Evaluating the Use of Twitter to Enhance the Educational Experience of a Medical School Surgery Clerkship

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OBJECTIVE: Although it has been suggested that social-networking services such as Twitter could be used as a tool for medical education, few studies have evaluated its use in this setting. We sought to evaluate the use of Twitter as a novel educational tool in a medical school surgery clerkship. We hypothesized that Twitter can enhance the educational experience of clerkship students.

DESIGN: We performed a prospective observational study. We created a new Twitter account, and delivered approximately 3 tweets per day consisting of succinct, objective surgical facts. Students were administered pre- and post-clerkship surveys, and aggregate test scores were obtained for participating students and historical controls.

SETTING: Required third-year medical school surgery clerkship at the University of Michigan large tertiary-care academic hospital.

PARTICIPANTS: Third-year medical students.

RESULTS: The survey response rate was 94%. Preclerkship surveys revealed that most (87%) students have smartphones, and are familiar with Twitter (80% have used before). Following completion of the clerkship, most students (73%) reported using the Twitter tool, and 20% used it frequently. Overall, 59% believed it positively influenced their educational experience and very few believed it had a negative influence (2%). However, many (53%) did not believe it influenced their clerkship engagement. Aggregate mean National Board of Medical Examiners Shelf Examination scores were not significantly different in an analysis of medical student classes completing the clerkship before or after the Twitter tool ($p = 0.37$).

CONCLUSIONS: Most of today's learners are familiar with social media, and own the technology necessary to implement novel educational tools in this platform. Applications such as Twitter can be facile educational tools to supplement and enhance the experience of students on a medical school clerkship. (J Surg Ed 73:73-78. © 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: medical school curriculum, surgery clerkship, Twitter, social media, survey data

COMPETENCIES: Medical Knowledge, Practice-Based Learning and Improvement

INTRODUCTION

Online social-media services have become a popular and widely used means of interpersonal interaction and communication. One such social-networking service is Twitter, which allows people to communicate and interact through "microblogging:" the act of exchanging small pieces of information in 140 characters or less.[1] Currently, Twitter supports more than 200 million users worldwide, with more than half "tweeting" once per month to an audience of "followers." Given this dramatic increase in use and popularity, numerous authors have begun to explore the uses of Twitter in medicine. Chretien et al. recently identified more than 300 physicians on Twitter with more than 500 followers,[2] and multiple authors have suggested uses of Twitter as a tool for medical education.[3-6]

Despite this enthusiasm, little is known about the use and effectiveness of Twitter as an educational tool for health care students. A recent systematic review of the subject by Cartledge et al. identified 9 articles describing use of

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social-networking sites for medical education.[7] Although most of the uses were well received by learners, only 1 study examined objective measures of learning. However, recent studies from medical conferences[8-10] and online journal clubs[11] have identified Twitter as a valuable tool for education and information transfer. Moreover, articles discussing use in disaster preparedness[12] and patient advocacy[13] have highlighted the powerful influence Twitter can have on human behavior.

Given this potential, we sought to use Twitter to develop a novel educational tool for medical students fulfilling a required third-year surgery clerkship. To do this, a clerkship Twitter account was created, and 3 succinct tweets of high-yield information were delivered to the students each day. To evaluate the feasibility and efficacy of the tool, pre- and postclerkship surveys were administered to all students. Objective data from the National Board of Medical Examiners (NBME) Shelf Examination scores were also collected for participating students and historical controls. We hypothesized that the Twitter tool could enhance the educational experience of third-year medical students on their surgery clerkship.

MATERIAL AND METHODS

Study Population

The University of Michigan Medical School surgery clerkship comprises an immersive 8-week experience in the field of surgery,[14] during which students complete 2 4-week rotations on individual surgery services. Throughout the clerkship, students are given frequent formal and informal feedback during interactions with attending physicians and residents, and biweekly formal educational lectures. Additional educational opportunities include didactic teaching sessions with residents and faculty, and point-of-care interactions with patients, which allow them to identify topics for self-directed investigation. At the conclusion of the clerkship, students are evaluated through a written assessment (the NBME Shelf Examination in Surgery) and a verbal assessment (clerkship standardized oral examination).

Starting in January 2013, third-year medical students starting their surgery clerkship were introduced to the Twitter educational tool during their introductory lectures at the beginning of their clerkship rotation. Students were encouraged to use the Twitter tool as they saw fit, to maximize their educational experience while on the clerkship. Use of Twitter during the clerkship was voluntary. The intervention lasted 6 months, through June 2013.

Twitter Tool

We created a Twitter account for the surgery clerkship with the "handle" @MLearnSurgery. Using the NBME surgical learning objectives as a guide for content and distribution of subjects,[15] we formulated a large bank of concise, high-yield surgical learning points into a language and character-count appropriate for Twitter (Table 1). Similar to previously

TABLE 1. Examples of Tweets Sent From the @MLearnSurgery Handle

	Example Tweets From @MLearnSurgery
1	Get in the habit of looking at your patient's imaging yourself, rather than relying on the radiologist's interpretation
2	The solution to pollution is dilution
3	Causes of postop fever: Wind (atelectasis D2), Water (UTI D3), Wound D5, Walking (DVT, PE D7-9), "Wonder" Drugs
4	Melanoma ABCDE: Diagnose: Asymmetrical, Border irregularity, Heterogeneous color, Diameter (>6 mm), and Elevated
5	Testicular Torsion: Acute onset scrotal pain; swollen elevated testicle, no cremasteric reflex, U/S for flow, surgical emergency
6	Hallmark of acute limb ischemia are the 5 Ps: pain, pallor, parasthesia, poikilothermia, paralysis, pulselessness!
7	Always use alpha blockade prior to beta blockade when preparing pheochromocytoma patients for surgery.
8	Most common causes postop low UOP: foley, hypovolemia (dehydration, under-resus, bleeding)
9	Types of hernias, Pantaloon (indirect and direct), Spigelian (@ semilunar line), Richter's (one-side bowel wall, no obs.)
10	MEN1: (Parathyroid, Pituitary, and Pancreas) MEN2A (Medullary, Pheo, Parathyroid); MEN 2B (Neuroma, Medullary, Pheo)
11	Antibiotics that treat VRE: Daptomycin, Linezolid, Tigecycline
12	Antibiotics that treat MRSA: Vancomycin, Linezolid, Daptomycin, Bactrim, Clindamycin, Doxycycline, Tigecycline
13	What is the blood supply to the spleen? The splenic artery (from celiac trunk) & short gastric arteries (from left gastric)
14	Classic triad of Renal Cell CA: flank pain, hematuria, and palpable mass—Sx also include hematuria, HTN, weight loss.
15	The triangle of Calot includes the common hepatic duct, cystic duct, and inferior border of the liver
16	Burn: Parkland formula is % total body surface area burned x 4cc/kg x wt in kg; Give 50% over first 8 hours, 50% over next 16 hours
17	Adult Body surface area: Head 9%, Torso 18% each side, Arm 9% each, Leg 18%; Pt. palm ~= 1% as a rule
18	Peritoneal Patient: fever, tachycardia, HTN, extreme tenderness, involuntary guarding, rigidity; motionless
19	Jefferson Fx: C1 ring fracture at 2 sites; Hangman's fracture: pedicles of C2 at pars; 3 types odontoid Fx, type 2 is unstable
20	Preoperative cardioworkup: Eagle Criteria: Q-Wave on ECG, Age > 70, Angina, ventricular ectopy, and diabetes

UOP, urine output.