Global Information Assurance Certification Paper

A Security Practices Look at the Clinical Use of E-mail
Randy Patterson
February, 2001

Introduction

The clinical use of email will be the most sweeping technological change in patient-physician communications in the last 100 years. The effective use of email communication will be the measuring stick by which a medical practice is determined to be up-to-date. The digital clinician's office can be internet connected. Up-to-date information can be online accessible for both patient and physician. Physician software can be automated and web-enabled, but it is the electronic connection of physician and patient which will define modern medical communications.

Dr. George Lundberg, former editor of the Journal of the American Medical Association, has identified the Web as "the most important advance in medical communications since the printing press" .... and e-mail is its' most useful tool (2). The last time this much promise has been introduced by technology was in 1870 with the commercial introduction of the telephone. The physician reaction to e-mail today is with the same celebration and trepidation as it was then with the telephone. And, like the telephone, once the concerns with overwhelming use, patients seeking care via this new communication medium, safety, security and privacy are addressed, the use of email will be fully accepted. It will be integrated into the practice and the modern physician office cannot be in business without it (2). The Annals of Internal Medicine proclaims, "we are again on the threshold of a dramatic expansion in communications technology that may have profound effects on the patient-physician relationship and the practice of medicine"(2).

It is this prediction of phenomenal change that the integration of e-mail into physician medical practice that warrants us to review the security practices which are also being promoted with e-mail's acceptance.

E-mail's Implementation

In order to understand what security is needed, we must first understand how email is used in the clinical setting whether it is a hospital, nursing home, physician office or clinic. Like any new tool there are varying degrees of anticipated use. Everything from very imaginative - next generation uses to vastly underutilizing - why waste your time possibilities. This research is limited to the "middle of the road" variety. Keep in mind that with the maturing of this technology will come more progressive use.

Email is a natural connection of two growing user groups, the American population and physicians. This year, according to industry estimates, more than half the U.S. population will be using e-mail (21). "In 1998, 33 percent of 10,000 physicians polled used e-mail to communicate with their patients-a 200 percent increase over the year before" (17).

Medem, Inc. and the eRisk Working Group for Healthcare in their Overview of The eRisk in Healthcare Project, reported a "doubling of provider/practice Web sites and tripling of provider-

patient email in the 12 month period ending in May 2000" (14). Also identified as a trend in this report is "growing numbers of consumers willing to change physicians in order to enjoy the convenience of email with their physicians." (14).

"It is estimated that more than 40% of patients in the United States use e-mail to contact health professionals. Up to 90% of these patients correspond with their doctors, not only on the mundane aspects of their care … but also on important and sensitive matters" (15).

E-mail Use

Obviously it is not appropriate or expected that all patient - physician communication will be relegated to email. Most email generation is assisted through the use of medical practice web sites. Some sites provide integrated links to various web pages designed for specific purposes, some even relative to the clinical specialty of the institution. An example would be a pediatric physician web site that auto-generates an e-mail request to send vaccination records for children to their school. Each page may have an option to generate email relative to the purpose of that particular page. Some sites have a dedicated page just for email with drop-down category selections that automatically selects a specific addressee (TO:) based on the selected category.

Normal examples of clinical email use are for patient services such as:

- appointment scheduling
- referral requests
- prescription refills
- patient education material
- billing inquiries
- contact requests / questions for office staff, nurse or the doctor
- reporting home health measurements (i.e. blood pressure, glucose measurements, etc.
- reporting the results of lab tests

E-mail Benefits

There are also sufficient benefits for both patient and physician to consider utilizing e-mail for communications. In searching the American Academy of Family Physicians database for e-mail, it lists the following benefits: (16)

"Patients cite such added convenience as:

- Anonymity of online exchanges allows them to describe problems they might not in person
- Convenience of access
- Prevents phone-tag
- A hard-copy of medical instructions/advice

Physicians cite such added convenience as:

- Convenience of response
- More thoughtful response
- More productive office visits
- Prevents phone-tag
- Ease of documenting patient correspondence" (16)

In addition to the above, utilizing e-mail to communicate with patients improves the efficiency of the contacts by not requiring both patient and physician to be available at the same time as with a phone conversation or office visit. By responding to e-mail in spare time or during a focused time frame, it can possibly keep a physician from interrupting office visits to take a phone call. E-mail is also faster than phone communication. In a 1998 study for JAMA, it was reported that physicians spend less than 4 minutes responding to e-mail which is less than the average phone call. This time has double efficiency paybacks if it also saves time spent more inefficiently on the phone or eliminates an unnecessary office visit (22).

Election to Use E-mail

There are several aspects of security, which are involved at this point before considering the use of email. There is the security of both computer systems from which the email will be sent and received. There is probably a web page the email is being generated from, the ISP who processes the email transaction, the network systems the email travels over, etc. For the remainder of this research we will accept basic assumptions that the computer systems for both the sender and receiver are independent and relatively secure.

Our focus will be on whether adequate security measures are being identified and addressed in the promotion of patient - physician internet email communication to allow an informed decision to be made.

Basic Information Security and Risk

The basic fundamental pillars of information security are Confidentiality, Integrity, and Availability (3). Besides knowing these basics, the concept of risk must also be realized. For without understanding the basics of security and risk, a patient could not make an educated determination as to whether e-mail would be a safe medium to use in communicating with a physician or vice versa. I would guess that the medical profession is fairly "legal literate". If the clinical practice has determined to allow e-mail from patients, they have already evaluated all aspects and are willing to accept the risks involved. Their patients cannot be expected to make a decision to participate using the service unless they too have been adequately informed on the basic tenants of information security and risk (hence the description of informed consent).

Physician Advisement

There are a number of guidelines produced by physician organizations that advise how to conduct business via e-mail with patients. There is none more authoritative in the medical field than the American Medical Association (AMA). The AMA Board of Trustees, Resolution 810 (A-99), "Guidelines for Patient-physician Electronic Mail" was adopted and specifically request the "AMA consider developing guidelines for the communication of patient information by means of electronic mail"(13). The AMA Board of Trustees adopted the guidelines in June 1997. The resolution also advised "if e-mail is to become a viable mode of communicating health information, physicians and health care organizations must assure the privacy, confidentiality, and security of transmissions. Privacy is the most significant public policy issue on the use of

electronic communication of patient records and exchange of information"(13). The guidelines address Communication Guidelines and Medicolegal and Administrative Guidelines (13).

The most authoritative resource on the subject of Electronic Patient Centered Communication, or ePCC is physician author Daniel Z. Sands, MD, MPH. He is aligned with the Beth Israel Deaconess Medical Center in Boston Massachusetts. E-mail guidelines such as those for the American Medical Informatics Association (AMIA) (5), Massachusetts Health Data Consortium (21), and the American Medical Association (AMA) (4) all have drawn on or referenced Dr. Sands' work. Dr. Sands has a web site dedicated to ePCC and can be found at http://clinical.caregroup.org/ePCC (19).

As Dr. Sands is the common reference for most industry produced guidelines, his work will be the only point of reference and each example from http://clinical.caregroup.org/ePCC/ePCC_Tips.htm (22) is quoted verbatim in the following Confidentiality, Integrity, Availability and Risk with Physician sections.

Confidentiality with Physicians

- Use alternative forms of communication for sensitive information (do not assume e-mail is confidential) (22)
- Put your name and identification number in the subject line (22).
- I may save e-mail I send and receive in your record (22).
- I may share your messages with my office staff or with consultants (if necessary) (22).
- E-mail sent using an employer's e-mail system could legally be read by the employer. An alternative is to sign up for a personal e-mail account (22).
- E-mail is sent across an open computer network and is generally unencrypted. It is thus accessible to prying eyes much as a postcard is (22).
- The biggest threat to the confidentiality of e-mail is not hackers intercepting messages, but:
  - messages that are misaddressed
  - messages containing confidential information that are inadvertently forwarded to others
  - messages read using shared e-mail accounts
  - messages left on computer screens when one forgets to log off (22).
- In general, be careful about sending e-mail messages to more than one patient at a time, since they will see the other recipients' e-mail addresses (or worse). If you wish to send group mailings, do the following:
  - Address the message to yourself.
  - Use the "bcc" field to list each of the intended recipients. This way your patients will not be able to see who else received the message (other than you) (22).
- You may choose to maintain a policy of only replying to but never initiating e-mail messages (22).

Integrity with Physicians

- Keep copies of e-mail you receive from me (22).
- I may save e-mail I send and receive in your record (22).

- Always quote the full text of the e-mail that is being sent to you when responding (to provide the context for your replies) (22).
- Save all e-mails that you send and receive in an e-mail folder for each patient. Ideally you should file these in the patient's medical record, either by printing them out and filing them or by copying and pasting or filing them directly in the patient's computerized record (22).
- You may choose to maintain a policy of only replying to but never initiating e-mail messages (22).
- When e-mail messages get long or the volley is prolonged, tell the patient you'd like them to come in to discuss (or call them) (22).
- Remind patients when they do not adhere to the guidelines (22).
- For repeat offenders, it is acceptable to terminate the e-mail relationship (22).

Availability with Physicians

- You may choose to offer this service to all of your patients, some of your patients, or none of them (22).
- Use alternative forms of communication for:
  - emergencies and other time-sensitive issues
  - situations in which my response is delayed (I may be away) (22).
- I may save e-mail I send and receive in your record (22).
- Append a standard block of text to the end of all your e-mail messages to patients, which contains your full name, contact information, and reminders about security and importance of alternate forms of communication for emergencies (22).
- Save all e-mails that you send and receive in an e-mail folder for each patient. Ideally you should file these in the patient's medical record, either by printing them out and filing them or by copying and pasting or filing them directly in the patient's computerized record (22).
- Record your patient's e-mail addresses in your address book and in their electronic or paper record. Ideally, you can have a field in the registration system that you can use for this (22).
- Remind patients when they do not adhere to the guidelines (22).
- For repeat offenders, it is acceptable to terminate the e-mail relationship (22).

Risk with Physicians

- You may choose to offer this service to all of your patients, some of your patients, or none of them (22).
- Always discuss guidelines for appropriate use. The major points can be summarized on a rubber stamp or sticker, which you may place on the back of your business card. Your discussion with your patient about the use of e-mail is an informed consent discussion, and as such the discussion and the patient's assertion of their understanding should be documented in the patient's record, for example "We discussed the risks, benefits, and appropriate uses of e-mail for our communications. The patient expresses an understanding of the risks and agreement to our standard guidelines. Her e-mail address is: …" (22).
- E-mail sent using an employer's e-mail system could legally be read by the employer. An alternative is to sign up for a personal e-mail account (22).
- E-mail is sent across an open computer network and is generally unencrypted. It is thus accessible to prying eyes much as a postcard is (22).

- Append a standard block of text to the end of all your e-mail messages to patients, which contains your full name, contact information, and reminders about security and importance of alternate forms of communication for emergencies (22).
- You may choose to maintain a policy of only replying to but never initiating e-mail messages. (22).
- Do not deliver bad news via e-mail (22).
- Remind patients when they do not adhere to the guidelines (22).
- For repeat offenders, it is acceptable to terminate the e-mail relationship (22).

Patient Advisement

The patient normally receives education on the information security and risk associated with using e-mail from their physician. This education is normally developed from one of the physician guidelines identified previously such as the one from the AMA.

Physicians will normally provide some instructions on using e-mail to communicate with them. Many times these are delivered via the practice web page and are implied agreements. An examples can be seen at Stanford Medical Group () web site. Dr. David Ives, Medical Director of APG Lexington Practice requires a contract that is included in the patient chart (12). The physician e-mail guidelines can be summarized on a sticker or rubber stamp and communicated via the back of your business card or general office information brochure. (19)

At times physicians will take steps to provide additional education regarding the more technical aspects of e-mail. Newton Wellesley Primary Care web site advises:

> "We find Email a valuable communication tool for our practice. There are a few things you should know about all Email communications. Email messages pass from your computer through a number of servers (computers) on the Internet.
> While in route and when stored on the servers, waiting for delivery to your computer, these messages could be read by an unauthorized person (18).

The Pediatric Health Care at Newton-Wellesley, P.C. web site will be the only point of reference and each example from http://www.pediatrichealthcare.com (7) is quoted verbatim in the following Confidentiality, Integrity, Availability and Risk with Patients sections. This web site is named as a point of reference on Dr. Sands ePCC web site (19).

Confidentiality with Patients

- Pediatric Health Care is committed to providing you with health care, information and medical services of the highest quality while at the same time protecting your privacy (10).
- We insist that every staff member observe patient confidentiality, respecting your right to privacy about your medical records and experience with us. We will only share data outside our patient care team for legal purposes or clinical necessity at your direction. While you may be asked to provide personal data in using this Web site, we can assure you this information will be treated with the same care we treat patient records. Any data we collect about you will be used only to help us with your medical needs and interest. We will not share your individual identity or personal contact information with anybody (10).

- Pediatric Health Care will undertake to honor or exceed the legal and governmental requirements of medical and health information privacy as required by our membership in the Health on the Net Foundation Code of Conduct (HONcode). This includes the recently announced US regulation for the privacy provisions of the US Health Insurance Portability and Accountability Act of 1996 (HIPAA). We will seek to provide information in the clearest possible manner from various medical information sources. Any medical or health advice provided and hosted on this site will be only given by medically trained and qualified professionals approved by Pediatric Health Care (10).
- Medical related correspondence sent to our physicians is monitored daily Monday through Friday. Other correspondence with our physicians will be addressed promptly unless the physician is away (9).
- Put the child's name and birth date and your name in the subject line (9).
- Be aware that we may share your email messages with the office staff or consultants (if necessary) to meet your needs (9).
- Be aware that that your employer or school may view email sent using their work provided or school provided email system (9).
- Be aware that messages sent to our normal Internet email addresses are not secure and can potentially be read by others. You should use our secure eServices forms for any sensitive or confidential information (9).
- We consider all requests as confidential communications between you and your physician (11).
- Ask the Doctor Existing patients can use this form to send questions directly to your primary physician (11).
- Record Release Patients can use this form to make a request for forwarding medical information to a given third party. Most requests for record release are verified by phone with the requester (11).

Integrity with Patients

- Pediatric Health Care will undertake to honor or exceed the legal and governmental requirements of medical and health information privacy as required by our membership in the Health on the Net Foundation Code of Conduct (HONcode). This includes the recently announced US regulation for the privacy provisions of the US Health Insurance Portability and Accountability Act of 1996 (HIPAA). We will seek to provide information in the clearest possible manner from various medical information sources. Any medical or health advice provided and hosted on this site will be only given by medically trained and qualified professionals approved by Pediatric Health Care (10).
- Keep copies of email messages you receive from us (9).
- Be aware that we may save email messages we send and receive in your medical records, either electronically or using a paper copy (9).
- Please review our email policy before using these addresses (8).
- In order to ensure only authorized requests are processed, on some occasions we will contact you by telephone to verify the information (11).
- Registration and Profile Update New and existing patients can use these forms to either register for the first time with Pediatric Health Care or to make changes in their existing patient

profile. For example, you can make changes in insurance, new address, etc. This information will be incorporated into your physician's permanent record (11).

- Record Release Patients can use this form to make a request for forwarding medical information to a given third party. Most requests for record release are verified by phone with the requester (11).

Availability with Patients

- Pediatric Health Care will undertake to honor or exceed the legal and governmental requirements of medical and health information privacy as required by our membership in the Health on the Net Foundation Code of Conduct (HONcode). This includes the recently announced US regulation for the privacy provisions of the US Health Insurance Portability and Accountability Act of 1996 (HIPAA). We will seek to provide information in the clearest possible manner from various medical information sources. Any medical or health advice provided and hosted on this site will be only given by medically trained and qualified professionals approved by Pediatric Health Care (10).
- Pediatric Health Care is committed to answer email as soon as possible but at least in 48 hours. Medical related correspondence sent to our physicians is monitored daily Monday through Friday. Other correspondence with our physicians will be addressed promptly unless the physician is away (9).
- Telephone our office for emergencies and questions that need to be answered promptly (in less than 48 hours) (9).
- If you do not get a response (your doctor may be away or the email system may be down), telephone our office (9).
- Keep copies of email messages you receive from us (9).
- Be aware that we may save email messages we send and receive in your medical records, either electronically or using a paper copy (9).
- Appointment Patients seeking an appointment with our office at least 5 days in advance should complete this online appointment form (11).
- Pre-visit Screening Patients planning an office visit should complete the appropriate questionnaires prior to their arrival (11).
- Prescription Refill Patients who are requesting a refill of an existing prescription should complete this form. If more follow-up care is needed then we will contact by phone (11).

Risk with Patients

- Pediatric Health Care will undertake to honor or exceed the legal and governmental requirements of medical and health information privacy as required by our membership in the Health on the Net Foundation Code of Conduct (HONcode). This includes the recently announced US regulation for the privacy provisions of the US Health Insurance Portability and Accountability Act of 1996 (HIPAA). We will seek to provide information in the clearest possible manner from various medical information sources. Any medical or health advice provided and hosted on this site will be only given by medically trained and qualified professionals approved by Pediatric Health Care (10).

- Be aware that that your employer or school may view email sent using their work provided or school provided email system (9).
- Be aware that messages sent to our normal Internet email addresses are not secure and can potentially be read by others. You should use our secure eServices forms for any sensitive or confidential information (9).
- Please review our email policy before using these addresses (8).
- In order to ensure only authorized requests are processed, on some occasions we will contact you by telephone to verify the information (11).
- Prescription Refill Patients who are requesting a refill of an existing prescription should complete this form. If more follow-up care is needed then we will contact by phone (11).
- Record Release Patients can use this form to make a request for forwarding medical information to a given third party. Most requests for record release are verified by phone with the requester (11).

Conclusion

There is adequate evidence found in the reference material to conclude that both the physician and patient are being appropriately educated regarding the basics of information security and risk in the promotion of patient – physician internet email communication. This education is sufficient to allow both the physician and patient to make an intelligent decision whether to utilize internet email in patient – physician communications.

References

1. Borzo, Greg. "Open season on e-mail". AMNews:LOG ON. 8 September 1997. URL: http://www.ama-assn.org/sci-pubs/amnews/net_97/logo0908.htm (15 February 2001).
2. Crounse, Dr. Bill. "Patients, doctors and e-mail." Overlake Healthscape Infobank. URL: http://www.overlakehospital.org/ask/scape.email.htm (15 February 2001).
3. Fried, Stephen. "Information Security: The Big Picture", Kickstart Track: Information Security. (15 October 2000): 1-6, 1-26
4. http://www.ama-assn.org/ama/pub/category/2386.html
5. http://www.amia.org/pubs/other/email_guidelines.html
6. http://www-med.stanford.edu/shs/smg/email.html
7. http://www.pediatrichealthcare.com
8. http://www.pediatrichealthcare.com/about/contact.html
9. http://www.pediatrichealthcare.com/about/email.html
10. http://www.pediatrichealthcare.com/about/privacy.html
11. http://www.pediatrichealthcare.com/eservice/index.html
12. Ives, David M.D., "E-Mail Contract", URL: http://www.cqv.org/contract.htm (15 February 2001).
13. Lewers, D. Ted. "Guidelines for Patient-Physician Electronic Mail." Board of Trustees Report 2-A-00. December 2000. URL: http://www.ama-assn.org/meetings/public/annual00/reports/bot/bot2a00.rtf (15 February 2001).
14. MEDEM, INC. and the eRisk Working Group for Healthcare. "Overview of the The eRisk in Healthcare Project of the eRisk Working Group for Healthcare". 1 November 2000. URL: http://www.medem.com/corporate/corporate_erisk.cfm (15 February 2001).
15. Medical Practice Communicator 6(4):5, 1999. "E-Mail Contact Between Doctor and Patient". British Medical Journal. 22 May 1999. URL: http://www2.geocities.com/~sleepwake/Professionals/email-doc.html (15 February 2001).
16. Medical Quality Clearinghouse. "E-mail Communication Module". 6 October 2000. URL: http://www.aafp.org/quality/module/mod6 (15 February 2001).
17. Murphy, Gretchen Med, RHIA. "Patient-centered E-mail: Developing the Rich Policies". Journal of AHIMA. March 2000. URL: http://www.ahima.org/journal/features/feature.0003.3.html (15 February 2001).
18. Newton Wellesley Primary Care, PC. "E-Mail". URL: http://www.nwpcmd.com/email_registration.htm (15 February 2001).
19. Sands, Daniel Z. M.D., M.P.H. "Electronic Patient Centered Communication Resource". 14 February 2001. URL: http://clinical.caregroup.org/ePCC (15 February 2001).
20. Sands, Daniel Z. M.D., M.P.H. "Electronic Patient-Centered Communication: Managing Risks, Managing Opportunities, Managing Care". URL: http://www.ajmc.com/sands_editorial.html (15 February 2001).
21. Sands, Daniel Z. M.D., M.P.H. "Guidelines for the Use of Patient-Centered E-mail." Massachusetts Health Data Consortium, Inc. URL: http://www.mahealthdata.org (15 February 2001).
22. Sands, Daniel Z. M.D., M.P.H., "Tips on Using E-mail with Patients"., 6 March 2000. URL: http://clinical.caregroup.org/ePCC/ePCC_Tips.htm (15 February 2001).