# Interest in Mental Health Care Among Patients Making eVisits

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## ABSTRACT

**Objectives:** The Internet allows patients opportunities for eVisits, in which a patient communicates electronically with a clinician who then makes a diagnosis and treatment recommendations. The status of mental health eVisits in these systems is still evolving. We examined features of mental health eVisits in a patient portal that did not explicitly provide an option for such care.

**Study Design:** Retrospective review of patient portal use.

**Methods:** Between April 2009 and mid-June 2012, over 2000 patients completed a total of 3601 eVisits through a patient portal at the University of Pittsburgh Medical Center. Although eVisits for mental health conditions were not explicitly offered, patients could choose an "other" option for the eVisit. We tracked diagnoses given by physicians in these "other" eVisits using Clinical Classification Software developed in the Healthcare Cost and Utilization Project.

**Results:** Of 685 patients choosing the "other" option for their eVisit (23.9% of patients making eVisits), 13.4% received mental health diagnoses, primarily anxiety and depression disorders. These patients represented 4% of all patients making eVisits. They were younger (41.1 ± 12.4 vs 46.2 ± 13.2; $P$ <.001) and more likely to be female (82.6% vs 71.1%; $P$ = .017) than patients not receiving mental health diagnoses. It took physicians longer to respond to mental health eVisits (same day in 71% of diagnoses involving mental health but 79.0% in all other diagnoses, $P$ = .054).

**Conclusions:** Patients are interested in eVisits for mental health care. Protocols that allow prompt attention to common mental health concerns in eVisits may be needed.


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A number of health systems now offer patients the opportunity to seek treatment for common conditions over the Internet. This type of clinical encounter is sometimes called an "eVisit." Health systems are increasingly providing reimbursement for such eVisits[1] because they offer convenience and efficiency,[2] lower costs,[3] and care similar to office visits. However, comparisons between online and in-person care suggest higher rates of prescribing for common conditions such as sinusitis and urinary tract infections,[4,5] including greater use of prescription broad-spectrum antibiotics,[6] in the online setting. Although experience with eVisits in health systems is still accumulating, direct-to-consumer telehealth is also growing and is likely to become an increasingly larger component of healthcare. A number of companies now offer telehealth capabilities directly to consumers, and Google has linked Internet searches for basic health information with consumer access to healthcare systems offering telehealth services.[7]



Nevertheless, the appropriateness of eVisits for certain kinds of medical care is still in question. For example, patients are advised not to use eVisits for potentially high-risk symptoms such as chest pain—although cases of such use are not rare.[8] Whether it is appropriate for patients to seek "e-mental health" via a patient portal is also unclear.[9] However, even in the absence of eVisit options designed to address depression or anxiety, patients may still seek eVisits to address common mental health needs.

Available "eVisits" vary across several key dimensions: some are provided live via video connection while others are "asynchronous," with a clinician responding to a patient after the patient completes his or her part of the eVisit. Additionally, some eVisits are tethered to a patient's medical record while others are not. In tethered eVisits, clinicians and/or patients may be required to review and update key elements of the electronic health record (eg, past medical history, medication use, allergies). eVisits also vary in whether

**Take-Away Points**

eVisits for mental health conditions were not offered in a single patient portal that included 22 structured eVisit conditions; however, patients could choose an "other" option for the eVisit. Among these patients, 13.4% received a mental health diagnosis. This experience suggests a need for mental health eVisits that take into account important features of this population:

- Users were younger and more likely to be female than patients not receiving mental health diagnoses in the eVisit.
- It took physicians longer to respond to mental health eVisits.
- Protocols that allow prompt attention to common mental health concerns in eVisits are needed.

a patient's primary care provider or a covering clinician completes the eVisit and how their services are billed.[1]

Finally, systems offering eVisits differ in the way patients report symptoms for review by clinicians. Some eVisits elicit free-text reports and others use structured questionnaires to identify relevant symptoms. Free-text reports allow patients to write in responses to such questions as, "What are your symptoms?" or "Have you tried any medication or other treatment?" Structured eVisits involve a formal questionnaire that attempts to cover all relevant symptoms and elicits additional information using a pre-specified branching logic. In structured eVisits, patients must answer all questions, which may include both multiple choice and free-text questions.

In the system assessed in this research, patient eVisits are asynchronous, tethered, and, for the most part, structured. Patients log onto a secure Internet portal and complete a standardized questionnaire about their symptoms. This information is reviewed by a physician, who makes a diagnosis, recommends necessary care (which may involve ordering a prescription), and replies to the patient via the portal. The system uses a standardized questionnaire to walk the patient through key questions about symptoms and elicit background information necessary to diagnose 22 different common conditions. However, patients may also select an "other" category if they have symptoms outside the listed common conditions or if they are unsure which condition to choose.

Despite the emphasis on structured eVisits for common conditions, we have found that patients choose the "other" category quite frequently. For example, among the first 150 eVisit patients in our system, 40% submitted an eVisit using the "other" category.[4] Similarly, despite the system's expansion of eVisit conditions (from 8 to 22 conditions since its inception), about a quarter of patients continue to make use of the "other" category each year.

In this research, we investigated diagnoses made by physicians over the first 3 years of eVisits, and, in particular, what diagnoses patients received after choosing the "other" option. We hypothesized that some patients use the "other" option in eVisits to seek mental health care, which is not currently available for structured eVisits.

## METHODS

This study was approved by the Institutional Review Board of the University of Pittsburgh. De-identified data were abstracted from eVisits completed between April 1, 2009, and June 20, 2012, and were provided to the research team by the Center for Assistance in Research using the eRecord (CARe) at the University of Pittsburgh Medical Center (UPMC). The study was limited to data specific to the eVisit, including diagnosis, limited patient demographic information (ie, gender and age but not race/ethnicity), date of the eVisit, and time the eVisit was initiated by the patient and completed by the clinician.

### eVisits

During the period of this research, about 140,000 patients had UPMC HealthTrak accounts (a version of EpicCare's MyChart, Epic Systems, designated MyUPMC), which provide secure, online access to health records and other services, and allow patients to view test results, send messages and biometric indicators (eg, glucose and blood pressure readings) to clinicians, refill prescriptions, schedule appointments, and resolve billing issues. Since April 2009, UPMC HealthTrak (now renamed UPMC AnywhereCare) has offered patients in primary care practices the opportunity to complete tethered eVisits, which are described by AnywhereCare as: "a digital house call that you complete any time of day or night. Using eVisits, your doctor can diagnose your condition and prescribe treatment over the Internet—all without traveling or waiting for an appointment." We limited analysis to eVisits that were completed and billed as a medical encounter (Current Procedural Technology code 99444).

To complete an eVisit, patients log onto a secure Internet portal and complete a standardized questionnaire about their symptoms and key elements of their prior health history. This information is reviewed by a physician who makes a diagnosis, recommends necessary care (which may, but does not always, involve ordering a prescription), and electronically replies to the patient via the portal. Prior to beginning an eVisit, patients are informed that eVisits are "not designed for medical emergencies or immediate contact with a physician."

Initially, UPMC eVisits were limited to 8 conditions: back pain, cold, cough, diarrhea, red/pink eye, sinus

infection, urinary symptoms, or vaginal irritation/discharge. Currently, eVisits are available for 22 conditions, with the following being added: birth control, bronchitis, burn, erectile dysfunction, flu, genital herpes, pneumonia, poison ivy, scabies, shingles, sore throat, strep throat, sunburn, other. Of note, none of these pre-structured eVisits address mental health symptoms. When beginning an eVisit, patients are informed that they can seek an eVisit for other conditions, as well: "If you are unable to find a specific symptom in the list, select 'Other' and tell us about your symptoms." In this case, patients describe symptoms in a series of text boxes.

After reviewing the eVisit information provided by a patient, the physician communicates with the patient electronically if more information is required. When the physician has gathered enough information to make a diagnosis, an *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*) code is assigned and recommendations are made to the patient regarding medication use (when needed) and follow-up care. Prescription orders are sent electronically to the patient's pharmacy. The cost of an eVisit in 2012 was $40, which was covered by insurance (with standard co-pay requirements).

### Analysis of Physician eVisits Diagnoses

To group *ICD-9-CM* diagnoses made in eVisits we used Clinical Classifications Software (CCS) for *ICD-9-CM* developed in the Healthcare Cost and Utilization Project (HCUP). HCUP is a US federal-state-industry partnership sponsored by the Agency for Healthcare Research and Quality. HCUP-CCS groups the more than 14,000 diagnosis codes and 3900 procedure codes of the *ICD-9-CM* into a smaller number of clinically meaningful categories.[10] CCS also includes categories from the Clinical Classifications Software for Mental Health and Substance Abuse.

The CCS "clinical grouper" consists of single- and multi-level classes. The single-level aggregates illnesses and conditions into 285 mutually exclusive categories. The multi-level CCS subdivides single-level CCS categories to provide more detail. We used the single- and multi-level CCS to classify diagnoses made by physicians for all eVisits and for "other" eVisits to establish the proportion of eVisit patients who received mental health diagnoses. We compared patients who made: 1) standard eVisits, 2) "other" eVisits that did not involve mental health diagnoses, and 3) "other" eVisits involving a mental health diagnosis to see if the groups differed by age and sex. We also examined whether eVisits involving mental health diagnoses were more challenging to physicians, as assessed by the length of time it took physicians to respond to the eVisit and make the diagnosis. CSS algorithms were implemented in SAS version 9.4 (SAS Institute, Cary, North Carolina) and descriptive analyses performed in SPSS version 18.0 (SPSS Inc, Chicago, Illinois).

## RESULTS

Between April 2009 and June 2012—roughly the first 3 years of eVisit availability—2292 patients completed 3601 eVisits. Use of this system increased steadily since their introduction in 2009, with 266 patients completing eVisits in 2009, 601 in 2010, and 1003 in 2011 (eVisit data for 2012 were still incomplete at the time we received the data). Most patients (73.5%) completed a single eVisit and only 2.2% of patients completed more than 5. The mean (± SD) age of patients making eVisits was 46.0 ± 13.2 years, and most (71.6%) eVisits were completed by women.

Physicians providing eVisits came from a variety of primary care practices affiliated with the UPMC health system. Practices organized eVisits in different ways, with some designating particular physicians to handle all eVisits for a particular practice and others expected to handle their own patients. Physicians conducting eVisits were patients' healthcare providers in about 40% of cases. Physicians made diagnoses and responded to patients on the same day in 78.8% of the eVisits.

### Prevalence of Mental Health Diagnoses Among "Other" eVisits

Of the 3601 eVisits between April 1, 2009, and June 20, 2012, 858 (23.8%) were made using the "other" option. As mentioned earlier, the proportion of "other" visits was constant over each year. These involved 685 (29.9%) of the total 2292 patients making an eVisit in this period. Table 1 shows single-level CCS diagnoses for patients making use of the "other" option for their eVisits. "Mental illness" was the second most common diagnosis for these eVisits, accounting for 12.6% (108/858) of "other" eVisits; 13.4% (92/685) of all patients using the "other" category had a mental health eVisit. All told, patients receiving mental health diagnoses represented 4% (92/2292) of eVisit patients. Level 2 CCS diagnoses for people receiving "mental illness" diagnoses are shown in Table 2. Of the 108 diagnoses, 62 (57.4%) involved anxiety disorders and 36 (33.3%) mood disorders.

### Differences Between Patients Making eVisits for Mental Health and Other eVisit Patients

Patients who made an eVisit and received a mental health diagnosis were younger (41.1 ± 12.4 years) than pa-

**Table 1.** Physician Diagnoses of eVisits Initiated for "Other" Reasons, April 2009 Through June 20, 2012

| Level 1 CCS *ICD-9-CM* Diagnosis | Frequency | % |
|---|---|---|
| Diseases of the respiratory system | 158 | 18.4 |
| Mental Illness | 108 | 12.6 |
| Diseases of the nervous system and sense organs | 107 | 12.4 |
| Diseases of the musculoskeletal system and connective tissue | 106 | 12.3 |
| Symptoms, signs, and ill-defined conditions and factors influencing health status | 79 | 9.2 |
| Diseases of the digestive system | 66 | 7.7 |
| Diseases of the skin and subcutaneous tissue | 40 | 4.7 |
| Infectious and parasitic diseases | 38 | 4.4 |
| Diseases of the circulatory system | 34 | 4.0 |
| Diseases of the genitourinary system | 33 | 3.8 |
| Endocrine, nutritional, and metabolic diseases and immunity disorders | 26 | 3.0 |
| Injury and poisoning | 24 | 2.8 |
| Diseases of the blood and blood-forming organs | 1 | 0.1 |
| Residual codes, unclassified, all E codes | 28 | 3.3 |
| Missing | 10 | 1.2 |

CCS indicates Clinical Classification Software; *ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification.*

tients making standard eVisits (46.1 ± 13 years) and patients with "other" eVisits that did not involve a mental health diagnosis (46.4 ± 13.6 years; $P = .001$). They were also more likely to be female (82.6% vs 71.5% and 70.2%, respectively; $P = .047$).

### Physician Response to Mental Health eVisits

The length of time between initiation of eVisits by patients and response by physicians differed by type of eVisit and mental health diagnosis. Physicians responded to patients and made the diagnosis on the same day for 80.3% of standard eVisits, 74.2% of "other" eVisits that did not involve a mental health diagnosis, and 71.0% of "other" eVisits that involved a mental health diagnosis ($P < .001$). More generally, physicians responded on the same day in 79% of eVisits not involving mental health diagnoses and in 71% for eVisits with a mental health diagnosis ($P = .054$).

## DISCUSSION

In the first 3 years of our experience with eVisits, 4% of patients received mental health diagnoses despite lack of an explicit mental health eVisit option. These patients were diagnosed after choosing the "other" option and describing symptoms in free-text format. In the absence of structured eVisits to address mental health conditions, individuals seeking mental health care appear to self-select through use of the "other" eVisit option. These patients were younger than patients making use of structured eVisits. If the list of eVisit conditions explicitly included anxiety or depression, it is possible that the prevalence of mental health diagnoses among eVisit patients would be similar to the 10% prevalence seen in primary care.[11] Although we were unable to establish the severity of depression or anxiety diagnosed in the eVisit, results from the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) cohort suggest that patients with nonpsychotic major depressive disorders followed in primary care and specialty care are similar in symptom severity.[12] Thus, the eVisit diagnosis may capture significant symptomatology and may be an important entry route for mental health care.

### Limitations

This study is limited by the lack of data outside those related to a specific eVisit. Thus, we were unable to determine outcomes for patients receiving mental health diagnoses following the eVisit, such as how many completed in-person assessments or received referrals to psychiatric services. In the future, it will be valuable to track patient outcomes following receipt of mental health diagnoses in an eVisit and to compare the clinical care provided in eVisits to care resulting from visits with a primary care provider.

However, even the limited data available for this research suggest important differences in the ways clinicians currently handle eVisits resulting in mental health diagnoses. It took longer for physicians to reply to patients reporting mental health symptoms than patients reporting other kinds of symptoms. Some of this difference may be related to the free-text format of the nonstructured eVisit, but it is also possible that review of mental health symptoms reported in eVisits requires greater attention and messaging contact with patients.

Additional limitations of this research include its focus on a particular health system patient portal and only 1 eVisit technology. For example, we were unable to assess the effect of a greater or lesser number of condition pathways in the content of the eVisit "other" category. Yet, we note that most of the "other visit" diagnoses were actually appropriate for available condition pathways (for example, nearly 20% involved respiratory conditions despite a number of potentially appropriate eVisit symptom and condition pathways [eg, cold, cough, flu, sinusitis, bronchitis, pneumonia, sore throat, strep throat]). This is not the case

for mental health conditions, which are not addressed by any of the other condition or symptom pathways. Thus, we would argue that the relatively high use of the "other" category for mental health conditions (13.4% among patients choosing the "other" option) and the 4% prevalence for mental health eVisits overall is not likely to differ unless mental health eVisits are added as a condition-specific option. We note, as well, that although eHealth portals continue to change, the UPMC portal has not changed its eVisit options or underlying questionnaires and branching logic since its expansion to 22 conditions.

## CONCLUSIONS

If patients seek eVisits for mental health conditions even when the option is not explicitly offered, what can we conclude? One key conclusion is the need to develop a mental health eVisit and, more broadly, Web-based tools to address mental health symptoms. Research suggests that Internet-based tools are effective for screening and delivery of mental health services.[9] For example, Internet-based screening questions for diagnosing major depressive disorder yield a sensitivity of 0.95 and specificity of 0.87 with as few as 4 items,[13] and similar results have been shown for Internet-based screening for anxiety disorders.[14] Beyond diagnostic tools, Internet-based delivery of psychotherapy appears to be as effective as traditional in-person therapy[15] and may be a reasonable firstline treatment for many patients making eVisits. Internet-based therapy for mental health conditions can be effective even without in-person personal contact.[16] As the evidence base for eVisits grows, it will be important to ensure full consideration of eVisits for mental health care.

Still, mental health may offer particular challenges for eVisits. One set of criteria proposed for effective Internet-based medical care includes the following: 1) the medical problem should have a clear "diagnostic data set" accessible to a patient and easily articulated in an online encounter; 2) patients should understand that the online interaction is problem-specific and may carry risks; and 3) treatment decisions should be algorithmic and not require a personal relationship with a physician because of emotional valence or medical history.[17] Mental health eVisits may satisfy the first 2 criteria, given the availability of reliable self-report instruments and use of cautions appropriate for all online clinical encounters. The third may be more challenging because of the nature of mental and behavioral health and the importance of personal physician relationships as part of the therapy for these conditions. Assessment of the efficacy of mental health eVisits for diagnosis and entry to care remains an important area for future research. The current research helps set the stage for these investigations by showing that patients seek online care for mental health conditions in the setting of an eHealth portal even when such care is not explicitly available.

**Table 2.** Diagnoses for eVisit Patients With Level 1 "Mental Illness" Diagnosis

| Level 2 CCS *ICD-9-CM* Diagnosis | Frequency | % |
|---|---|---|
| Anxiety disorders | 62 | 57.4 |
| Mood disorders | 36 | 33.3 |
| Adjustment disorders | 3 | 2.8 |
| Screening and history of mental health and substance abuse codes | 2 | 1.9 |
| Miscellaneous mental disorders | 2 | 1.9 |
| Attention-deficit, conduct, and disruptive behavior disorders | 1 | 0.9 |
| Delirium, dementia, and amnestic and other cognitive disorders | 1 | 0.9 |
| Schizophrenia and other psychotic disorders | 1 | 0.9 |

CCS indicates Clinical Classification Software; *ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification.*

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