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# A Comparative Approach to Promotional Methods for Seasonal Influenza Immunizations to Dorm Dwelling College Freshmen

Gina Aalgaard Kelly\*

Carolyn Townsend

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## Abstract

**Introduction:** Comparing tailored e-mail messaging to mailed postcards promoting seasonal influenza immunizations for dorm dwelling college freshmen is important for early health prevention and promotion. Dorm dwelling college students are particularly at risk of viral diseases due to the close proximity of their living conditions. Understanding influences with health care decisions and practices is therefore also important with the college dorm dwelling population. **Method:** A convenience sample was used to collect data from influenza clinic participants on a Midwest college campus over three seasonal flu periods. A Health-E card was sent in 2010 via university issued student e-mail accounts informing students how to prevent influenza through immunization. Postcards were sent in 2008 and 2009 solely to dorm dwellers and parents of college freshmen. Short questionnaires gathered demographic data from participants at flu clinics for comparison. **Results:** In 2008 and 2009, 8% and 14% of dorm dwelling college freshmen participated in flu clinic following printed media sent to them and their parents. In 2010, only 3% of the same population participated in campus flu clinics following tailored e-mail messages sent via campus listserv. **Discussion:** Efficiency of social media e-mail messaging was established, however effectiveness of tailored e-mail to college freshmen was not supported. Family was most influential for the seasonal influenza in the third year of the study. Further study is needed to determine efficacy of social media intervention for college students and parental or family influence.

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## INTRODUCTION

In this research note, we describe the evolution and assessment of a tailored intervention devised to increase influenza immunization among college freshmen. In the recent past, dramatic shifts have occurred in national recommendations from the Centers for Disease Control and Prevention (CDC) regarding seasonal influenza immunizations for college students. In 2008, for the first time the CDC recommended that all 5-18 year olds receive annual seasonal influenza immunizations, which included most college freshmen. During the influenza season of 2009-2010, the H1N1 influenza pandemic disproportionately affected college-aged students. This created heightened awareness of the risk for influenza in the previously untargeted population of students over the age of 18 (CDC 2010). In 2010, the CDC issued a new recommendation that everyone over the age of six months should be annually immunized for seasonal influenza. The new criteria included the entire college student population for the first time (CDC 2010).

For a number of reasons, college students have an increased risk of developing influenza. Any population living in confined settings, such as dormitories, has a heightened risk of contracting droplet-based diseases because of shared living space and close proximity. Of all college dorm-dwellers, freshmen are at greatest risk for contracting influenza (Butler 2006). Some universities require first-year students to live on campus so a greater percentage of dorm-dwellers belong to the freshmen class. Other characteristics of freshmen students, such as loneliness and decreased social network size, decrease immune response even if the influenza vaccination has been obtained (Pressman et al. 2005).

In response to the CDC guidelines, we conducted an intervention and clinical research study from 2008 – 2010 on our Midwestern campus. The shape of this intervention, which sought to increase influenza immunizations among freshmen, evolved as the recommendations

from the CDC changed. In 2008, we targeted 18 year old dorm-dwellers because of their inclusion in the new CDC recommendation, as well as their status of being at greatest risk for developing influenza (CDC 2008). Through the use of a mailed postcard, we informed all dorm-dwelling students and their parents about the CDC guidelines and provided information about an upcoming clinic on campus. In 2009, the same approach was used. At this time, awareness of seasonal influenza was likely heightened following declaration of the H1N1 influenza pandemic. The seasonal influenza immunization was a separate injection and offered early in the flu season before the H1N1 vaccine became available (CDC 2010).

By 2010, new information regarding the health information seeking preferences of college students became available. The American College Health Association (ACHA) identified that college students preferred the internet as a health information source more than information from their parents. During the 2009 H1N1 influenza pandemic, the CDC developed a number of social media resources. An electronic Health E-card encouraging an individual to receive influenza immunizations was selected from the CDC resources shared with ACHA member colleges (ACHA 2009a-c, CDC 2010). Specifically, the e-card contained a message identifying four methods of protection from seasonal influenza, including washing hands, covering a cough, staying home if ill, and getting an influenza immunization (CDC 2010). The change in the 2010 CDC seasonal influenza recommendations to include the entire campus population encouraged us to seek a new cost-effective approach to intervention. We decided to use an E-Card, sent to all students via the campus listserv. Social media interventions sent via the internet have been found to be cost effective in comparison to traditionally mailed interventions, especially when the target population is a large audience. Colleges have student e-mail accounts for the entire student body and messages can be sent via an already created student listserv quickly and efficiently. Furthermore, past use of web-based, tailored health

interventions has shown promise in reducing alcohol-related risk with first-year college students and increasing awareness of smoking cessation (Bingham et al. 2010; Staten and Ridner 2006).

A personalized message from the student health center used the Health Promotion Model (HPM) to tailor the message to the student population (Pender, Murdaugh, and Parsons 2006; Staten and Ridner 2006). Three of the social behavioral cognition issues identified in the HPM affecting the target population of college students were addressed. The first issue promoting the perceived benefit to students was staying healthy may aid in academic success for the college student (Nichol, D'Heilly, and Ehlinger 2008). The second issue addressed perceived barriers which include busyness, lack of time, inconvenience, class/work schedule, and location of the clinic being too far out of the way (Martinelli 1999; Mayo and Cobler 2004; Taylor et al. 2009; Von Ah et al. 2004). The third issue addressed self-efficacy or the ability to make and follow through with a decision (Jackson, Tucker, and Herman 2007). The three issues were woven into the message, tailoring the message to address common student concerns.

The informational intervention in the form of a Health E-card was sent to the entire student body via student listserv e-mail two weeks prior to the campus walk-in flu shot clinic from the student health center. Date, time, location, and cost of the influenza immunization was included in the message to students. See Appendix A for the E-card and Appendix B for a copy of the Postcard that was printed and mailed. In the next section of this note, we describe the outcomes for each of the three years of our intervention program.

#### ASSESSMENT

Approval was obtained from the participating university's Institutional Review Board (IRB) as well as the university where the researcher was enrolled in graduate study. Data was collected through a short questionnaire at the time of the on-campus immunization with each

participant. Cost comparison between printed and mailed postcards to electronically sent influenza immunization reminders found significant cost savings (Table 1). Informing college students of health information via Health E-cards was both efficient and cost effective.

**Table 1** Cost Comparison of Mailed Reminders versus E-mailed Reminders

2008, 2009	2010
Postcard Printing \$405	Health E-card \$ 0
Postage \$324	E-mail Use \$ 0
Total \$729*	Total \$ 0**

\*Cost for freshman class only

\*\*Cost for entire college

Students presenting for immunization at the on-campus flu clinics were given a clipboard that included a personal disclosure and data collection form. The disclosure explained that return of the data collection form implied consent. The students were assured that the information was completely anonymous with no personal identifiers. A convenience sample of demographic information with 100% participation was collected that included year of study, age, gender, place of residence (i.e., on or off campus), if this was the student's first influenza vaccination, and reason why they decided to get immunized.

## RESULTS

The percentage of dorm dwelling freshmen receiving an influenza immunization in 2010 following a tailored social media intervention in the form of a Health E-card was compared to

the percentage of dorm dwelling freshmen in the years 2008 and 2009 receiving an influenza immunization after receiving a printed media tailored intervention. Official college data was used for accuracy in determining the percentages of dorm dwelling freshmen receiving the influenza immunization (Minnesota State University [MSUM] 2009).

The participation rate of dorm dwelling freshmen in 2008 following postcards in dorm mailboxes and mailed to parents of freshmen was 82 (8%) of the 1039 dorm dwelling freshmen. Following the same messaging interventions, the 2009 participation rate was 133 (14%) of the 983 dorm dwelling freshmen. The 2010 rates following an e-mail message to the campus using the student listserv was 34 (3%) of the 1094 dorm dwelling freshmen, the lowest of the three years. The highest participation rate of the three years occurred in 2009, with the confounding factor of the H1N1 pandemic. Efficacy was not established for electronically delivered health information for freshmen college students. The data are shown in Table 2.

**Table 2** Percentage of Dorm Dwelling Freshmen of Total Receiving Influenza Immunizations

<i>Year</i>	<i>Promotional Method</i>	<i>Freshmen Enrolled/Dorm Dwelling Freshmen</i>	<i>Freshmen Attended Clinic N / (%)</i>
Fall 2008	Postcard	1938 / 1030	82 / (8)
Fall 2009	Postcard	1686 / 983	133 / (14)
Fall 2010	E-card	1683 / 1094	34 / (3)

In addition, a comparison was made identifying what influenced the participant's decision to get the immunization. The majority of participants (57.1% and 57.8%) were influenced more by

campus advertising with post card delivery during the years 2008 and 2009 compared to the tailored social media messages electronically sent to students (14.3%) in 2010. Also, in 2010 family influence was the highest reason (46.2%) for getting immunized and not campus advertising like it had in the previous two years. This data suggests again that tailored social media messages in the form of listserv e-mails promoting seasonal influenza immunization were not effective with this population of students. See Table 3.

**Table 3** Comparison of Reasons for Getting Immunized 2008-2010

<i>Decision-Making Influence</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>
Campus Advertising	57.1 %	57.8 %	14.3 %
Family Influence	32.7 %	26.5 %	46.2 %

## IMPLICATIONS

College is the ideal setting for establishing lifelong health habits (Martinelli 1999; Von Ah, Ebert, Ngamvitroj, Park, and Kang 2009). As the largest group of healthcare providers in student health centers, nurses are ideally positioned to shape student health patterns (Nicoteri and Arnold 2005). Students are developmentally formulating their health belief system while separating from their parents (Pender, Murdaugh, and Parsons 2006). Results of this study suggest family influence is the most effective source of immunization decisions for disease prevention rather than social media for freshmen.

Healthcare providers have a high level of believability when students are seeking health information (Kwan et al. 2010). The student health center professionals responsible for most of health education are seen as credible sources of health information by the student body (ACHA

2008, 2009a-c). When targeting the college student population, the approach must be relevant to their lifestyle, health and wellness (Staten and Ridner 2006). Messaging must be appropriately geared to the college age group and tailored to their social cognition and affect (Mayo and Cobler 2004). Cost and convenience have always been major factors in college students' budgets and decisions. The method of dissemination must be appealing to the student (Hanauer, Dibble, Fortin, and Col 2010; Baxter, Egbert and Ho 2008). Student health centers have a unique opportunity while students are pursuing their education to assist them to develop health prevention habits that will benefit them throughout life (Von Ah et al. 2004; Martinelli 1999). The importance of discovering effective methods of distributing information to students as well as supporting their decisions as they develop and solidify their health beliefs, will have tremendous impact on students' future health prevention habits.

Limitations of this study were that the sample groups for comparison were restricted solely to dorm dwelling college freshmen, an H1N1 influenza pandemic occurred during the three years of data collection, and a single Midwestern university campus setting was used for study. Because dorm dwelling freshmen were the target population from the previous media intervention of mailed postcards to all dorm dwellers and parents of all freshmen, that same group was used for comparison to the intervention of a Health E-card sent out via the student listserv with no notification to parents. The heightened national awareness surrounding the 2009 H1N1 pandemic influenza may have influenced the higher participation rates in that year. Despite the current evidence suggesting students prefer web-based social media for health information, this was not supported in the study findings for dorm dwelling college freshmen, but the limitations prevent generalization of findings to other situations. Future projects could be conducted regardless of place of residence, include all years of undergraduate and graduate students to determine efficacy for the entire campus community.

Several issues unique to the freshman age group may have impacted their assessed response to seasonal influenza immunization on campus. Freshmen have been living away from home for two months or less when influenza immunizations are traditionally offered. Freshmen may not have been familiar with the student health services offered on campus and sought health services at their home of origin. Freshmen covered under their parents insurance may have returned to their healthcare provider at home to receive influenza immunizations. Any freshmen receiving an influenza immunization elsewhere would not have been included in the measurement of the percent of freshmen receiving influenza immunizations on campus. This action may have caused lower reported rates than they were in actuality.

Secondly, freshmen are transitioning from home and they may view themselves as independent, they may need advice from their parents for health care decisions (Nicoteri and Arnold 2005). Autonomous health care behaviors are accomplished over time as students separate from family and transition from adolescence to adulthood. Social and cognitive skills forming during this developmental stage assist them to develop health habits and sense of self efficacy (Pender, Murdaugh, and Parsons 2006; Jackson, Tucker, and Herman 2007). Without parental involvement, freshmen students may not have the ability to make decisions for influenza immunizations.

With the efficiency and cost effectiveness of e-mail, a message could be sent more than once. Future projects could send a message initially two weeks in advance of the on-campus influenza immunization clinic, followed by follow up reminders sent two days prior and repeated on the day of the clinic. Other formats of social media that may be preferred by college students such as texting, Facebook or My Space, Tweeting and Twittering should be explored. Future influenza clinics could benefit from a broader literature review regarding factors contributing to college student population decision making for immunizations. At the systems

level, exploring feasibility of including parents in the e-mail messaging is another factor that bears investigation.

Social media has become a standard of societal communication and has limitless potential for distributing health prevention communication to the college student population. Further research and projects are needed to provide evidence of best practice for effective health prevention messaging tailored to this developmental stage in life when life-long health prevention habits are being formed.

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**APPENDIX A**          E-card

E- Mail Subject line: Your friends at Hendrix Health Center have sent you an urgent message

Text accompanying the Health E-card

NO FLU 4 U

Your friend's personal message:

*Did you know? Healthy students perform better academically. In a national survey conducted on college campuses in 2009, students indicated the #1 issue interfering with their academic performance was cold/flu/ sore throat. Don't let the flu slow down your academic performance. Choose to protect yourself. Please open the Health E-greeting card for 4 tips on how to do that. One of them is to get your flu shot which the Center for Disease Control and Prevention (CDC) recommends for all students even if you are healthy. Annual flu shots are the most effective method for preventing influenza infection and its complications according to the CDC. NO FLU 4 U walk in flu shot clinic in room XXX of the Comstock Memorial Union on Wednesday, October XX from 10:00-5:00. Cost: \$20. No appointment necessary. Less than 15 minutes waiting time.*

DISCLAIMER:

Comments and views expressed in the personal message feature are those of the individual sending the personal message and do not necessarily reflect those of the HealthReform.gov, the Department of Health and Human Services (DHHS) or the Federal government. DHHS does not control or guarantee the accuracy or relevance of the information sent in a personal message, nor does DHHS endorse any content or links provided therein.

Back

Send Flu.gov eCards

[http://transparency.cit.nih.gov/flu\\_ecard/message.cfm?CFID=503074&CFTOKEN=69403278&jsessionid=4a30504b53cdfbc2c358514f52191032412a](http://transparency.cit.nih.gov/flu_ecard/message.cfm?CFID=503074&CFTOKEN=69403278&jsessionid=4a30504b53cdfbc2c358514f52191032412a) Right click to open the Hyperlink to the

Flu eCard

**APPENDIX B**      Postcard