Openness of patients' reporting with use of electronic records: psychiatric clinicians' views

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ABSTRACT

Objectives Improvements in electronic health record (EHR) system development will require an understanding of psychiatric clinicians' views on EHR system acceptability, including effects on psychotherapy communications, data-recording behaviors, data accessibility versus security and privacy, data quality and clarity, communications with medical colleagues, and stigma.

Design Multidisciplinary development of a survey instrument targeting psychiatric clinicians who recently switched to EHR system use, focus group testing, data analysis, and data reliability testing.

Measurements Survey of 120 university-based, outpatient mental health clinicians, with 56 (47%) responding, conducted 18 months after transition from a paper to an EHR system.

Results Factor analysis gave nine item groupings that overlapped strongly with five a priori domains. Respondents both praised and criticized the EHR system. A strong majority (81%) felt that open therapeutic communications were preserved. Regarding data quality, content, and privacy, clinicians (63%) were less willing to record highly confidential information and disagreed (83%) with including their own psychiatric records among routinely accessed EHR systems.

Limitations single time point; single academic medical center clinic setting; modest sample size; lack of prior instrument validation; survey conducted in 2005.

Conclusions In an academic medical center clinic, the presence of electronic records was not seen as a dramatic impediment to therapeutic communications. Concerns regarding privacy and data security were significant, and may contribute to reluctances to adopt electronic records in other settings. Further study of clinicians' views and use patterns may be helpful in guiding development and deployment of electronic records systems.

As in Sigmund Freud's time,[1] contemporary psychiatric care providers still struggle with how written records affect patients' openness in psychotherapy sessions, and also with how much information to document in psychiatric records. The advent of electronic health record (EHR) systems has revitalized this debate, but to our knowledge no study has surveyed clinicians to assess their impressions and concerns regarding acceptance and implementation of this new recording medium for psychiatric records.

Several needs and constraints drive conflicting goals in maintaining psychiatric records, including patients' concerns, clinicians' recording behaviors, data accuracy and accessibility, federally-accepted special procedures for psychiatric notes, and stigma.[2] Time-saving benefits are controversial,[3 4] but will improve over time along with patient safety, cost control, and other benefits.[5] We developed a survey to evaluate mental health professionals' perceptions and beliefs regarding privacy, record quality, and data safety for psychiatric documentation using an EHR system.

Major issues relevant to the adoption of an EHR by psychiatric clinicians come from the points of view of all individuals involved and also of society as a whole. The cardinal concerns of privacy, data sensitivity, stigma, and the need for open clinical communications will be discussed here together, followed by issues regarding data quality, security and access, and potential personal impact. The survey items were specifically written to address the presently studied population.

PRIVACY, SENSITIVE DATA, STIGMA, AND THE NEED FOR OPEN CLINICAL COMMUNICATIONS

A clinician documents, with equal importance, both subjective narrative data and more objective diagnostic impressions and treatment plan descriptions. Narrative data contain highly sensitive details of the patients' life histories, perceptions, experiences, and thought content, and ultimately assist with subsequent decision-making in psychiatric care. These data also heighten risks from diverse threats, ranging from breaches in data security to unintentional data misuse or misinterpretation by non-psychiatric clinicians and other professionals. Social acceptability of past life or family events and also the stigmas associated with psychiatric diagnoses remain very contemporary major concerns.[6] EHR adoption has been slower than anticipated[7] and there remain many impediments to EHR implementation,[8] but some may not be addressed entirely by legislating financial inducements for EHR system use.

Recently a national telephone survey (March 2009), conducted by the Harvard School of Public Health and the Kaiser Family Foundation, reported that 65% of 1238 adult respondents believed that it was somewhat or very important for doctors to use electronic medical records. However, 59% were not too confident or not at all confident that their electronic records would remain confidential, and 76% believed it would be very or somewhat likely that an unauthorized person would be able to access their medical record.[9] This is not new: almost 10 years ago a California HealthCare Foundation report revealed that almost one-fifth of a sample of Americans believed that release of their mental

health records had adversely affected them in some way.[10] According to this 1999 survey, responses from 1100 Californians and 1000 other Americans showed that: "Close to half of the people affected by improper disclosure say it resulted personal embarrassment or harm. In total, 7% of all US adults and 9% of California adults say they have been personally embarrassed or harmed by a violation of their medical privacy. The segment of the population most likely to have been hurt are those who have used mental health services…".

The perception of risks from breaches in data security may increase discomfort with seeking counseling or other psychiatric treatment; may cause patients to keep psychiatric care a secret from family, friends, other medical practitioners, or employers; and may influence accuracies and completeness of disclosures that are critical to success in psychotherapy.[6] These concerns are not limited to consumers, but also affect the acceptance of the EHR systems by clinicians. In a survey of outpatient physicians, psychiatrists were the least likely to use EHRs (8% of psychiatrists vs 18% overall).[11] Understanding concerns of mental health clinicians will be critical to increasing acceptance.

Research reports on this topic were startlingly absent from the literature, despite best efforts of the authors and two research librarians consulted to assist our efforts. However, it has been demonstrated and reported that patients often adjust the completeness of their revelations to suit their comfort with their mental health provider and with their perception of the privacy of their psychiatric records.[10] The same 1999 California HealthCare Foundation survey of 2100 American adults found that about one in six respondents admitted to protecting their privacy by withholding or giving inaccurate information, not seeking or delaying care, paying out of pocket (when insured), secreting to a physician unknown to their primary care provider, or asking their physician not to record information or to misrepresent it in their record.[10 12] Parallel concerns may influence documentation practices of clinicians, a topic that has not been adequately studied and was addressed in the present survey.

DATA SECURITY AND ACCESS

Accompanying these concerns about the stigma associated with mental health conditions, patients and clinicians may also question the security of psychiatric records. Worries center on numbers and qualifications of people who have access, whether records can be exported or stolen, whether medical center and clinic personnel who are uninvolved with immediate care can access the records, and whether rules regarding released records will apply to re-release by third-party payers or other recipients. When inadequately addressed, these concerns may keep patients going secretly to psychiatrists unknown to anyone else, making them highly preoccupied with privacy concerns during mental health visits, limiting their revelations, and altering the accuracy of events and feelings they disclose to their mental health providers.

Patients' and mental health providers' perceptions of psychiatric record security are affected by occasional but very high-profile reports of EHR system breaches. For example, a 2001 *JAMA* editorial pointed out that a privacy researcher was able to access the medical record of the then governor of Massachusetts by using an "anonymous" database of State Employee Health Insurance Claims, his town of residence and zip code, his birth date, and his gender.[2] The same editorial quoted a past president of the American Psychiatric Association, Daniel Borenstein, as saying, "In the internet age, some wonder if privacy exists." It is evident to these and other observers that people who see psychiatrists must feel secure that their revelations will remain private.

A number of efforts have addressed the problem of privacy and security for EHR systems, especially for mental health records. These include federal standards demarcating the boundary between a patient's general medical record and psychotherapy notes, such as those that went into effect in April 2003 as part of HIPAA rule 45 CFR §164.501.[13] The new standards clarify that psychotherapy notes must not be kept with the general medical record and may only be released with the written authorization of the patient. Standards for the privacy of psychotherapy notes were inspired, in part, by the landmark court case, *Jaffee v Redmond* in 1996. In that decision, the court suppressed a request for access, by the decedent's family, to the psychiatric record of a police officer who had shot a man involved in an altercation.[14–16] In addition, numerous technical approaches have been developed to enhance privacy and security across medical records; examples include integrating disparate approaches to privacy, improving access audits, performing in-depth analyses of privacy breaches, and improving models for access controls.[17–23]

At Vanderbilt Medical Center (VMC), an EHR system was developed for outpatient psychiatric records and deployed in 2003. Reasons given for the switch from paper charts included patient safety, with improved access to records in emergencies, lower costs of maintaining records, improved legibility and general convenience, and lower costs of providing responses to increasingly frequent and detailed requirements for copies of records for third-party payers. The latter is especially important in environments where frequent changes in insurance coverage are encountered. In our large medical center, where patients receive care from many different departments across a multi-facility campus, the transportation of paper charts had become unreliable and costly. The VMC EHR system was designed to assure that healthcare providers across the institution could access needed clinical records. For mental health services, all notes, appointments, and phone communications were sequestered in a separate database accessible only to psychiatric clinicians and staff. This continued the previous policy in that the paper psychiatric charts, similarly kept only in the charting rooms of each psychiatric clinic, were not available to most medical center clinicians. Internists and surgeons, for example, see no charted evidence in the EHR system that a given patient is under the care of a psychiatrist, even if seeking the record after the patient has revealed such information directly. Unless patients request that their note at a specific visit be recorded by the mental health provider in the database open to all clinicians, healthcare providers who are not established mental health providers cannot read psychiatric notes in the EHR systems. Only laboratory results, a list of diagnoses and medical problems, and the medication list are not sequestered and are currently available to all healthcare providers.

In order to obtain impressions regarding changes incurred by an EHR system it was important to survey clinicians after a carefully determined period following their transition from a paper-based psychiatric record to an EHR system-stored psychiatric record. An instrument was developed for use with clinicians who would still accurately recall their experiences with paper, but would also have passed beyond any initial and transient impressions regarding EHR use. Survey questions assessed the perceptions and beliefs of a sample of mental health professionals for quality, confidentiality, and security of the two forms of psychiatric records. A factor analysis was conducted to

assess the quality of responses to the instrument by comparing the items in generated factors to a priori groups of survey topics.

RESEARCH QUESTIONS

Topics of interest were generated in a series of discussions among the six research team members, most of whom brought expertise from several disciplines. Discussions were monitored for minimization of bias toward either paper or EHR. Generally, the questions centered on issues of EHR acceptance: *How acceptable are electronic records among psychiatric clinicians who are familiar with paper records and have recently transitioned to electronic media*? Some starting questions included:

1. Is confidentiality of psychiatric records more important than in most other areas, and how is this related to the stigma of a psychiatric diagnosis?
2. Does the use of an EHR affect the quality and clarity of the record?
3. Are data recorded differently in EHRs than on paper records?
4. When the EHR is being used, do clinicians perceive a change in patients' revelations of personal information in psychotherapy sessions?
5. Does EHR use affect frequencies of record release requests?

These topical research questions became benchmarks against which subsequent discussions and survey item drafts were weighed.

METHODS

Multidisciplinary problem formulation and survey construction

The six-member, multidisciplinary team included a psychologist with expertise in both statistics and informatics, an expert in evolving medical ethics issues trained in medicine and law, a healthcare information technology expert teaching in the Business School, a medical ethicist, a researcher and practicing outpatient psychiatrist, and a mental health nurse practitioner who had served on the development team for the psychiatric EHR. The team was diverse in age, gender, and personal impressions regarding EHR value and deployment. Neutrality was deliberately sought, taking a primary stance that electronic records are neither favorable nor unfavorable. Rather, a premise was adopted that information about EHR usage and acceptance is needed to optimally develop the technology. The issues were then used to formulate questions that would gauge the impressions of mental health clinicians on these matters.

A paper-based, confidential survey instrument was prepared in an iterative draft and revision process, with focus group testing to assure item quality. Survey distribution was arranged so that responses could not be tracked to individual respondents. A total of 62 survey questions (including demographics) queried major issues identified by the research team and focus group participants. Most of the survey questions asked the clinicians to respond by circling a number (1 through 7) reflecting how strongly they felt about the issue on a scale, using 1 for strongly disagree, 4 for neutral, 7 for strongly agree, and each intervening integer. The data (table 1) are reported with the initial wording, but statistical analyses in the current manuscript use a conversion to −3 through +3 for ease of interpretation of the calculated mean, where 0 is the neutral response. Means and standard deviation (SD) of the 7-point scale from −3 to +3 are reported (unless stated otherwise). Demographic data were requested with a clear assurance that reporting would be only in aggregate. Non-demographic survey items were heuristically grouped for analysis and reporting purposes, as assigned to the following five domains covering clinicians' views: (1) confidentiality and the stigma of mental illness; (2) quality and clarity of the record; (3) reporting behaviors; (4) perceptions of patients' responses; and (5) releasing information. The survey instrument was approved by the Vanderbilt IRB prior to deployment in the fall of 2005 and is available on request.

Survey implementation and data analysis

An initial letter was sent by email announcing the planned survey, its purpose, and its protections of respondents' privacy. One week later, surveys were mailed to all 120 mental health practitioners in the VMC Department of Psychiatry, including staff clinicians, residents in training, and faculty. The survey packet included a cover letter, explaining the study purpose and instructions for returns using a numbered envelope. A research assistant not familiar with individual clinicians sent two reminders via email to clinicians who had failed to respond, as tracked by return envelope numbers that were recorded and disassociated from the survey on receipt. No identifiers, coded or otherwise, were marked on the surveys themselves.

Results were analyzed using SAS V.9.1. Means and standard deviations were calculated. Histograms of responses by item were reviewed for non-normality and outliers. χ^2 analyses were performed to determine if responders were significantly different from non-responders on the following variables: gender, age group, profession, and prescription authority. A factor analysis was performed with an oblique (promax) rotation on the 35 items rated on the 1–7 Likert scale. Only study participants with complete data were included in this factor analysis.

RESULTS

Demographics

Of the 120 surveys issued, nine were excluded because the subjects worked in programs which did not yet have access to the EHR systems. Responses from 60 (50%) were received, two of which were blank except for a marking to report personally-elected non-use of the EHR system, and two were incomplete. Occupations of the 60 responders were reported by 25 (43%) psychiatrists (faculty and residents), 17 (29%) psychologists, 7 (14%) staff therapists, and 9 (16%) nurses (faculty and trainees in the advanced practice nurse practitioner program); two did not complete demographic data. Ages for 25 men and 34 women showed a fairly even distribution across 5 decades (20–30, 31–40, etc, and all over 60). The target population (n=120) showed significant differences in response rates by gender ($\chi^2(1)=6.59$, $p=0.01$) and profession ($\chi^2(4)=12.44$, $p=0.01$). Females were more likely to respond to the survey than males (61% vs 39%). Within each profession, nurses (82%) and psychologists (73%) were more likely to respond than therapists (45%), social workers (40%), and psychiatrists (39%). There were no significant responder differences by completion of MD or RN degrees vs non-medical practitioners (psychologists, therapists).

Factor analysis

A factor analysis showed that participants answered items in clusters of concerns that paralleled the a priori expected groupings of items, suggesting validity of the survey results in accurately reflecting response intentions. A total of 51 (93%) subjects' results were included in the factor analysis. Based on a minimum eigenvalue of 1, nine factors were retained. Items were considered to load on a factor if either (a) the factor loading was ≥0.40 on a single factor (n=26), or (b) factor loadings were ≥0.40 on two factors, with a difference of at least 0.20 for the larger

Table 1 Responses to survey questions

#	Question	Disagree 1	2	3	Neutral 4	5	6	Agree 7	Mean score	% Agree
8.	In my view, confidentiality of psychiatric records is important to me in my professional work	0	0	0	1	0	5	47	6.85	98%
9.	In my view, confidentiality of psychiatric records is important to me for my own and my immediate family's records	1	0	0	2	1	4	45	6.66	94%
10	Maintaining isolated electronic psychiatric records makes the stigma of mental illness worse	13	11	6	11	5	2	5	3.19	23%
11	The stigma of mental illness would decrease if confidentiality safeguards were like those in the rest of medical care settings	20	11	9	2	6	2	3	2.64	21%
12	Dropping the current extra safeguards in psychiatric confidentiality is a good way to bring about change in the stigma surrounding mental illness	25	11	8	3	4	2	0	2.17	11%
13	It would be acceptable to include my own psychiatry records (if they ever existed or might exist in the future) with the general medical record	28	9	2	5	5	0	4	2.36	17%
14	Compared to paper records, electronic records safeguard confidentiality better	7	6	5	21	7	2	6	3.83	28%
15	Compared to paper records, electronic records make *me feel* more comfortable writing confidential information in the record	7	11	7	15	7	3	4	3.54	26%
16	Compared to paper records, electronic records increase patients' reports of feeling more comfortable telling confidential information	8	9	8	21	6	1	1	3.28	15%
17	Compared to paper records, electronic records are more complete	5	4	3	9	12	14	7	4.65	61%
18	Compared to paper records, make clinical information in a chart more factual	9	6	5	15	7	8	4	3.83	35%
19	Compared to paper records, electronic records make clinical information in a chart more usable because it's more legible	0	1	2	1	11	17	22	5.98	93%
20	Compared to paper records, electronic records appear to *decrease* patients' willingness to divulge confidential information	9	9	7	18	3	6	1	3.36	19%
21	Compared to paper records, electronic records appear to *lessen* my willingness to record highly confidential information	5	9	2	4	13	15	6	4.48	63%
22	Compared to paper records, electronic records appear to *increase* patients' willingness to divulge confidential information	12	10	9	21	0	0	2	2.91	4%
23	Compared to paper records, electronic records appear to *improve* my willingness to record confidential information	11	16	10	9	4	1	3	2.89	15%
24	Based on your experience, current levels of electronic safeguards improve clinical care	1	1	4	15	18	6	8	4.85	60%
25	Based on your experience, current levels of electronic safeguards make me feel comfortable about records confidentiality for my current patients	1	6	7	13	16	8	3	4.35	50%
26	Based on your experience, current levels of electronic safeguards make me comfortable recommending Vanderbilt Psychiatric services for close acquaintances	3	4	3	17	10	12	5	4.54	50%
27	Based on your experience, current levels of electronic safeguards make me comfortable using Vanderbilt Psychiatric services for myself or family members	10	9	3	12	9	7	4	3.70	37%
28	Based on your experience, current levels of electronic safeguards take too much time completing the record because the forms are too generic and redundant	5	8	10	8	5	10	8	4.15	43%
29	Based on your experience, current levels of electronic safeguards take too much time searching through screens looking for past information	5	10	8	7	11	10	3	3.94	44%
40	Because of concerns with confidentiality in electronic medical records, I take more time to add clarifying data to the record	2	9	4	15	9	10	5	4.30	44%
41	Because of concerns with confidentiality in electronic medical records, I collect additional information so the record is more complete	2	8	7	11	12	11	3	4.26	48%
42	Because of concerns with confidentiality in electronic medical records, I use more "measured" (selective, discrete) wording in the medical record	0	2	7	7	12	20	6	5.09	70%
43	Because of concerns with confidentiality in electronic medical records, I use cryptic encoding, ie, codes that are only meaningful to me	22	14	4	7	2	4	1	2.43	13%
44	Because of concerns with confidentiality in electronic medical records, I leave out information entirely	8	9	4	11	12	5	5	3.83	41%
45	Because of concerns with confidentiality in electronic medical records, I maintain a "shadow record", ie, a personal file	29	3	2	3	8	5	4	2.80	31%
46	Because of concerns with confidentiality in electronic medical records, I am more concerned about the potential for legal discovery	10	7	4	9	15	5	4	3.80	44%
47	Because of concerns with confidentiality in electronic medical records, I provide only technical details of treatment (eg, specific automatic thoughts)	5	8	6	9	17	7	2	4.00	48%
48	Because of concerns with confidentiality in electronic medical records, I add more treatment details than I would in a paper record	14	9	11	11	6	3	0	2.91	17%
49	Because of concerns with confidentiality in electronic medical records, I use more "generic" wording in the record	3	7	5	6	15	13	5	4.52	61%
50	Because of concerns with confidentiality in electronic medical records, I am more concerned that non-mental health providers will misunderstand the information in the record	2	4	6	9	13	12	7	4.63	60%

Table 1 Continued

#	Question	Disagree 1	2	3	Neutral 4	5	6	Agree 7	Mean score	% Agree
51	Because of concerns with confidentiality in electronic medical records, I am more concerned that non-mental health providers will revise the medications list without knowing the correct diagnosis	7	9	5	19	7	4	2	3.50	25%
52	Because of concerns with confidentiality in electronic medical records, I am more concerned that non-mental health providers may misuse diagnostic terms	1	9	4	14	15	6	4	4.19	47%

Items were rated on a 1–7 scale with 1=disagree, 4=neutral, and 7=agree. % Agree was calculated as the % of respondents scoring a 5, 6, or 7 for that item. Items 1–7 are not included in this table because they address demographic issues only.

loading (n=3). Six of the survey items (17%) did not meet either of these criteria and were not included in the final factor constructs.

The nine factors that accounted for 83% of the response items were: (A) data security, (B) data sensitivity (stigma), (C) data quality erosion (all types of reporting behaviors), (D) data quality enrichment (quantity and clarity), (E) xenophobia (concerns about non-mental-health providers), (F) use of recording precautions (altering some reporting behaviors), (G) personal acceptability (comfort with present levels of security for myself), (H) data efficiency (saves/wastes time), and (I) personal importance of confidentiality. The variances accounted for by these factors ranged from 5.23 to 1.76, as shown in table 2, with the last retained factor still accounting for a unique variance of 1.48. These statistically created factors are acceptably similar to and more finely divided than our a priori set of survey item groupings, where: (1) confidentiality and the stigma of mental illness would be reflected in factors A, B, and I; (2) quality and clarity of the record are reflected in C and D; (3) reporting behaviors are reflected in E, F, and H; (4) perceptions of patients' responses are identified in C; and (5) releasing information is covered by G.

Scored items grouped by a priori topics

Confidentiality and the stigma of mental illness

Nearly all responders agreed strongly that the confidentiality of psychiatric medical records is very important (mean=2.85; SD=0.49 (note that maximum possible is 3.0)). Responses diverged considerably on whether paper records and EHR systems provide similar confidentiality safeguards (mean=−0.07; SD=1.77).

On average, providers also felt slightly more comfortable than "neutral" with the current levels of safeguards employed by Vanderbilt Psychiatric Services for their patients' records (mean=0.38; SD=1.4). When asked if they would recommend this level of safeguards for close acquaintances, the clinicians retained reasonable comfort but with a greater range in opinion (mean=0.55; SD=1.79). Providers were clearly bimodal in their comfort level if hypothetically for themselves or their family members, where 40% of clinicians recommended the services, 40% did not, and 20% selected the neutral, central response (item 27, table 1, mean=−0.3).

A majority of mental health providers did not think that keeping the psychiatric record separate from the general medical record worsens the stigma of mental illness, but simultaneously disagreed with the statement that "the stigma of mental health would decrease if psychiatric records were included in the medical record". In total, 50% of providers *strongly* did not want their own personal psychiatric record included with their general medical record (mean=−1.64, item 13, table 1) and were joined by another 20% less emphatically, again indicating that 70% of the providers were acutely aware of, and concerned about, the sensitivity of this information.

Quality and clarity of the record

Most respondents reported a belief that the EHR system is more complete (mean=0.65, SD=1.80) and legible (mean=1.98, SD=1.16), but not necessarily more factual (mean=−0.17, SD=1.86) than the paper record (items 17–19, table 1). Respondents reported believing that clinical care is mildly improved with the used of current levels of electronic safeguards (mean=0.84, SD=1.34, on a scale from −3 to +3).

Reporting behaviors

Despite the increased quality and clarity of the EHR, respondents were slightly less willing (on average, but highly divergent) to write highly confidential information in the EHR system than the paper record (mean=0.48, SD=1.93). Respondents affirmed weakly that they would take more time to add clarifying data due to confidentiality concerns (mean=0.30, SD=1.67), and that they would try to collect additional information to make the record more complete (mean=0.26, SD=1.60). Many indicated the use of "measured" (mean=1.09, SD=1.35) or generic wording (mean=0.52, SD=1.72). For example, the review of side effects may be thoroughly recorded, while specific aspects of childhood incest traumata might be mentioned only as "inappropriate contact". One respondent commented in free text at the end of the survey that a patient had expressed concerns regarding what her spouse, a Vanderbilt physician, might read if he took an unauthorized peek into her chart. A bimodal split was seen for an item probing whether information was deliberately left out of the record, with 41% affirmative, 20% neutral, and 39% denying the practice. Interestingly, these respondents' groupings were not super-imposable with the groups formed by the question on comfort with Vanderbilt safeguards for their own records. Overall, 31% indicated that they might keep a shadow record for psychotherapy process notes because of confidentiality concerns, while 69% indicated that this was not used (item 45, table 1, mean=2.8). Reasons for this practice may include concerns on the part of 60% that information would be misunderstood by non-mental health providers (item 50, table 1, mean=0.63). Sixty-two percent were essentially neutral (−1, 0, or 1) on how much non-mental health providers misuse diagnostic terms for psychiatric illnesses (item 52, table 1, mean=0.19).

Clinicians' perceptions of patient responses to EHR systems

With the passage of time from EHR installation to the survey 1.5 years later in 2005, clinicians perceived a decrease in patients' concerns that their internists might view their progress notes. Initially, clinicians estimated that 20% of patients expressed concern that their internists or other non-mental health staff would have access to their psychiatry record, but rarely did patients completely refuse to allow use of the EHR system. On another item regarding the prior 12 months, only 12% of providers recalled patients expressing these concerns. Despite respondents being less willing to write confidential information in the EHR system, respondents did not perceive that the use of

Table 2 Factor analysis results

Factors and items	Question number	Factor loading
Factor 1: data security; total variance=5.23, unique variance=2.82		
Compared to paper records, electronic records safeguard confidentiality better	14	0.79
Compared to paper records, electronic records make *me feel* more comfortable writing confidential information in the record	15	0.90
Compared to paper records, electronic records appear to *increase* patients' willingness to divulge confidential information	22	0.56
Compared to paper records, electronic records appear to *improve* my willingness to record confidential information	23	0.83
Factor 2: data sensitivity; total variance=4.43, unique variance = 2.77		
Maintaining isolated electronic psychiatric records makes the stigma of mental illness worse	10	0.79
The stigma of mental illness would decrease if confidentiality safeguards were like those in the rest of medical care settings	11	0.78
Dropping the current extra safeguards in psychiatric confidentiality is a good way to bring about change in the stigma surrounding mental illness	12	0.90
It would be acceptable to include my own psychiatry records (if they ever existed or might exist in the future) with the general medical record	13	0.85
Because of concerns with confidentiality in electronic medical records, I add more treatment details than I would in a paper record	48	0.44
Factor 3: data erosion; total variance=3.57, unique variance=2.76		
Because of concerns with confidentiality in electronic medical records, I leave out information entirely	44	0.77
Because of concerns with confidentiality in electronic medical records, I maintain a "shadow record", ie, a personal file	45	0.51
Because of concerns with confidentiality in electronic medical records, I provide only technical details of treatment (eg, specific automatic thoughts)	47	0.80
Factor 4: data enrichment; total variance=3.97, unique variance=2.26		
Compared to paper records, electronic records are more complete	17	0.85
Compared to paper records, electronic records make clinical information in a chart more factual	18	0.60
Compared to paper records, electronic records make clinical information in a chart more usable because it's more legible	19	0.75
Based on your experience, current levels of electronic safeguards improve clinical care	24	0.69
Factor 5: xenophobia; total variance=3.07, unique variance=2.35		
Because of concerns with confidentiality in electronic medical records, I am more concerned that non-mental health providers will misunderstand the information in the record	50	0.77
Because of concerns with confidentiality in electronic medical records, I am more concerned that non-mental health providers will revise the medications list without knowing the correct diagnosis	51	0.71
Because of concerns with confidentiality in electronic medical records, I am more concerned that non-mental health providers may misuse diagnostic terms	52	0.78
Factor 6: recording precautions; total variance=2.55, unique variance=1.78		
Because of concerns with confidentiality in electronic medical records, I take more time to add clarifying data to the record	40	0.54
Because of concerns with confidentiality in electronic medical records, I collect additional information so the record is more complete	41	0.77
Because of concerns with confidentiality in electronic medical records, I use more "measured" (selective, discrete) wording in the medical record	42	0.73
Because of concerns with confidentiality in electronic medical records, I use cryptic encoding, ie, codes that are only meaningful to me	43	0.51
Factor 7: personal acceptability; total variance=2.46, unique variance=1.76		
Based on your experience, current levels of electronic safeguards make me comfortable recommending Vanderbilt Psychiatric services for close acquaintances	26	0.80
Based on your experience, current levels of electronic safeguards make me comfortable using Vanderbilt Psychiatric services for myself or family members	27	0.78
Factor 8: data efficiency; total variance=2.29, unique variance=1.80		
Based on your experience, current levels of electronic safeguards take too much time completing the record because the forms are too generic and redundant	28	0.74
Based on your experience, current levels of electronic safeguards take too much time searching through screens looking for past information	29	0.68
Factor 9: personal importance of confidentiality; total variance=1.76, unique variance=1.48		
In my view, confidentiality of psychiatric records is important to me in my professional work	8	0.76
In my view, confidentiality of psychiatric records is important to me for my own and my immediate family's records	9	0.77

electronic records changed patients' behavior. Respondents did not feel that the EHR either decreased (mean=−0.65, SD=1.63) or increased patients' willingness to divulge information.

Releasing information

The number of requests that records be forwarded to other physicians, essentially the opposite of the above concern, reportedly had a similar frequency. Few patients (less than 15%) were reported to have requested that their records be shared with non-psychiatric staff, or to have had caregivers actively request confidential information. A vast majority of clinicians reported that they had given confidential information to non-psychiatric clinicians in the interest of quality care without either written or verbal permission, but that this again applied to a minority (less than 15%) of their patients. Most clinicians reported a belief that more than 15% of their patients have confidential information that could be detrimental to the patient or the patient's care if it reached unauthorized persons.

DISCUSSION

The results of a 2005 survey of clinicians regarding psychiatric EHRs indicated positive and negative views. Overall, clinicians reported that quality of care was slightly improved due to enhanced completeness and legibility of the EHR. However, confidentiality concerns were prominent and resulted in greater caution in documenting sensitive information.

This is consistent with a 2004 study of clinicians in a medical setting, where the EHR was seen as helpful for physician–patient interactions.[4] In our study, a shift toward documentation of less private material was noted by clinicians, while they also simultaneously replied that the EHR is more complete and yet not more factual. We may be getting more of the non-sensitive data, perhaps, without an increase in clinically important but more sensitive detail. In this regard, it may be necessary to assess whether therapeutic discussions themselves are also drifting toward a more technical, and less private, topic set.

There are several limitations. The sample size is modest, and reflects only the impressions of mental health clinicians in a

single academic medical center. Larger studies inclusive of more diverse mental health clinic settings, and of other specialties in which confidentiality is a major concern (eg, obstetrics, infectious disease) are required. These data were collected in 2005, and may differ from current clinician views.

Designers of future systems will need to enhance electronic file security and simultaneously maintain legitimate accessibility in order to preserve confidence in psychiatric and other EHR systems. The ramifications of data security cover more than the psychiatric domain, implying a need for considerable reflection. The ability to satisfy privacy and confidentiality needs will be critical to greater success in implementation(s) of EHR systems.

This study identified areas of strengths and concerns, especially regarding confidentiality and other data recording issues. Hopefully, this study will serve to draw increased awareness to this issue in an era of increasing availability of personal information.

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REFERENCES

1. **Freud S,** Strachey J, Freud A, *et al*. Scientific Literature Corporation. The standard edition of the complete psychological works of Sigmund Freud. London: Hogarth Press, 1953: 640.
2. **Lamberg L.** Confidentiality and privacy of electronic medical records: psychiatrists explore risks of the "information age". *JAMA* 2001;**285**:3075–6.
3. **Kaufman KR,** Hyler SE. Problems with the electronic medical record in clinical psychiatry: a hidden cost. *J Psychiatr Pract* 2005;**11**:200–4.
4. **Hsu J,** Huang J, Fung V, *et al*. Health information technology and physician-patient interactions: impact of computers on communication during outpatient primary care visits. *J Am Med Inform Assoc* 2005;**12**:474–80.
5. **Menachemi N,** Ford EW, Beitsch LM, *et al*. Incomplete EHR adoption: late uptake of patient safety and cost control functions. *Am J Med Qual* 2007;**22**:319–26.
6. **Sartorius N.** Stigma and mental health. *Lancet* 2007;**370**:810–11.
7. **Jha AK,** DesRoches CM, Campbell EG, *et al*. Use of electronic health records in U.S. hospitals. *N Engl J Med* 2009;**360**:1628–38.
8. **Blumenthal D.** Stimulating the adoption of health information technology. *N Engl J Med* 2009;**360**:1477–9.
9. **NPR/Kaiser Family Foundation/Harvard School of Public Health**. The public and the health care delivery system. 2009. http://www.kff.org (accessed 14 Jun 2009).
10. **California HealthCare Foundation report National survey: confidentiality of medical records**. Medical privacy and confidentiality survey: summary and overview. Oakland: California Health Care Foundation, 1999. http://www.chcf.org (accessed 30 May 2009).
11. **Burt CW,** Sisk JE. Which physicians and practices are using electronic medical records? *Health Aff (Millwood)* 2005;**24**:1334–43.
12. **Pennbridge J,** Moya R, Rodrigues L. Questionnaire survey of California consumers' use and rating of sources of health care information including the Internet. *West J Med* 1999;**171**:302–5.
13. Code of Federal Regulations, Title 45 Public Welfare: Department of Health and Human Services, Part 164, Security and Privacy, Subpart E, Privacy of Individually Identifiable Health Information.
14. **Chan KW.** Jaffee v. Redmond: making the courts a tool of injustice? *J Am Acad Psychiatry Law* 1997;**25**:383–9.
15. **Cesario FJ.** Supreme Court protects communications in psychotherapy. *J Law Med Ethics* 1996;**24**:388–9.
16. The federal psychotherapist-patient privilege [Jaffe v. Redmond, 518 U.S. 1]: history, documents, and opinions. http://jaffee-redmond.org/ (accessed 13 Sep 2009).
17. **Goldsmith DF,** Sisneros GC. Cancer prevention strategies among California farmworkers: preliminary findings. *J Rural Health* 1996;**12**:343–8.
18. **Blobel B.** Authorisation and access control for electronic health record systems. *Int J Med Inform* 2004;**73**:251–7.
19. **Blobel B.** Comparing approaches for advanced e-health security infrastructures. *Int J Med Inform* 2007;**76**:454–9.
20. **Blobel B,** Nordberg R, Davis JM, *et al*. Modelling privilege management and access control. *Int J Med Inform* 2006;**75**:597–623.
21. **Breu R,** Sztipanovits J, Ammenwerth E. Model-based design of trustworthy health information systems. *Methods Inf Med* 2008;**47**:389–91.
22. **Collmann J,** Cooper T. Breaching the security of the Kaiser Permanente Internet patient portal: the organizational foundations of information security. *J Am Med Inform Assoc* 2007;**14**:239–43.
23. **Malin B,** Airoldi E. Confidentiality preserving audits of electronic medical record access. *Stud Health Technol Inform* 2007;**129**:320–4.

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