Putting the EHR to the Test

by Fanny Hawkins, EdD, RHIA

Is clinical documentation significantly different before and after implementing the electronic health record (EHR)?

Believing that the development and implementation of an EHR strategy is required for success, Baylor College of Medicine sought to answer this question. This article presents an empirical study comparing the presence or absence of clinical data before and after implementing an EHR, and reveals that data was improved post-EHR implementation.

Evaluating Data Quality

The study, which aimed to evaluate the quality of clinical data documentation in medical records at the Baylor Family Medicine Clinic before and after EHR implementation, was conducted via a pre- and post-EHR chart review.

The paper record was reviewed before the EHR was implemented using general documentation requirements. The documentation requirements were reviewed in 12 subcategories (See "Frequencies and Significance of Missing Clinical Data," below). The medical records from 10 percent of one week's visits were reviewed. Twenty-seven charts were randomly selected from multiple faculty, residents, and nurse practitioners.

Frequencies and Significance of Missing Clinical Data

Clinical Data	Pre-EHR	Post-EHR six months	P-Value	Post-EHR one year	P-Value
Sample size	27	41	NA	54	NA
			Patient Identification		
Patient identification	27	0	0.0000***	0	0.0000***
			Summary Page		
Diagnosis	4	7	1.0000	3	0.2141
Medications	2	3	1.0000	2	0.5974
Allergies	8	3	0.0202*	0	0.0000***
			Signatures		
Signature	3	1	0.2931	0	0.0342*
Profession, or co-signature	12	0	0.0000***	0	0.0000***
			Dictation		
Transcribed dictation	1	0	0.3970	0	0.3333
			Immunizations		
Immunization page	8	0	0.0003***	0	0.0000***
Date	7	0	0.0009***	0	0.0002***
Manufacturer and lot number	8	3	0.0202*	0	0.0000***
			Lab		
Not filed in order	6	0	0.0027*	0	0.0009***
Not initialed by clinician	10	0	0.0000***	0	0.0000***

Significant P <.05* P <.01** P <.001***
Frequencies of completed patient information can be calculated by subtracting the table frequency from the respective sample size

The post-EHR implementation chart reviews were conducted at six months and one year after implementation. Again, the medical records from 10 percent of one week's visits were reviewed. Forty-one charts were randomly selected for the six-month post-EHR implementation chart review. Fifty-four charts were randomly selected for the one-year post-EHR implementation chart review.

To determine whether there was a significant difference in the clinical documentation before and after implementing the EHR, the Fisher Exact Probability Test, a statistical test that calculates data observed and data expected, was used.1 It determines if there is a difference between two processes and is used primarily when the sample size is small. Contingency tables were set up for all data to indicate missing and not missing data at six months and one-year post-EMR implementation.

Comparing Processes

The Fisher Exact Probability Test was used to compare the pre and post-EHR processes. In this test, which shows true probability, p-values of less than .05, .01, and .001 are significant. The results showed a significant difference at six months (P=.00) and one year (P=.00) post-implementation for patient identification.

The EHR has patient identification on every page of the medical record while with pre-EHR, each of the paper records had identification problems. The clinical data documentation for allergies at six months (P=.02) and one year (P=.00) post-implementation were also significantly improved, as were the results at one year for signature (P=.03).

Results post-implementation for profession and co-signature were significant at six months (P=.00) and one year (P=.00). All immunization and lab clinical data documentation showed significant improvement at six months and one year post-EHR implementation. In the post-EHR chart review, of the 24 Fisher Exact tests performed, four were significant at the .05 level and 13 were significant at the .001 level.

EHR Passes the Test

The implementation of the EHR system significantly improved the documentation of clinical data in the medical record six months and one year after implementation. Clinical data in the EHR is well organized and easy to find. The legible notes and easy access to charts reduce daily frustrations. For example, all records were available in the EHR for review and are available for all patient visits.

In all subcategories of clinical data of patient identification, immunizations, and lab, the EHR clinical data was significantly more complete at six months and one year than the clinical data in the paper record. Furthermore, the clinical data for allergies and profession or co-signature were significantly more complete than the clinical data in the paper record at six months and one year. Further, at one year, the post-EHR clinical data for signature was significantly more complete than the paper record. Overall, the EHR provides accessible, organized, and searchable records.

Using the Results

Clinicians are faced with growing numbers of incomplete records, increased documentation requirements, and pressure to reduce costs. Although physicians have traditionally either handwritten or dictated and transcribed their medical records, there are definite reasons to change.

Good medical care requires accurate records in greater detail than previously necessary. Malpractice protection mandates more organized and complete records. Third-party payers are requiring more justification for the expenses generated by physicians' actions. Today's economics demand more efficient and effective methods of maintaining the patient's clinical records.

Documentation guidelines should reflect both current practice and modern technology. The availability of tools that provide for electronic capture of patient data and documentation suggests the need for a single set of simplified documentation

requirements.

Note

1. For more information on the Fisher Exact Probability test, visit the National Institute of Standards and Technology Web site at www.itl.nist.gov/div898/ handbook/prc/section3/prc33.htm.

Fanny Hawkins *(fhawkins@bcm.tmc.edu) is assistant professor and vice president of information technology at Baylor College of Medicine in Houston, TX.*

Article citation:
Hawkins, Fannny. "Putting the EHR to the Test." *Journal of AHIMA* 73, no.8 (2002): 65-66.