Comparison of E-Mail Communication Skills Among First- and Fourth-Year Dental Students


Abstract: As e-mail and other forms of electronic communication increase in popularity, it is important for dental schools to consider a curriculum that prepares their graduates to understand and apply effective electronic communication strategies to their patients. Reflecting this shift in communication behavior, the American Medical Association has developed specific e-mail communication guidelines. Some behavioral examples in these guidelines include protecting patients’ protected health information (PHI), ensuring proper record keeping, and using professional, courteous, and understandable language. In this study, a sample of first- and fourth-year dental students (n=160) at the University of Pittsburgh School of Dental Medicine participated in an assignment assessing their patient-provider e-mail communication skills. A rubric was used to evaluate and compare the data between dental student classes. The results reveal a generalized lack of compliance with several of these guidelines by both classes (e.g., failure to protect PHI), despite efforts to expose students to these concepts in the curriculum. In an effort to train emerging dentists to function in a rapidly changing technological environment, these findings suggest a need for growth and development of curricula and perhaps guidelines/recommendations for behavioral competencies regarding dental students’ use of electronic communication in the patient care environment.

Dr. Oakley is Associate Dean for Clinical Affairs and Associate Professor, Department of Restorative Dentistry and Comprehensive Care, University of Pittsburgh School of Dental Medicine; Dr. Horvath is Director of Faculty Development, Office of Faculty Affairs, University of Pittsburgh School of Dental Medicine; Dr. Weinberg is Assistant Professor, Department of Oral Biology, University of Pittsburgh School of Dental Medicine; Jaya Bhatt is First-Year Master’s in Public Health Student, Drexel University; and Dr. Spallek is Associate Dean for Faculty Affairs and Associate Professor, Department of Dental Public Health, University of Pittsburgh School of Dental Medicine. Direct correspondence and requests for reprints to Dr. Marnie Oakley, University of Pittsburgh School of Dental Medicine, 3501 Terrace Street, 440 Salk Hall, Pittsburgh, PA 15216; 412-648-1874 phone; 412-648-8219 fax; moakley@pitt.edu.

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“...What ultimately makes the difference is how well people use technology,” Atul Gawande wrote in 2011. “We have devoted disastrously little attention to fostering those abilities.” E-mail has shaped the way our society communicates over the last fifteen years. As dental educators, part of our mission is to prepare our students to interact with their patients in an increasingly complex environment, one characterized by an elaborate legal framework, multifaceted technical systems, diversity regarding information and computer literacy on both sides—providers and patients, and a false sense of security among today’s Y Generation/Millennials, who identify themselves as “digital natives.” This generation’s self-perception suggests that they have little to learn regarding e-mail communication, despite clearly lacking computer literacy skills to support this assumption. This dichotomy is supported by a study that concludes “students come to college without proficient IL [information literacy] skills.” While responding to patient needs through the use of electronic communication tools can promote patient-centered care, dental students’, and possibly providers’, lack of sufficient computer literacy skills may ultimately have adverse effects on ethical patient care. Thus, it is important for dental educators to understand the computer literacy background and corresponding self-perception of today’s students related to this topic.

E-mail can be described as an electronic asynchronous communication exchange that may be interpreted as less disruptive than phone calls and practically cost-free when compared to traditional letter writing. Despite clear advantages e-mail allows between recipient and sender, such as the documented speed of delivery and retrieval of information and the rapid exchange of ideas, its use raises concerns and presents barriers to both patients and providers.
cently, emerging technologies such as social media, texting, and instant messaging have seen the same increase in popularity that e-mail received a decade ago. In fact, it can be safely stated that universities and businesses could not successfully operate without the use of e-mail; the health care sector is no exception in this regard, but lags far behind other industries in the adoption of e-mail. The Centers for Disease Control and Prevention (CDC) provided a statistic that states, “from January through June 2009, almost 5 percent of adults aged 18-64 had communicated with a health care provider by e-mail in the past 12 months.” Research has shown that e-mail allows for enhanced communication in the doctor-patient relationship and has been noted as a method that is generally preferred by many patients. Today’s health care professionals need to consider the resulting implications as technology becomes increasingly more popular in the health care setting and patients begin to electronically submit questions and concerns regarding their care. Unauthorized disclosure of protected health information (PHI) can result in fines up to $1.5 million per year under the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Supporting evidence is emerging that the use of online communication appears to be a preferred option for many patients over more traditional modes of communicating with their providers.

A British study published in 2003 found that only 45 percent of dental practices had access to Internet and e-mail capabilities. Dentists appear to be considering the use of e-mail to communicate with patients; however, another study found that only 10 percent of dentists who responded (436 respondents total) used e-mail to directly communicate with their patients—noting that the message content was limited to scheduling appointments. Very few health care insurers offer reimbursement for the time spent with e-mail consultation/communication. In addition, lack of reimbursement in other health professions, including dentistry—where no Current Dental Terminology (CDT) code exists for this action—may be considered as one contributing factor to the limited use of e-mail. This may continue to guide dentists to opt for an office visit rather than a non-covered procedure such as a consultation via e-mail.

A 2011 pilot study of e-mail communication skills analyzed rheumatology fellows’ responses to a simulated patient’s e-mail using ROSCE (Rheumatology Objective Structured Clinical Examination), an instrument validated to assess communication skills and professionalism. Mittal et al. have developed a scoring instrument (rubric) to evaluate responses measuring whether 1) fellows understand the provider-patient relationship, 2) they are aware of the administrative, confidentiality, and legal aspects of e-mail communication, and 3) they are able to compose a response in a professional manner. The responses of the fellows showed wide variation, highlighting the need for including didactic modules on e-mail communication in the fellowship program or earlier in medical education.

This paradigm shift in information exchange between providers and patients in the medical profession prompted the American Medical Association (AMA) to develop guidelines to assist health care providers as they communicate with their patients electronically. These guidelines focus in part on the mandate that requires the confidentiality of the patient’s PHI as noted in the rapidly evolving privacy rules outlined in HIPAA policies. In addition, the guidelines address topics such as interacting within a secure network that maintains adequate firewalls, ensuring that the message contains a privacy disclaimer, and maintaining a printed copy of the e-mail in the patient’s office record. Although clear guidelines as quoted above exist in the health care profession, it is noted that dentists have the same responsibility as physicians under the privacy rules outlined in HIPAA policies regarding the security of PHI. These efforts of the AMA and American Medical Informatics Association (AMIA) related to e-mail guidelines have not seemed to enter the dental professional setting. Given the clear trend toward greater electronic communication among health professionals, including dentists, it is critical to assess the baseline e-mail communication skills of students prior to entering the workforce. The goal of our study was to assess and compare the communication skills exhibited by a sample of incoming first-year and fourth-year first-professional dental students as they responded to simulated patient inquiries via e-mail. From these findings, suggestions for best practice will be drawn. We will develop an initial set of recommendations in the area of curricular considerations that can be proposed for a broader discussion among the stakeholders, specifically dental educators trained in communication theory and behavior management and computer security experts. The findings of such a broad discussion may then serve as a basis to propose a set of guidelines and recommendations for behavioral competencies dental students should achieve prior to graduation regarding the use of electronic communication in the dental setting.
Methods

The study consisted of two clustered convenience samples drawn from the first-professional student population at the University of Pittsburgh School of Dental Medicine (UPSDM), a public, state-related accredited institution located in Pittsburgh, Pennsylvania. The first sample consisted of eighty incoming first-year students (D1); the second sample was comprised of eighty fourth-year students (D4) in their final year of dental school. Upon entry to the UPSDM, the D1 sample (Class of 2015) consisted of fifty males and thirty females and twenty-two in-state and fifty-eight out-of-state residents; these students were an average of 24.3 years of age. The D4 sample (Class of 2012) consisted of fifty-five males and twenty-five females and thirty in-state and fifty out-of-state residents; these students were an average of 27.4 years of age. All students from both classes were included in the study (n=160).

This study was approved by the Institutional Review Board at the University of Pittsburgh (PRO11080323). All students were required to complete an assignment designed to capture their e-mail communication skills as part of their required coursework; however, they were informed that they were permitted to decline participation in the study, thus disallowing their data for use for this project.

Both samples of students had their assignments administered via an electronic course management system (Blackboard, version 9). During the exercise, both D1 and D4 students were presented with two e-mail scenarios (Appendix A). Case 1 presented a patient who appeared to show signs of a serious acute infection (potentially involving the patient’s airway) subsequent to an extraction three days earlier. Despite reporting compliance with the prescribed antibiotic and pain medication regime, the patient described systemic signs of infection in addition to localized facial swelling and pain with the slightest touch—symptoms that suggested the need for immediate attention. Case 2 presented a patient who fractured a tooth while eating. He was previously also told that the tooth was indicated for a crown. He did not report any symptoms; however, he sought immediate attention to not only preserve the remaining tooth structure, but also learn more about the cost in order to acquire the necessary funds. Students were given the following directions to complete the case: “This exercise will assess your professional e-mail communication skills. You will have a total of 10 minutes to type a response to this simulated e-mail from a mock patient. Your responses should be clear and professional and should address the concerns presented by the patient”; and “You receive the following e-mail message from your patient; please write a suitable response. Describe any additional action you would take that you may not be able to perform due to electronic limitations today.”

For D1 students, the completion of the assignment was a mandatory part of the course “Professionalism in Dental Medicine.” The assignment was administered and described to the students as an e-mail communication pre-assessment exercise. It was offered at the same time to all students to avoid communication between students regarding the assignment and proposed responses. The purpose of the assignment was to acquire baseline data from incoming dental students, who were assumed to lack information related to the expectations of professional communication among health care providers and patients via e-mail. The exercise was conducted in the school’s simulation lab, which is equipped with eighty individual computer workstations. It was administered during the third week of classes prior to any formal curricular introduction related to the topic of professional communication in a health care setting, but after completing a university-developed online HIPAA training module that explained the basic regulations regarding use of PHI.

The same e-mail communication assignment was presented to D4 students as a mandatory part of the course “Clinical Responsibilities.” As with the D1 students, it was offered at the same time to all D4 students to avoid contamination of the results. Students were expected to complete the assignment in the third week of their fourth year. These more clinically experienced students were expected to apply skills presented to them in a first-year dental informatics course, which contained a module on patient communication, including e-mail. Thus, D4 students completed the assignment after receiving this formal content three years earlier, while D1 students were asked to complete the assignment very early in the program prior to any formal instruction. Prior to the assignment presented in “Clinical Responsibilities,” the course director provided the students with background information regarding the exercise; references to resources were provided in the online syllabus and in an e-mail sent to the students two weeks prior to the exercise. The references included links to UPSDM curriculum content presented to them in their first year and also to the
AMA Guidelines for Physician-Patient Electronic Communication.\textsuperscript{24}

To analyze the data, we received only de-identified responses; the identity of the student participants was kept confidential using Blackboard’s grading center export function, which was used by an administrative assistant to communicate data to the respective course directors. An intern, a fourth-year Health Management Systems student from Rangos School of Health Sciences, Duquesne University, evaluated each de-identified response for the purposes of this research project. We read each individual case and compared it against a rubric adapted and modified from a study by Mittal et al.\textsuperscript{23} to reflect a dental focus (Appendix B). We collectively discussed discrepancies of responses to achieve agreement.

The rubric developed for the study at the UPSDM described four primary components, each comprised of one or more items: 1) importance—which included suggestions for emergency care for urgent medical issues and face-to-face follow-up care for non-urgent care; 2) PHI security—which included measures to ensure a secure channel existed during the e-mail exchange or demonstrated regard for protecting patients’ health information (e.g., using a standard e-mail signature with confidentiality language); 3) professionalism and courtesy—which included providing the dentist’s name, phone number, back-up plan, and read receipt (a request by the sender for a confirmation that the message was opened); and 4) content/action—which included use of lay terminology, use of direct/understandable instructions, use of a proper salutation/closing, and indications that efforts would be made to ensure an electronic hard copy is present in the office files (an action the students were able to indicate in a textbox in addition to the e-mail). The individual rubric items organized by component are shown in Table 1. These four components paralleled school policies and curricular content presented to students prior to their fourth year, such as a course content on dental informatics and a mandatory HIPAA training module including the basic regulations regarding use of PHI.

The rubric was also closely aligned with the objectives of the courses that hosted the exercise. The first-year course “Professionalism in Dental Medicine” had the following objectives and competencies in the year of the study: construct adequate professional written communications, apply ethical and legal standards in the provision of dental care to patients, and communicate effectively with patients from diverse cultural backgrounds. The fourth-year course “Clinical Responsibilities” had the following objectives and competencies in the year of the study: communicate effectively with patients from diverse cultural backgrounds and acquire practice management skills applicable to contemporary practice to include the proper use of information technology resources.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>D1 Pass</th>
<th>D4 Pass</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
<td>80 (100%)</td>
<td>80 (100%)</td>
<td>ns</td>
</tr>
<tr>
<td>Recognizes urgency or suggests office visit accordingly</td>
<td>80 (100%)</td>
<td>80 (100%)</td>
<td>ns</td>
</tr>
<tr>
<td>PHI</td>
<td>3 (4%)</td>
<td>9 (11%)</td>
<td>ns</td>
</tr>
<tr>
<td>Ensures clear channel or demonstrates regard for protecting PHI</td>
<td>3 (4%)</td>
<td>9 (11%)</td>
<td>ns</td>
</tr>
<tr>
<td>Professionalism and Courtesy*</td>
<td>0</td>
<td>0</td>
<td>ns</td>
</tr>
<tr>
<td>Includes dentist’s name</td>
<td>70 (88%)</td>
<td>71 (89%)</td>
<td>ns</td>
</tr>
<tr>
<td>Includes dentist’s phone number</td>
<td>24 (30%)</td>
<td>40 (50%)</td>
<td>0.007</td>
</tr>
<tr>
<td>Includes back-up plan</td>
<td>77 (96%)</td>
<td>71 (89%)</td>
<td>ns</td>
</tr>
<tr>
<td>Includes read receipt</td>
<td>0</td>
<td>0</td>
<td>ns</td>
</tr>
<tr>
<td>Content/Action*</td>
<td>0</td>
<td>0</td>
<td>ns</td>
</tr>
<tr>
<td>Includes lay terminology</td>
<td>80 (100%)</td>
<td>80 (100%)</td>
<td>ns</td>
</tr>
<tr>
<td>Includes direct/understandable instructions</td>
<td>80 (100%)</td>
<td>80 (100%)</td>
<td>ns</td>
</tr>
<tr>
<td>Includes proper salutation/closing</td>
<td>80 (100%)</td>
<td>80 (100%)</td>
<td>ns</td>
</tr>
<tr>
<td>Ensures a copy in office files</td>
<td>0</td>
<td>0</td>
<td>ns</td>
</tr>
</tbody>
</table>

*Failure of one subcategory resulted in the failure of the entire category.

Note: All percentages noted as results were rounded to the nearest whole number.
A binary scale (1=pass; 0=fail) was used to evaluate the individual items of the rubric for each student (see Table 1). A student received a 0 point value if the answers were deemed unclear or too vague. If the student failed any item within a given component as outlined on the rubric, it was documented that he or she failed the entire component. This was accomplished by applying the same binary scoring routine used for the individual items to the four primary components (Importance, PHI security, Professionalism and Courtesy, and Content/Action). Care was taken to identify any component(s) that were missing from each response in an effort to analyze deficiencies and trends. For each item and component in the evaluation rubric, a 2x2 chi-square test of association with Yates correction was conducted to determine whether formal curricular training received during the course of students’ dental education had any effect on the e-mail communication skills passing rate. Where appropriate, Fisher exact test was used instead of the standard chi-square test. An alpha level of 0.05 was used as the threshold for statistical significance. All p-values were reported as one-tailed because it was expected that the pass rate would improve from D1 to D4.

Results

A total of 160 students (100 percent) responded to the assignment and agreed to have their responses included in the study. The results of the e-mail communication exercise for both D1 and D4 students are shown in Table 1. In the Importance component, all students, regardless of year, demonstrated optimal behavior. They recognized the importance of the interaction and displayed a sense of urgency or suggested an office visit to address the concern in their reply to the patient. In the PHI component, only 4 percent of D1 students demonstrated actions that attempted to protect their patient’s PHI; this rate increased to 11 percent in D4 students. Although there was some improvement from D1 to D4, the difference in passing rate was not statistically significant. Examples of responses adequately addressing PHI can be found in Appendix C.

In the Professionalism and Courtesy component, students showed mixed results. The majority of students in both classes (88 percent in D1 and 89 percent in D4) remembered to include their name in their e-mail response. Similarly, 96 percent of D1 students and 89 percent of D4 students included a back-up plan. Neither of these differences was statistically significant. Conversely, a greater proportion of D4 students (50 percent) compared with D1 students (30 percent) provided a phone number for their patients as an alternative communication channel in case of an escalation in the situation; this difference was statistically significant (p=0.007). Lastly in this component, none of the students in either class included a read receipt with their e-mail response.

In the Content/Action component, 100 percent of students in both classes passed three of the four sub-items relating to providing appropriate content in their e-mail reply (including lay terminology, providing direct/understandable instructions, and using a proper salutation/closing). Nevertheless, none of the students in either class indicated in the designated comment field for action that a copy of the correspondence would be retained in their office’s files.

Failure of any sub-items within a section resulted in a total failure of the component. Thus 100 percent of both D1 and D4 students passed the Importance component, but failed the components regarding Professionalism and Courtesy and Content/Action. A total of 4 percent of D1 students and 11 percent of D4 students passed the PHI component.

Discussion

This study assessed the skills incoming dental students at one school possessed regarding electronic communication with patients and attempted to compare these skills with those of students at the same school scheduled to graduate during the year of the study. Our overarching goal in measuring the abilities of the D1 students was to establish a baseline assessment of their skills as they enter our school in an effort to tailor the instructions provided to them. In measuring the abilities of our D4 students, we wanted to document the impact our curriculum at the time of the study has had on e-mail communication skills by comparing how a group entering dental school (D1 students) performed with a more experienced group preparing to graduate (D4 students).

Predictably, our results confirmed that the incoming students were familiar with the use of electronic communication tools. They successfully used the technology without assistance to interact with their mock patient who expressed a dental concern. On the other hand, they did not display the particular behavior that is expected in a professional provider-patient relationship when communicat-
ing electronically. The completion of a mandatory HIPAA training module, which explained the basic regulations regarding use of PHI, appeared to have a limited effect on the D1 and D4 students as only a few of them seemed to recall that using a confidentiality disclaimer at the end of a message is necessary as directed during the training module. Given the fact that no student successfully passed the exercise (not even D4 students who were exposed to a curriculum that had aimed to develop these skills), we cannot support the claim that these students were inherently aware of the particulars of electronic communication in their new role as health care providers. This concern is most clearly seen in their disregard for including action to protect their patients’ PHI in a clear channel, offer a read receipt, and place a copy of the correspondence in the office files—all of which are elements of the Guidelines for Physician-Patient Electronic Communications\textsuperscript{24} set forth by the AMA in the medical profession and the AMIA guidelines for e-mail communication,\textsuperscript{2} and are part of the didactic material presented in the dental informatics course\textsuperscript{26,27} at this particular school that the D4 students completed prior to participating in the assignment.

Half of the D4 students failed to provide a phone number for their patients as an alternative communication channel in case of an escalation in the situation. Although these more experienced students performed significantly better on this task than their less experienced counterparts (50 percent vs. 30 percent passing), their passing rate was deemed unacceptable by the standards of the school. Perhaps leaving a phone number did not occur to many students because young people of similar age to dental students often complain that phone calls are by their nature “impolite” as they are considered more of an interruption than an arriving text message.\textsuperscript{28} Furthermore, they “avoid voice calls because the immediacy of a phone call strips them of the control that they have over the arguably less-intimate pleasures of texting, e-mailing, Facebooking, or tweeting.”\textsuperscript{28}

Often employees mix private and business communication in one e-mail account, and subsequently supervisors and information technology auditors are reluctant to spot-check these accounts for adherence to policies and guidelines without cause.\textsuperscript{29} However, cases in the past have shown that e-mail communication of entire businesses can become public record easily, as in the case of the Enron Corpus after the collapse of the Enron Corporation.\textsuperscript{30}

With the introduction of smart phones, tablets, and other mobile devices, privacy increasingly becomes a concern as these devices are harder to safeguard and easier to lose. Mobile devices with full access to privileged information and often-insufficient access control against unauthorized usage are easily stolen from offices, cars, and homes. Perpetrators can often effortlessly access e-mail and electronic health record accounts through these stolen devices as they are seldom on a secure network,\textsuperscript{31,32} thus allowing easy transfer of information and data from the device.

**Potential Limitations and Bias**

This study did not use a longitudinal design, but rather was comparative and cross-sectional in nature. As with any study of this design, there is the possibility of uncontrolled stratification effects that can bias the data. One potential confounder of this study is that the two sets of students being compared were separated by time and age. We did not account for this factor; however, given the fact that both classes performed equally poorly, it is quite clear that neither age, experience, nor instruction resulted in improved communication. Unrelated to influences from the dental curriculum, rapidly evolving technological progress, and a general increase in awareness regarding privacy and confidentiality are likely to take place over any four-year period. Parsing these larger effects from any curricular effects would be very difficult, even in a longitudinal study design. However, any such differences between the two classes, if present, were not linked to any meaningful differences in e-mail communication skills, at least as determined by the present evaluation rubric.

Some bias may have been introduced by the manner in which the experiment in each of the classes could have been interpreted by the students. D1 students completed the assignment after they completed the initial university-wide HIPAA training, which makes it unclear whether some of the skills they demonstrated (e.g., protection of PHI) were the result of the training or their baseline skills before coming to the dental school. D1 students may have felt little to no pressure while completing the exercise, which was presented to them as a non-graded course assignment, whereas D4 students may have felt a certain level of stress when asked to complete an e-mail communication exercise as a graded course requirement. It also should be noted that the content provided to the D4 students might not have been
effective enough or presented at the optimal time in the curriculum to meet the desired learning outcome.

One could also argue that the students may have planned a follow-up action not able to be captured in the assignment. For example, the students may have intended to call the patient the next morning or after the e-mail was sent; or they may have intended to place a copy of the e-mail in the office record but were not certain how to note that in the assignment, despite the fact that a designated field was provided.

Finally, the evaluation of students was restricted to the UPSDM, potentially limiting the generalizability of the findings. However, there is no reason to expect that students enrolled in this institution are significantly different from students at other U.S. dental education institutions.

Conclusions and Recommendations

Based on the prior evidence from the literature and the findings presented in this study related to the e-mail skills of first- and fourth-year dental students from one institution, the following considerations are proposed to dental educators. In an effort to address the results of this study revealing a general lack of skills of dental students in communicating professionally to patients via e-mail, we recommend that broad discussions occur among stakeholders in dental education whose expertise relates to curriculum development, communication theory, behavior management, and computer security. Using the outcomes of these discussions, an expert committee can proceed to develop guidelines for the dental education community. Additional outcomes may also include a set of behavioral competencies that are required of graduating dental students related to professional e-mail communication skills. Dental students, as emerging health care providers, need to be equipped to apply skills and demonstrate attitudes and behaviors associated with the proper use of electronic communication with their patients.

Guidelines developed as a larger outcome of this study may also contain recommendations for templates that include the provider’s name and phone number, proper salutation, and closing remarks, as well as information regarding office protocol (e.g., stating that a copy of the correspondence will be placed in the patient’s file). In addition, the guidelines need to emphasize what constitutes appropriate content of an e-mail and what kind of content may not be included. Furthermore, including calibration exercises to connect didactic and simulation instruction to the clinical curriculum would be necessary to address the dichotomy that can often occur between didactic and clinical faculty members. These guidelines then can serve as a basis for developing competencies.

Once such guidelines and competencies are in place, schools will be able to implement curricular changes. Given that the existing curricular content presented to the D4 students at the UPSDM failed to convey the information in a manner that students were able to apply the appropriate skills tested in the study, these curricular changes are imperative. These results strongly suggest that the UPSDM will need to modify the current content of the courses preparing students for professional and ethical electronic communication that protects patients’ health information as a priority. Consideration will be given to whether or not the development of electronic communication skills should occur in a larger context of health communication, i.e., included in general verbal and written communication skills sessions. Such an evaluation of existing curricular offerings would be recommended to any institution as it evaluates the effectiveness of its first professional curriculum. Revised curricular offerings need not only train students in these communication skills, but can also serve to evaluate students’ performance in applying these skills to ensure competence. Until the dental education community develops and adopts its own guidelines and competencies, the Guidelines for Physician-Patient Electronic Communications developed by the AMA, AMIA, and other applicable descriptions of other health professions schools serve as the only formal resources for developing courses or curricular units related to the topic of electronic communication with patients.

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REFERENCES


34. Christner JG, Stansfield RB, Schiller JH, Madenci A, Keefer PM, Pituch K. Use of simulated electronic mail (e-mail) to assess medical student knowledge, professionalism, and communication skills. Acad Med 2010;85(10 Suppl):S1-4.
Case 1: E-Mail Communication Exercise

Student instructions: This exercise will assess your professional e-mail communication skills. You will have a total of 10 minutes to type a response to this simulated e-mail from a mock patient. Your responses should be clear and professional and should address the concerns presented by the patient.

You receive the following e-mail message from your patient; please write a suitable response:

Date: August 8, 2011
To: dkdoctor@hotmail.com
From: Marge_Jones@aol.com
Subject: after pulling my tooth

Hi Doc:
I wanted to let you know that even though you pulled that tooth 3 days ago, I still don't feel good. The area around where the tooth used to be really hurts when anything touches it and it is hard for me to eat around it or even open my mouth. It feels like a sharp pain in my mouth and I have the chills. I noticed that it hurts more when I swallow too. My husband looked in there with a flashlight and said that it looks red and swollen. He even said my face looks different on that side. I have been taking the pain pills you gave me and haven't stopped the antibiotic either. I wonder if I am getting worse? What do you think is happening? I thought I would feel better after the tooth was gone. I tried calling you at the office but I got the answering machine. What do you think I should do?

Thanks,
Marge Jones

Describe any additional action you would take that you may not be able to perform due to electronic limitations today:

Case 2: E-Mail Communication Exercise

Student instructions: This exercise will assess your professional e-mail communication skills. You will have a total of 10 minutes to type a response to this simulated email from a mock patient. Your responses should be clear and professional and should address the concerns present by the patient.

You receive the following e-mail message from your patient; please write a suitable response:

Date: August 11, 2011
To: dkdoctor@hotmail.com
From: Henry_Adkins@aol.com
Subject:

Doctor:
I saw you for my regular check up a while back. The girl at the office that cleans my teeth said that I needed to think about replacing a big filling with a crown so it doesn't break. She told me I could “think about it,” so I did. Last night, when I was eating wings, a piece of that tooth broke. I think I may need an emergency crown before it gets worse. How much will that cost? I want to make sure I can get the money from my son before he leaves to go out of town tomorrow. Until I can get to the office, maybe I should just try to eat soft things – is that right? I really don't want to do anything that will make me lose the tooth. Can it be saved?

Thanks,
Henry Adkins

Describe any additional action you would take that you may not be able to perform due to electronic limitations today:
APPENDIX B

Rubric for E-Mail Communication Exercise

IMPORTANCE

Pass
- Suggests emergency care for an urgent message that contains medical issues that require immediate attention; or
- Suggests face-to-face follow-up to a non-urgent message that contains dental issues that are of sizable concern to the patient.

Fail
- Fails to suggest emergency care for an urgent message that contains medical issues that require immediate attention; or
- Fails to suggest face-to-face follow-up to a non-urgent message that contains dental issues that are of sizable concern to the patient.

PROTECTED HEALTH INFORMATION

Pass
- Takes measures to ensure a secure channel exists during the e-mail exchange; or
- Demonstrates regard for protecting the patient’s health information.

Fail
- Fails to take measures to ensure a secure channel exists during the e-mail exchange; or
- Fails to demonstrate regard for protecting the patient’s health information.

PROFESSIONALISM AND COURTESY

Pass
- E-mail includes:
  Dentist’s name; and
  Phone number; and
  Back-up plan if indicated; and
  Read receipt.

Fail
- E-mail does not include:
  Dentist’s name; and
  Phone number; and
  Back-up plan if indicated; and
  Read receipt.

CONTENT/ACTION

Pass
- E-mail includes:
  Lay terminology; and
  Proper salutation/closing; and
  Direct, understandable instructions.
- Effort is taken to ensure an electronic or hard copy is present in the office files.

Fail
- E-mail does not include:
  Lay terminology; and
  Proper salutation/closing; and
  Direct, understandable instructions.
- Effort is not taken to ensure an electronic or hard copy is present in the office files.
APPENDIX C

Examples of Responses Adequately Addressing PHI

EXAMPLE #1

Dear Marge Jones-
I’m sorry to hear that you are still experiencing pain in the area where I removed your tooth. Based on the information you’ve given me, I would like to see you in my office as soon as possible as it appears you have a dental infection. It is important that you make every effort to come in for an office visit because your current condition could get worse. Please feel free to contact my office via phone to schedule an appointment time.

Student’s name
School’s address and phone number

*The information contained in this e-mail is intended for only the above named recipient. Any use of this e-mail for any other purpose is prohibited. If you are not the above named recipient, please notify sender via e-mail, and delete this e-mail immediately.

EXAMPLE #2

Dear Mrs. Jones,
Because you are having pain in the area of the extracted tooth, I would like to see you as soon as possible. This does not appear to be an emergency situation, but is urgent. Please come to my office tomorrow morning at 8 am so that I can assess the area.

For future reference, please call me on my urgent care phone line and leave a message. The number for that line is (412) 555-1234. If you are in severe pain and cannot reach me, please report to the emergency room at your closest hospital.

Sincerely,
Student’s name
Student’s e-mail
School’s address and phone number

Confidential: This e-mail contains confidential information. If you received this e-mail by mistake, please disregard, and delete it immediately.