

Patient Access to U.S. Physicians Who Conduct Internet or E-mail Consults

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BACKGROUND: E-mail communication has the potential to improve communication between patients and doctors.

OBJECTIVE: The objective of the study is to describe the access of patients to physicians who conduct e-mail consults.

METHODS: We analyzed data from the National Ambulatory Medical Care Survey (NAMCS), a nationally representative cross-sectional survey of office-based physician visits, in 2001, 2002, and 2003. The main outcome measure was the percentage of visits to a provider who reported doing internet or e-mail consults.

RESULTS: There was fewer than 1 in 10 outpatient visits in 2001 (9.2%) to physicians who reported doing internet or e-mail consults, and this did not increase in 2002 (5.8%) or 2003 (5.5%). Access to these physicians was greater among patients who were male, nonminority, lived in the Western United States, seen for pre-/postoperative care, seen by a primary care provider, and not seen by a nurse during their visit. Access to physicians who conducted internet or e-mail consults was independent of other patient (e.g., chronic conditions), provider (e.g., office setting), and visit (e.g., medications prescribed) characteristics.

CONCLUSIONS: Access to physicians who do internet or e-mail consults is generally low and did not increase between 2001 and 2003, despite growth in internet access and in other internet-related activities.

KEY WORDS: internet; e-mail; consults; U.S. physicians; communication.
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BACKGROUND

Internet and e-mail communication have the potential to improve the doctor–patient relationship, by providing an additional channel of communication. Internet access has grown rapidly, to over 75%, and 80% of those with internet access seek health information online.^{1–3} Fewer than 10% of patients, however, communicate with their provider by e-mail,

although many would like to.^{4–10} For example, Sittig and colleagues observed that only 6% of patients reported e-mailing a doctor, although 50% would e-mail their doctor if given the chance.⁶ Physicians have concerns over the effect of doctor–patient e-mail on workload and payment for services and the security of doctor–patient e-mail.⁷ One clinical trial showed no effect of e-mail on decreasing call volume for providers.⁸ Patients also have concerns about the security of doctor–patient e-mail,¹¹ and how long it would take doctors to respond online.⁴ Other researchers have observed that physicians often do not respond to e-mail from patients¹² and often use doctor–patient e-mail inappropriately, conveying urgent or sensitive matters that are better addressed face-to-face.¹³

Doctor–patient online communications can be of many types, from simple communications (e.g., for prescription renewals, lab test results, and billing questions) to more detailed interactions requiring back-and-forth communication and clinical decision making (e.g., for a new symptom).⁸ Despite the barriers and limitations of the medium, many insurers are moving toward reimbursing online consultations.^{14–16}

OBJECTIVE

We carried out the present study to describe the frequency that patients in the United States saw physicians who did internet or e-mail consults and to describe patient and provider characteristics associated with this activity. No previous study has included nationally representative data at both the patient- and doctor-level, to address this question.

METHODS

We analyzed complete case data from the 2001, 2002, and 2003 National Ambulatory Medical Care Survey (NAMCS), an annual survey of outpatient practices in the United States. All physicians in NAMCS complete a one-time physician induction interview (PII) telephone interview. For each physician, 1 week was randomly selected, during which 20 to 100% of patient visits were sampled. After each visit, physicians completed an encounter form, detailing patient demographics, diagnoses made and clinical services provided. We excluded physicians who did not submit patient encounter forms (approximately 65% per year) and who did not answer the question on e-mail consults (less than 5% per year). Each complete survey included approximately 900 physicians and 18,500 patient visits, for a total of 2,725 physicians and 55,658 visits.^{17,18}

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Table 1. Association of Physician, Patient, and Visit Characteristics with Likelihood of Seeing a Physician Who Conducted Email Consultations

Characteristics	Number of Physicians Reporting Information About Themselves or About Patients They Saw*	Did Physician do E-mail Consults? (% "YES")	Odds Ratio (95% CI)†
Year of survey			
2001	825	9.2	1.00
2002	970	5.8	0.58 (0.30–1.10)
2003	930	5.5	0.56 (0.29–1.08)
Physician characteristics			
Physician specialty			
Primary Care	617	8.3	1.66 (1.01–2.70)‡
Specialty Care	2,108	5.7	1.00
Type of office setting			
Private solo or group practice	2,483	6.5	1.00
All others	253	10.6	1.56 (0.73–3.34)
Ownership of practice			
Physician or physician group	2,406	6.8	1.00
All others	338	7.3	0.96 (0.33–2.82)
Employment status of physician			
Owner	2,098	6.9	1.00
Employee or contractor	657	7.0	0.85 (0.39–1.84)
Geographic region			
Northeast	565	7.1	1.74 (0.83–3.66)
Midwest	654	8.8	2.28 (0.96–5.41)
South	904	3.8	1.00
West	602	9.5	2.36 (1.09–5.11)‡
Metropolitan area			
Yes	2,372	7.3	1.91 (0.78–4.68)
No	353	4.0	1.00
Patient characteristics			
Gender			
Male	2,470	8.1	1.25 (1.09–1.42)§
Female	2,659	6.2	1.00
Age			
18–24	1,502	5.3	0.99 (0.75–1.29)
25–44	2,444	7.1	1.23 (0.97–1.57)
45–64	2,564	7.5	1.21 (1.01–1.44)‡
65+	2,355	6.3	1.00
Race/ethnicity			
Minority			
Non-white race OR Hispanic ethnicity	2,013	5.3	1.00
White race, non Hispanic ethnicity	2,446	7.1	1.41 (1.03–1.94)‡
White race, ethnicity not reported//	706	8.2	1.28 (0.69–2.38)
Tobacco use			
No	2,419	6.9	1.00
Yes	1,841	7.5	1.01 (0.85–1.21)
Has 1 or more chronic conditions			
Yes	1,627	7.3	0.99 (0.76–1.29)
No	2,663	6.8	1.00
Visit characteristics			
Major reason for visit			
Acute problem	2,346	7.6	1.38 (0.90–2.12)
Chronic problem, routine	2,369	6.7	1.28 (0.83–1.98)

Table 1. (continued)

Characteristics	Number of Physicians Reporting Information About Themselves or About Patients They Saw*	Did Physician do E-mail Consults? (% "YES")	Odds Ratio (95% CI)†
Chronic problem, flare-up	1,675	7.2	1.43 (0.92–2.20)
Pre-/postsurgery	1,192	8.5	2.01 (1.22–3.31)§
Preventive care	1,061	5.1	1.00
Saw RN/LPN¶			
Yes	984	4.6	1.00
No	2,369	7.8	1.74 (1.06–2.87)‡
Visit disposition			
Follow-up planned	2,647	6.7	0.96 (0.68–1.34)
Follow-up not planned	2,283	7.4	1.00
Medications prescribed			
0–2	2,674	6.5	0.74 (0.53–1.03)
3+	1,756	8.2	1.00
Payment			
Insurance	2,652	6.8	1.00
Self-pay/no charge	1,022	6.2	0.89 (0.55–1.45)
Unknown/other/not stated	1,009	9.3	1.36 (0.67–2.75)

*Physicians may appear in multiple rows that describe patient characteristics. For example, 2,470 physicians saw at least 1 male patient, and 2,659 physicians saw at least 1 female patient.

†Odds ratios presented are multivariable, adjusted for all other variables presented in this table.

‡p < .05

§p < .01

//Race was noted to be "white" but the question on Hispanic ethnicity was not answered.

¶Overall, 23.8% of patients saw a nurse (RN/LPN), and 96% of these also saw a physician.

#p < .001

The dependent variable was an indicator of whether the physician engaged in internet or e-mail consults with patients from the PII. In 2001, physicians were asked "on average, about how many encounters of the following type do you make with patients each week", and one category was "internet/e-mail consults". Physicians responded with a number, although the data were collapsed for the data file released to the public and reported as "yes" if the response was greater than 0, "no" if the response was equal to 0, and "unknown" if the response was blank or unknown. In 2002 and 2003, the question wording was changed slightly from "on average" to "during your last complete week of practice." This main outcome measure, therefore, characterizes whether the provider engaged in internet or e-mail consults, not whether the specific patient encounter was an internet or e-mail consult.

The following items from the PII were also included in the analysis: specialty was categorized into primary care (e.g., family practice) versus specialty care (e.g., Surgery). Office setting was categorized into private solo or group practice versus other (e.g., HMO). Geographic location was coded into region (e.g., west) and metropolitan location. We also used data collected in the patient encounter form. Patient diagnoses were grouped to identify the following major chronic conditions: diabetes, depression, obesity, hypertension, hypercholesterol-

emia, and asthma, using standard ICD-9 codes.^{17–19} Patient age, gender, race, smoking status, and reason for the visit were also recorded for each visit. The univariate, bivariate, and multivariate analyses, including physician, patient, and visit characteristics, were done at the visit level. SUDAAN was used to account for the clustering of these visits within physicians.²⁰

RESULTS

Overall, 6.9% of visits were with a provider who conducted internet or e-mail consults (9.2% in 2001, 5.8% in 2002, and 5.5% in 2003), but this decline was not statistically significant. The likelihood of seeing a provider who conducted internet or e-mail consults was greater among visits to primary care providers, for patients seen in the west, for patients aged 45–64, for male patients, for nonminority patients, for patients seen for pre-/postsurgical care and for patients who saw only a physician, rather than a nurse in addition to a physician. No significant differences existed, however, between the 4 different types of primary care providers (general practitioners, medicine/pediatrics, general Internal Medicine, family practice). No significant association was observed between internet or e-mail consults and patient chronic conditions or other provider (e.g., office setting) or visit (e.g., number of medications prescribed) characteristics (Table 1).

DISCUSSION

Only 9.2% of outpatient visits in the United States in 2001, 5.8% in 2002, and 5.5% in 2003 were to physicians who engaged in internet or e-mail consults. This represents one of the largest published studies of the availability of physicians who do internet or e-mail consults to date. Similarly, large studies have been done by private research firms,^{5,9,10} but no previous published study included patient, provider and visit-level characteristics.

The proportion of visits in which patients saw providers who reported doing internet or e-mail consults is similar to other studies, although results are difficult to compare as the question wording differs.^{4–8,10,21} Gaster and colleagues observed that 72% of academic physicians averaged 7.7 e-mails to patients each month.²² Hobbs and colleagues observed that 75% of academic physicians exchanged e-mail, but most with only 1–5% of their patients.⁷ Brooks and colleagues observed that 16.6% of physicians in Florida exchanged e-mail with patients, but less than 3% did this on at least half of all business days.²¹ Surveys by DeLoitte and Manhattan research observed that 25% of physicians reported e-mailing patients, though frequency was not noted.^{9,10} Surveys of patients have observed lower rates. Moyer, Sittig, and Fox and Jupiter Research, respectively, observed that 10, 6, 7, and 3% of individuals had ever e-mailed a doctor.^{2,4,6} The current study, however, examined internet or e-mail “consults”, rather than simply exchanging e-mail with patients. A study by Jupiter research, which similarly described the activity as a “consult”, observed that only 3% of adults with internet access reported having online clinical consultations with their doctor in 2003.⁵

The main observation was the low overall rate in the proportion of visits to providers who reported doing internet or e-mail consults and lack of an increase in the rate. The lack of an increase between 2002 and 2003, years in which the question wording was consistent, is somewhat surprising given the simultaneous growth in internet access and online health information seeking.^{2,3,23,24} This may be because of the looming implementation of the Health Insurance Portability and Accountability Act^{25,26} in 2003 and the lack of secure online communication tools and health plan reimbursement at the time.^{15,27,28}

Access to providers who conducted e-mail consults was higher among male patients, though the reasons for this are not clear. Adjusting for whether or not the provider was an obstetrician gynecologist did not remove the gender difference. Although NAMCS now collects provider demographic information, the NAMCS in 2001–2003 did not, so we are unable to test whether these differences are due to demographic differences in the providers seen by men and women. Also, patients who saw primary care providers and patients seen for pre-/postoperative care were more likely to see a provider who conducted internet or e-mail consults. Primary care providers, whose practice includes a significant amount of chronic disease management, may find e-mail helpful for streamlining communication with patients.^{13,29} Similarly, physicians whose practice includes a significant amount of pre-/postsurgical care may find e-mail useful for patients; they may not be seeing the patient on an ongoing basis to send laboratory results.^{8,30} It is somewhat surprising that the number of medications was not associated with likelihood that the patient saw a provider who did e-mail consults, as one important use of e-mail is medication refills.⁸ This indicates that patients using more medications were not more likely to seek out such providers, perhaps because other factors are more important influences on choice of provider. Although it was reassuring that access to physicians who did internet or e-mail consults did not differ among patients of differing insurance status, access to these physicians was less among minority patients. The NAMCS did not include data regarding patient education level or household income, so residual confounding cannot be excluded.

Our analysis had the following strengths: (1) the sample was nationally representative and multiyear and (2) patient-, visit- and provider-level data were included. The results should be interpreted with the following limitations. First, there is no clear definition of a “consult” via internet or e-mail, given that these technologies are still evolving. As reimbursement is likely to increase the use of these more formal “consults”, future studies will be needed to assess the impact and comparability to face-to-face services, as has been done to compare primary care physicians and primary care nurse practitioners.³¹ Second, although certain patients were more likely to see a provider who engaged in internet or e-mail consults (e.g., men), we do not know whether these patients were more likely to engage in an internet or e-mail consult with their provider. This is a limitation of the data, as physicians were only asked once, not after every visit, whether they engaged in internet or e-mail consults. Third, we could not examine some patient (e.g., household income) and doctor (e.g., age) characteristics that may be related to whether doctors conduct internet or e-mail consults. We do not believe that these limitations are likely to impact the main findings of the study that internet or

e-mail consult rates were generally low and did not appear to be increasing, despite strong growth in other internet-related health activities.

Potential Financial Conflicts of Interest: None disclosed.

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