)	3.0	2.1	2.1	2.2	1.6	1.3	1.3	1.4	1.6	1.5
Average No. of programs applied to by an applicant (percentage of total positions)	3.1 (34)	8.1 (43)	13.2 (60)	14.4 (48)	19.8 (48)	22.5 (49)	21.3 (42)	27.3 (48)	33.5 (60)	35.1 (59)

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PC112.

Self-Identified Vascular Surgeons More Likely to Post Objectionable Content

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Objectives: The ability to communicate and share information through social media is invaluable but carries with it a risk of permanently exposing unprofessional behavior. Our goal was to evaluate the level of professionalism among recent vascular surgery fellows and residents.

Methods: The Association of Program Directors in Vascular Surgery directory was used to compile a list of the vascular fellows/residents from 2016 to 2018. Neutral Facebook, Twitter, and Instagram accounts were searched for public information and analyzed. All content within each platform was screened by two separate investigators for predetermined material categorized as either unprofessional or potentially objectionable. Unprofessional content included HIPAA violations, appearing intoxicated, unlawful behavior, possession of drugs or drug paraphernalia, and uncensored profanity or offensive comments about colleagues/work/patients. Potentially objectionable content included holding/consuming alcohol, inappropriate attire, censored profanity, controversial political or religious comments, and controversial social topics. Descriptive data were compiled and the Fishers exact test was used for categorical comparisons.

Results: Evaluation of 480 vascular trainees revealed that 325 (68%) were male, 456 (95%) held MD degrees, and 115 (24%) were integrated 0+5 residents. A total of 235 trainees (49%) had an identifiable account on at least one platform and 135 (55%) identified themselves as vascular surgeons. Sixty-one (30%) account holders had either unprofessional or potentially objectionable content, with eight (3.4%) containing content categorized as unprofessional. The only forms of unprofessional content identified were obvious alcohol intoxication in three Facebook accounts and uncensored profanity or offensive comments about colleagues/work/patients in one Facebook and five Twitter accounts. Potentially objectionable content included holding/consuming alcohol (12.3%), controversial political comments (9.4%), inappropriate/offensive attire (3.8%), censored profanity (3.4%), controversial social topics (2.5%), and controversial religious comments (0.9%). There was no significant difference in objectionable content between gender, training (MD vs non-MD), or track (0+5 or 5+2; all $P > .05$). However, there was more unprofessional or potentially objectionable content for those who self-identified as vascular surgeons (33% vs 17%; $P = .007$)

Conclusions: One-half of recent and current vascular trainees had an identifiable social media account with nearly one-third of these containing unprofessional or potentially objectionable content. Account holders who self-identified as vascular surgeons were more likely to be associated with objectionable social media behavior. Young surgeons should be aware of the permanent public exposure of potentially objectionable content that can be accessed by peers, patients, and current/future employers.

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PC114.

Accessing Trends in Academic Impact of Vascular Surgeons Within the National Institutes of Health iCite Database

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Objectives: A diverse array of measures are used to evaluate academic physicians. One critical factor is the scholarly impact an author has upon the research discourse within a field. Recently, the National Institutes of Health (NIH) developed the relative citation ratio (RCR) as a method to quantify the impact of published research. The aim of this study was to examine the academic impact of vascular surgeons using RCR within common vascular disease research fields.

Methods: Using the PubMed and NIH iCite database, the scientific fields of abdominal aortic aneurysm, thoracic aneurysm, peripheral arterial disease, carotid disease, deep venous thrombosis, and venous insufficiency were queried for the twenty highest rated articles in each category (1997-2012). Article categories were divided into basic science, health services, and clinical research. To calculate the RCR, article citation rates are divided by an expected citation rate derived from performance of articles in the same field. The resulting RCR is article level and field independent and provides a validated and more accurate measure than journal impact factors. For articles, academic background of the first and last author (influential authors) were collected analyzing procedural specialty: surgery, medicine subspecialty (cardiology, neurology, nephrology), engineering/radiology, and other (anesthesia and pediatrics). Statistical significance between scientific fields and academic background were determined using Student *t* tests or analysis of variance followed by the Newman-Keuls post hoc test.

Results: The academic impact of vascular surgeons varied substantially based on the scientific field (Table). Vascular surgeons as compared with medical specialists were found to have the highest academic impact in the field of abdominal aortic aneurysm research comprising 51% of the influential authors on the highest rated RCR studies (5.9 ± 0.8 vs 5.6 ± 0.8; $P = .6$). In contrast, vascular surgeons only comprised 13% of influential authors as compared with medical specialists in deep venous thrombosis (RCR of 2.6 ± 0.3 vs RCR of 15.7 ± 1.7; $P < .003$) and 18% in peripheral arterial disease (RCR of 1.9 ± 0.5 vs RCR of 2.1 ± 0.2; $P = .78$). Grouping all vascular fields of study together, no difference in RCR was found

Table. Impact of vascular surgeons versus medical specialists by relative citation ratio (*RCR*) in vascular disease research fields

Scientific field	Studies with surgery influential authorship, %	RCR score vascular surgery	RCR score medical specialties	*P*
AAA	51	5.9 ± 0.8	5.6 ± 0.8	.60
PAD	18	1.9 ± 0.5	2.1 ± 0.2	.78
TA	46	5.6 ± 0.5	4.1 ± 0.5	.03
CVOD	33	3.1 ± 0.6	8.9 ± 1.3	.002
CVI	29	2.9 ± 0.2	2.0 ± 0.2	.005
DVT	13	2.6 ± 0.3	15.7 ± 1.7	.003

AAA, abdominal aortic aneurysm; *CVI,* chronic venous insufficiency; *CVOD,* cerebral vascular occlusive disease; *DVT,* deep vein thrombosis; *PAD,* peripheral vascular disease; *TA,* thoracic aorta.
RCR scores reported as mean ± standard error of the mean. *P* value determined by the Student test.