The Origin, Content, and Workload of E-mail Consultations

Stephen M. Borowitz, MD; Jeremy C. Wyatt, MRCP, DM, FACMI

Context.—Despite the common use of e-mail, little beyond anecdote or impressions has been published on patient-clinician e-mail consultation.

Objective.—To report our experiences with free-of-charge e-mail consultations.

Design.—Retrospective review of all e-mail consultation requests received between November 1, 1995, and June 31, 1998.

Setting and Participants.—Consecutive e-mail consultation requests sent to the Division of Pediatric Gastroenterology at the Children's Medical Center of the University of Virginia in Charlottesville.

Main Outcome Measures.—Number of consultation requests per month, time required to respond, who initiated the request and their geographic origin, and the kind of information requested in the consultation.

Results.—During the 33-month period studied, we received 1239 requests, an average (SD) of 37.6 (15.9) each month. A total of 1001 consultation requests (81%) were initiated by parents, relatives, or guardians, 126 (10%) by physicians, and 112 (9%) by other health care professionals. Consultation requests were received from 39 states and 37 other countries. In 855 requests (69%), there was a specific question about the cause of a particular child's symptoms, diagnostic tests, and/or therapeutic interventions. In 112 (9%), the requester sought a second opinion about diagnosis or treatment for a particular child, and 272 consultations (22%) requested general information concerning a disorder, treatment, or medication without reference to a particular child. A total of 1078 requests (87%) were answered within 48 hours of the initial request. On average, reading and responding to each e-mail took slightly less than 4 minutes.

Conclusion.—E-mail provides a means for parents, guardians, and health care professionals to obtain patient and disease-specific information from selected medical consultants in a timely manner.

JAMA. 1998;280:1321-1324

QUALITY HEALTH CARE depends on successful communication between physicians and patients. Successful communication improves the patient's understanding of the diagnosis and increases adherence with therapeutic recommendations and interventions.[1,2] In addition to traditional face-to-face and telephone contact and mailed and faxed letters, rapid communication through e-mail is now widely available to patients and health care professionals.[3] E-mail has a number of unique advantages. It can provide patients with a direct means of communicating with physicians and assure those patients that their messages are received.[4,5] It can provide physicians with the ability to follow up or clarify advice that was provided during an outpatient visit or to direct patients to educational materials or other resources available on the Internet.[6]

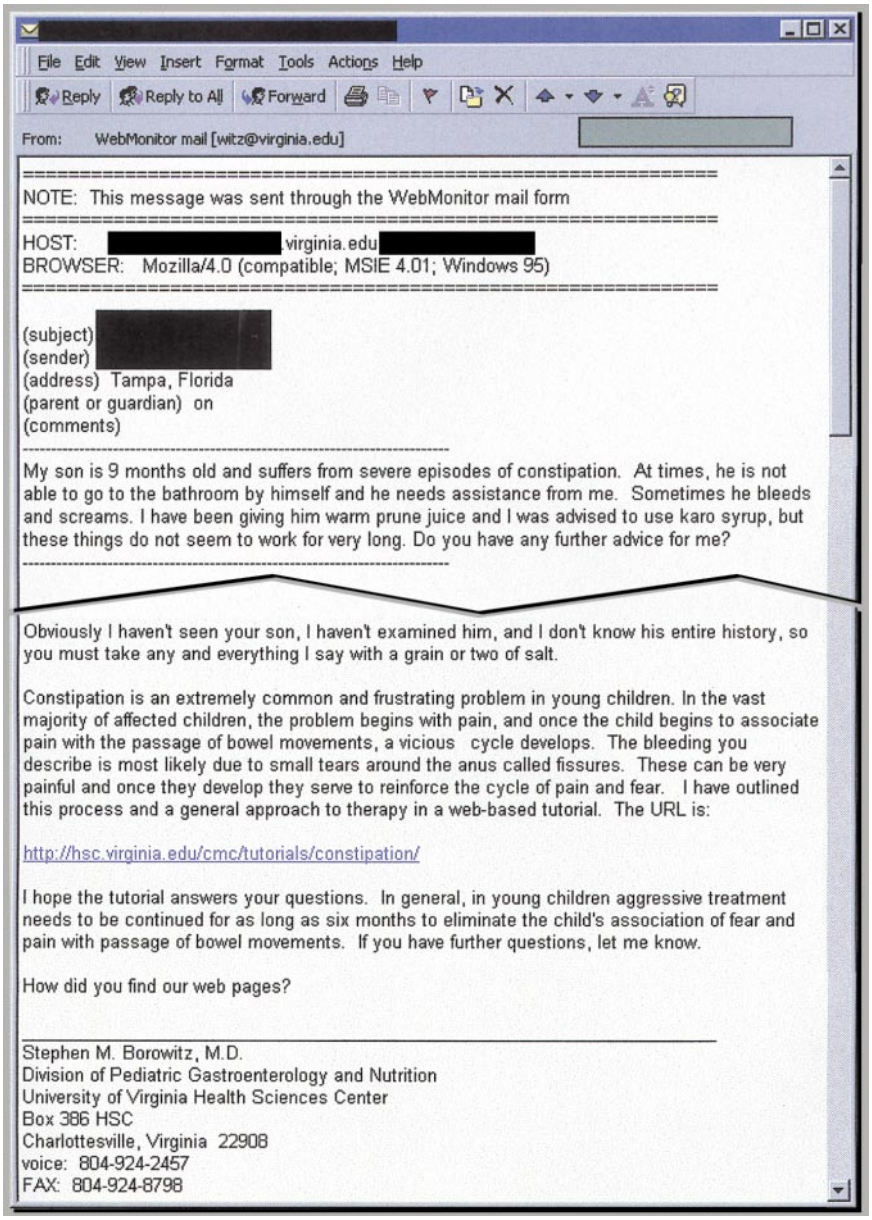
From the University of Virginia Health Sciences Center, Charlottesville (Dr Borowitz); and the School of Public Policy, University College London, London, England (Dr Wyatt).

Reprints: Stephen M. Borowitz, MD, Division of Pediatric Gastroenterology and Nutrition, University of Virginia Health Sciences Center, Box 386 HSC, Charlottesville, VA 22908 (e-mail: Witz@Virginia.edu).

In 1996, nearly 25% of adults in the United States had access to the Internet[7] and at least 15% of the US population was using e-mail.[6] These figures are now considerably larger. In some settings, more than 40% of patients use e-mail to communicate with their health care clinicians.[8] Those patients who use e-mail to communicate with physicians perceive this means of communication as not only more convenient and faster than telephone communication but also as increasing their access to medical care.[3] While e-mail is generally viewed as a good means of communicating simple information and nonurgent requests between physicians and patients (ie, refilling prescriptions, communicating laboratory results, or making appointments), up to 90% of patients who use e-mail to communicate with their physicians relay important and sensitive medical information electronically.[3]

See also pp 1333, 1353, and 1361.

What little has been published on the general subject of patient-physician e-mail has been limited to personal anecdotes and impressions describing the use of e-mail as a means of supporting established patient-physician relationships.[3,6,8] Little or nothing has been published regarding the use of e-mail as a means of providing consultative services. Beginning in November 1994, the Children's Medical Center at the University of Virginia in Charlottesville instituted a pilot program of providing free e-mail consultations in selected pediatric subspecialties. The purpose of this article is to detail our experiences with e-mail consultations directed to the Division of Pediatric Gastroenterology and Nutrition during a 33-month period.



Sample e-mail consultation request with sample response.

METHODS

During the summer of 1995, a simple e-mail consultation form was developed and installed on the Web pages of the Children's Medical Center at the University of Virginia (http://hsc.med.virginia/cmc/giconslt.html). This service was introduced as a way of providing patients and referring physicians with another means of communication with selected subspecialist physicians, with the hopes of increasing the number of patient referrals. Faculty participation in the project was purely voluntary and participating faculty received no financial support for their efforts. There was no fee for any of the consultations. No internal or external announcements or mailings were made to communicate the availability of this service and access to the Web site was not limited in any way. This page was linked to the institution home page by a button labeled "electronic consultation" and has subsequently been referenced on the pediatric indices PEDINFO (http://W3.LHL.UAB.EDU/pedinfo/) and Pediatric Points of Interest (http://www.med.jhu.edu/peds/neonatology/poi.html).

The consultation form comprised 4 free-text fields and 1 multiple-choice field. The free-text fields were (1) name and organizational affiliation, (2) complete e-mail address, (3) city and country of origin, and (4) consultation information. The multiple-choice field was "category of requester," which included (a) physician, (b) parent or guardian, and (c) other. A disclaimer was included at the top of the form alerting people that since the information contained within the form would be conveyed across the Internet, it might not be secure.

As a prerequisite for participation in this project, participating faculty members agreed to review consultation requests on a daily basis and respond within 48 hours of receipt. All consultation replies included a copy of the original consultation request as well as a disclaimer to the effect that since the patient had not been physically examined and the entire history had not been obtained, the validity of the response might be limited. At the end of each consultation reply, consultees were asked how they had located the consultation request page.

During April, May, and June 1998, one author (S.B.) kept track of the amount of time spent reading and responding to 166 consecutive consultation requests with a stopwatch and logged the date and time the consultation request arrived and the date and time a reply was sent.

All of the consultations discussed in this article were initial inquiries. Two faculty physicians in the division of pediatric gastroenterology and nutrition responded to all inquiries. Follow-up information was not requested and people were not asked whether they were satisfied with the response or with the experience. Any additional questions or requests received in response to consultation replies are analyzed separately. For this study, all consultation requests were reviewed by a single author (S.B.), the central theme of each consultation was identified, and the request was categorized as either (1) a specific question or questions about the cause of a child's symptoms, appropriate diagnostic tests, and/or appropriate therapeutic interventions, (2) a second opinion about a diagnosis or a recommended treatment, or (3) a request for general information concerning a disorder, a treatment, or a medication.

RESULTS

Between November 1, 1995, and June 30, 1998, the Division of Pediatric Gastroenterology at the Children's Medical Center of the University of Virginia received 1239 e-mail consultation requests. None of the people requesting consultations had any prior relationships with physicians in the Division of Pediatric Gastroenterology. However, 3 children have been examined in our outpatient clinic as a result of this service. During the 33-month period, an average of 37.6 (SD, 15.9) consultation requests were received each month with a range of 14 to 68 requests.

Most of the consultation messages were fairly brief, consisting of several

paragraphs (Figure). The average time from receipt of a consultation to response was 30.1 hours (SD, 23.6 hours), and 1078 consultations (87%) were answered within 48 hours of receipt. Responses were usually less than 1 typewritten page in length. Responses suggested treatment or gave advice in general terms and usually recommended seeing a physician. In many cases, the person soliciting the consultation was informed that we could only speak in broad generalities given the limited information they had provided and that a more definitive response could only be provided with additional information or clarification. Responses often contained references or directed the reader toward educational materials available on the World Wide Web (Figure). It took an average of 3.95 (SD, 1.37) minutes for the author (S.B.) to read and respond to a consultation, and the author spent an average of 7.3 minutes each day responding to consultation messages. Additional questions or requests for more information followed 223 (18%) of all consultation responses, and, in 12 cases (1%), there has been an ongoing exchange of information over months or years. In all 12 cases, a parent or guardian requested the initial consultation and in each case the affected child has experienced long-term or recurrent symptoms. All are followed up by physicians locally, but the parents have written for additional advice or clarification.

Of the 1239 consultation requests, 1057 (85%) originated within the United States. Consultation requests were received from 39 of the 50 United States. Only 99 (8%) of all consultation requests originated in Virginia or West Virginia, which comprises our traditional referral area. One hundred eighty-two (15%) of the consultation requests originated from sites outside the United States. Consultation requests were received from 37 different countries. Of the 1239 consultations, 64 (5.2%) came from Canada, 28 (2.3%) from Australia, 27 (2.2%) from the United Kingdom, and 22 (1.8%) from Argentina.

Parents or guardians initiated 1001 (81%) of the 1239 consultation requests, 126 (10%) of the requests came from physicians, and another 112 (9%) came from other health care professionals, such as nurses, pharmacists, or respiratory therapists. Of the 1057 consultation requests originating within the United States, 870 (82%) were initiated by parents or guardians, 84 (8%) by physicians, and 103 (10%) by other health care professionals. Of the 182 consultation requests originating from outside the United States, 131 (72%) were initiated by parents or guardians, 42 (23%) by physicians, and 9 (5%) by other health care professionals.

In 855 (69%) of the 1239 consultation requests, there was a specific question or questions about the cause of a particular child's symptoms, appropriate diagnostic tests, and/or appropriate therapeutic interventions. In 112 (9%) of the consultations, the requester was seeking a second opinion about a diagnosis or a recommended treatment for a particular child. In 272 (22%) of the consultations, there was a request for general information concerning a disorder, a treatment, or a medication without reference to a particular child or case. Parents or guardians and physicians differed in the type of information requested. Parents most often (765 [76%] of 1001) had a specific question about the cause of a particular child's symptoms vs 55 (44%) of 126 physicians. Of 110 (11%) of 1001 requests by parents, a second opinion about a diagnosis or treatment was sought compared with 2 (1%) of 126 requests by physcians. Most physicians (69 [55%] of 126) wanted general information about a disorder, treatment, or medication vs 126 (13%) of 1001 parents.

Of the 1239 consultations we received, 285 (23%) had questions about chronic constipation and/or encopresis. Two hundred thirty-seven (19%) had questions about gastroesophageal reflux, 121 (10%) about acute or chronic diarrhea, 115 (9%) about chronic abdominal pain or infantile colic, 98 (8%) about medications, 86 (7%) about child or infant nutrition, and 21 (2%) about inflammatory bowel diseases in children. Nearly 60% of all the consultation requests pertained to the 4 common pediatric problems of constipation/encopresis, gastroesophageal reflux, abdominal pain or colic, and chronic diarrhea. This distribution of problems mirrors the distribution of problems seen in ours and other pediatric gastroenterology practices.[9] Parents (688 [69%] of 1001) were more likely to have questions about the 4 common pediatric problems of constipation/encopresis, gastroesophageal reflux, abdominal pain or colic, and chronic diarrhea than were physicians (46 [36%] of 126).

Of the 1239 consultees, 384 (21%) responded to our question of how they found our Web pages. Of these 384 people, 372 (97%) found the pages through a key-word search of 1 of the major Internet search engines, such as Yahoo, Excite, or Lycos, or the major Internet pediatric indices PEDINFO or Pediatric Points of Interest. The remaining 12 (3%) were directed to our pages by friends, relatives, or acquaintances.

COMMENT

This study describes 1239 e-mail consultation requests in pediatric gastroenterology during the past 33 months. While this article describes the experiences of a small number of physicians at a single institution, it suggests that e-mail can provide a means for parents or health care professionals to obtain patient and disease-specific information in a timely manner. The amount of time (4 minutes) to answer an average consultation request is comparable to the amount of time physicians spend answering a patient-initiated telephone call.[10] Studies comparing the workload, costs, and outcomes associated with patient-physician telephone and e-mail communications are needed.

No demographic or socioeconomic information was collected from individuals soliciting consultations, making it impossible at this time to draw any conclusions about what types of people are using this service or why. Nevertheless, the large number of consultation requests received from parents and guardians suggests that primary health care clinicians do not always meet a family's information needs.[11] In many of the consultation requests we received, families were seeking additional information about their child's condition or clarification about various diagnostic tests or therapeutic choices. Many parents appear to be very comfortable sending intimate clinical details to and seeking medical information from relatively unfamiliar "electronic consultants." This form of electronic communication can provide people with a means of finding qualified consultants outside their local health care system with whom they can communicate directly.[11] According to some of the families who consulted us, e-mail communications with an unfamiliar "electronic consultant" are less intimidating than face-to-face conversations with time-pressured physicians, and e-mail consultations enabled some parents to ask questions that they were otherwise too timid to ask.[11]

While there is tremendous variability in the content and quality of medical information available through all forms of public communication, the freedom of the Internet makes it extremely easy to disseminate information.[12-15] There is no governing body or authority that acts as a "gatekeeper" of Internet publications. This lack of consistent evaluation and oversight coupled with the tremendous ease and low cost of publishing on the World Wide Web can lead to inaccurate, inconsistent, or incomplete health-related publications.[12-15] Impicciatore et al[12] reviewed Web pages about the management of fever in young children and concluded that relatively few Web sites provided complete and accurate information and that "advice obtained through the World Wide Web should not be a

substitute for routine care by a family doctor."

Similarly, e-mail correspondence with an unfamiliar consultant cannot and should not substitute for examination and care by a physician. However, unlike unmediated Web sites, e-mail consultants have the ability to ask clarifying questions or begin a dialogue with a person seeking information, clarify information uncovered on the Internet, or direct people toward educational materials or other resources that the consultant has created or reviewed.[6]

Given the complexities of the communication process, there are always potential misunderstandings when physicians and patients exchange medical information. The potential for misunderstandings may be magnified when medical information is exchanged across the Internet. The information could be based on incomplete or incorrect assumptions, the information could be misinterpreted, it could be incorrect or out-of-date, or it could be more up-to-date than information provided by another physician. Given the wide variation in practice patterns, situations may arise in which an online consultant will disagree with the advice of another physician.[11] In most countries, the laws dealing with interactions between physicians and patients over the Internet have not been well-defined. Potential legal issues include physicians practicing without licensure in the state or country in which the patient resides, alleged medical negligence, and abandonment of patients should the consultant not continue the relationship.[6,11] While there are published guidelines concerning the use of e-mail between clinicians and patients with whom they have established relationships,[16] no guidelines have been developed regarding the use of e-mail between clinicians and patients without any prior relationship. Clearly, many issues still need to be clarified.

The availability of vast amounts of medical information on the World Wide Web has important implications for the future of our health care system. One author has called this "the next transformation in the delivery of health care."[4] This dissemination and redistribution of medical information may influence public perceptions of the standards and quality of care and the nature of the patient-physician relationship.[17,18] Medical information on the World Wide Web can help health care professionals educate their patients, learn more about patients' concerns and fears, and help patients make better and more informed decisions about their own health care.[4,19]

References

1. Haynes RB, McKibbon KA, Kanani R. Systematic review of randomised trials of interventions to assist patients to follow prescriptions for medications. *Lancet*. 1996;348:383-386.
2. Bertakis KD. The communication of information from physician to patient: a method for increasing patient retention and satisfaction. *J Fam Pract*. 1977;5:217-222.
3. Neill RA, Mainous AG, Clark JR, Hagen MD. The utility of electronic mail as a medium for patient-physician communication. *Arch Fam Med*. 1994;3:268-271.
4. Kassirer JP. The next transformation in the delivery of health care. *N Engl J Med*. 1995;332:52-54.
5. Harris ED. Electronic mail—a physician extender? *West J Med*. 1997;166:123-125.
6. Kane B, Zands DZ. Guidelines for the clinical use of electronic mail with patients. *J Am Med Inform Assoc*. 1998;5:104-111.
7. Sonnenberg FA. Health information on the Internet. *Arch Intern Med*. 1997;157:151-152.
8. Fridsma DB, Ford P, Altman R. A survey of patient access to electronic mail: attitudes, barriers, and opportunities. *Proc Annu Symp Comput Applications Med Care (SCAMC)*. 1994:15-19.
9. Levine MD. Children with encopresis: a descriptive analysis. *Pediatrics*. 1975;56:412-416.
10. Johnson BE, Johnson CA. Telephone medicine: a general internal medicine experience. *J Gen Intern Med*. 1990;5:234-239.
11. Widman LE, Tong DA. Requests for medical advice from patients and families to health care providers who publish on the World Wide Web. *Arch Intern Med*. 1997;157:209-212.
12. Impicciatore P, Pandolfini C, Casella N, Bonati M. Reliability of health information for the public on the World Wide Web: systematic survey of advice on managing fever in children at home. *BMJ*. 1997;314:1875-1879.
13. Wyatt JC. Commentary: measuring quality and impact of the World Wide Web. *BMJ*. 1997;314:1879-1881.
14. Culver JD, Gerr F, Frumkin H. Medical information on the Internet: a study of an electronic bulletin board. *J Gen Intern Med*. 1997;12:486-470.
15. Pealer LN, Dorman SM. Evaluating health-related Web sites. *J Sch Health*. 1997;67:232-235.
16. Kane B, Sands DZ. Guidelines for the clinical use of electronic mail with patients. *J Am Med Inform Assoc*. 1998;5:104-111.
17. Coeira E. The Internet's challenge to health care provision. *BMJ*. 1996;312:3-4.
18. Silberg WM, Lundberg GD, Musacchio RA. Assessing, controlling, and assuring the quality of medical information on the Internet. *JAMA*. 1997;277:1244-1245.
19. Spooner SA. The pediatric Internet. *Pediatrics*. 1996;98:1185-1192.