Using Test Vignettes to Assess EHR Capabilities

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Test vignettes help evaluate how EHR products handle common documentation needs.

For those who are braving the EHR selection process, there is a great deal of guidance available on how to organize this difficult process. The steady advance of technical standards, functional standards, and product certification contributes much-needed help in compiling functional requirements. (These resources are also helpful to those who are looking to evaluate their current systems.) Organizations can also receive help in evaluating EHR systems through the use of testing protocols that apply established, professionally and legally accepted standards in the form of test vignettes.

Test vignettes, as used in this article, are scripts representing common documentation events, processes, and procedures that occur during an encounter. They seek to illustrate the performance and output of a software system in a fair and reproducible manner. Typically, a knowledgeable system user follows the script and performs the information entry while evaluators observe. The resulting documentation is judged according to professional documentation principles.

In addition to highlighting important software features and functions, test vignettes also assist HIM staff and organization leadership in comparing how various EHR products handle key HIM functions. Vignettes also help illustrate how a provider's documentation policies and procedures may be reflected in an EHR it currently uses or is considering for purchase.

About This Vignette

Test vignettes can be applied to any health record function. The vignette presented here tests an EHR system's ability to maintain a legal health record. The script focuses on evaluating functions pertaining to amendments, attestation, authorship, and nonrepudiation, as well as the auditing functions that support their integrity. Constructing the vignette began with a review of the core requirements of medical records as legal business records in a computerized environment.1

No one encounter will include the many functional challenges that this vignette contains. The vignette is not intended to be a typical encounter; instead it presents a test environment that includes a number of common challenges to the documentation workflows that occur in normal practice environments. The vignette does not include all variants that a testing protocol should measure in the course of an HIM-focused, due-diligence process. It is intended as a presentation of one type of testing for one set of critical functions. It is most appropriate as a script for a live or remote demonstration, but it could possibly serve as part of a request for information.

The scenario starts with a review of the context and the system functions being examined. It includes possible requirements regarding general assurances necessary for a system's evaluation, especially when testing a system for possible purchase. These assurances should be solicited from the vendor prior to the demonstration.

The script of the scenario appears in the table that follows. The organization provides the vendor with the identification and system permissions of the users featured in the script. The analytic questions shown in the "observation" column help guide the evaluator's queries. (They are not intended as instructions for the user working directly with the software or as questions for the vendor.) These questions address authorship, attestation, nonrepudiation, and auditing, seeking to identify the system's ability to:

- Track exactly who did what tasks and when
- Support changes in, and additions to, documentation that occurred during the course of an encounter by changing of authors
- Support changes in, and additions to, an encounter that occurred after the encounter was attested (signed)

- Re-attest a re-opened encounter, including supporting documentation for the changes as an extraordinary event

Throughout the review, the utility of audit functions should also be noted--where the audit supports differentiation and where it may not, specific to the targeted areas for authorship, attestation, integrity, and amendments. The vendor should be asked to provide a printed copy of the audit report or audit views that substantiate the scenario events that require auditability. Evaluators should also note the required skill set and system security access level.

The objective here is documentation veracity, not speed. The vignette is one example of how testing protocols can be used to compare the ability of different systems to perform common HIM functions.

Scenario: Testing Legal Functionality

Scenario Context

An established patient presents with a scheduled appointment for an annual physical. The patient already has PFSH, medications, labs, and radiology information in the system.

The visit is in a primary care practice where staff trust is high, intake staff members have the discretion--in line with practice policies and procedures--to do common tests when deemed highly likely to be needed or as specifically established as standard operating procedure (e.g., U/A on a first-trimester pregnancy).

Purposes

1. Demonstrate system capabilities to support authorship and to demonstrate timeliness, attestation, and nonrepudiation
2. Demonstrate system business rules for building information using common convenience tools and the ability to differentiate the employment of these tools
3. Demonstrate amendment functions
4. Demonstrate appropriately detailed documentation audit features and functions
5. Highlight how each product handles key documentation events and supports authenticity with the assistance of the system's audit functions

Demonstration Requirements

1. System must be substantially the same as that generally installed at a client site.
2. A similar test run on a randomly chosen user site must yield substantially the same results.
3. The system must support multiple user identifications within the same encounter. [Note: demonstration versions may not offer this routinely, so it must be requested to ensure a useful test.]
4. If the tested system has features or functions the vendor would like to emphasize for special notice or clarification, the vendor may include this information in a separate document, referring back to the test protocol to indicate the context of its relevance.
5. If an opportunity for a verbal explanation is requested from or by the vendor, the point of contact and a brief indication for the need is required. This added information will not be considered part of the evaluation, testing, and verification process.
6. The report must include a printed copy of the documentation output, representing what would be sent in response to a request from another medical office or from a third-party payer.
7. The audit report must include a printed copy of the output of the audit and the steps necessary to produce the report.
8. If any portion of the vignette is omitted, explanations must be provided.

Scenario

Action	Observation
I. Intake--user 1	
A. Checks patient into the clinical workspace	
B. Updates allergies by adding a mild urticarial reaction to penicillin, treated at Hospital X's ED January 1, 2006	Can the system identify new general patient information that is added by user 1 in the encounter? [Note: some systems do not identify the user when changes are made to general patient information fields that are separate from the encounter functionality and workflow. Some systems will not indicate the state of the data prior to the change, instead noting only that information within that functional

	area was changed.] Can the added allergy be identified in the system as associated with the encounter by date and user ID?
C. Documents vital signs: T/BP/P/R and weight	Does the system associate each data field input with user 1? Alternatively, are vital signs recorded in a table and is each new table a unique event that can be associated with a different user?
D. Documents presenting problem or chief complaint: annual physical	Does the system associate the information with the user 1 ID?
E. Documents basic HPI/ROS using the standard tools and functions within the system including those generally used by providers. (Please note separately if the system does not permit, under any setup options, a subset of intake users to employ the provider HPI and ROS tools). Within HPI/ROS:	Does the system associate the information with the user 1 ID?
1. Identifies episodic fatigue and malaise or similar	Does the system associate the information with the user 1 ID?
2. Identifies episodic visual blurring	Does the system associate the information with the user 1 ID?
3. Identifies "no cardiac symptoms" as the patient reported item	Does the system associate the information with the user 1 ID?
4. Cues global "all other ROS items negative" function, if available	Does the system separately identify or otherwise support the differentiation of information recorded by a "global" statement from uniquely selected individual information elements? [Note: "global" cues or "aggregate documentation events" are those documentation tools that support either cueing a series of documentation insertions or outputs as a result of one user action, keystroke, or click, including those that insert boilerplate text or defined norms or normals.] Does a global or aggregate event generate detailed documentation text? If so, is it distinguishable in the output from uniquely selected, typed, or voice-recognition documentation? Is it distinguishable using user-accessible audit functions? Does any coding accumulation in the background calculate the same codes whether from global or aggregate documentation events (multiple system ROS documentation from a single key), or does coding accumulation differentiate individually selected from globally recorded events?
F. Removes ROS indication for "GI negative" and leaves it blank or null	If the system uniquely records global versus individual selection events, are the global events appropriately recorded as changed to unique events?
G. Orders a urinalysis	Does the system record orders by user?
H. Gives a tetanus immunization injection	Does the system record procedures by user? Does the system support reference to a standing order that legitimizes this as a task that can be undertaken by the intake staff?
I. Transfers encounter process to user 2	Does the system record user changes as an event, or does it identify documentation events by user ID?

II. Provider--user 2	
A. Reviews PFSH records in system: no changes made	Does the system record "screen view" events where no changes are made? How does the system differentiate "review" events that support PFSH--does the user indicate an action to support that this event occurred? [Note: whether the system discriminates between "reviewed" as defaulted versus selected during an encounter is tested below.]
B. Reviews current medications: no changes made	Does the system record "screen view" events where no changes are made? How does the system differentiate "review" events that support medications review--does the user indicate an action to support that this event occurred? [Note: whether the system discriminates between "reviewed" as defaulted versus selected during an encounter is tested below.]
C. Reviews current allergies: notes the addition of new allergy	Does the system record "screen view" events where no changes are made?
D. Adds family history of PCN reactions	Does the system differentiate screen views from screen changes in the PFSH section?
E. Identifies new chief complaint not mentioned upon intake: abdominal pain	Does the system differentiate information input by multiple users?
F. Collects basic HPI for abdominal pain using standard functions in the system	Does the system differentiate information input by multiple users?
1. Occurrence irregular, occasional, not predictable 2. Associated with fatty meals 3. Located in the right upper quadrant, no radiation	
G. Changes some of the information entered by user 1	Does the system preserve the original information recorded by user 1 and allow differentiation of user 1 and user 2 information?
1. Within vitals adds new, different BP reading	Does the system preserve the differentiation of information recorded by multiple users in all areas, including time of recording?
2. Within HPI/ROS: a. Adds visual symptoms: episodic visual loss in right eye b. Changes urinary from intake to indicate nocturia, twice per night c. Leaves the rest blank or unchanged	Does the system preserve the differentiation of information recorded by multiple users in all areas, including time of recording?
H. Within physical exam, indicates positive and negative findings in at least five system exam areas including neurological, cardiovascular, and abdominal/GI using a mixture of positives and negatives. Do not mention murmurs in cardiovascular examination.	
I. Within physical exam, indicates skin/dermatological findings are all normal by a global key, if available	Does the system differentiate user input and, if global key documentation events are supported, how are they differentiated from unique selection?

J. Reviews the U/A result	Does the system differentiate user activities? How is clinical information review captured?
K. Completes the assessment or impression section	
1. Diagnosis: abdominal pain, possible cholelithiasis 2. Diagnosis: UTI	
L. Completes the plan section	
1. Diagnostic ultrasound of abdomen 2. Refer to general surgery 3. Patient instructed to call provider if fever, vomiting, worsening pain	
M. Completes the documentation tasks and executes closing tasks and signature equivalents	How are closing events and signature events recorded? Identify in the accompanying report the steps undertaken by a user to execute a signature event. (Use screenshots if appropriate or helpful.)
N. If available, show how nursing or checkout staff can document any printed patient instructions after the encounter has been closed	How are additional information events recorded? How are they identified as components of the encounter?
O. Recalls additional exam findings not documented; re-opens encounter to document ophthalmic exam and add to cardiac exam	How does the system record and differentiate the inputs from different authors made at different times? How are amendments supported and differentiated from the original, signed record? How are amendments connected to the original documentation? How are additions to documentation and to processes such as tests and referrals identified and preserved?
1. Adds PERRL, extra-ocular movements, inability to maintain lateral gaze, vision blurs 2. Adds funduscopic negative 3. Adds new cardiac finding: new systolic murmur, 3/6 4. Adds new diagnosis: cardiac murmur, NOS 5. Adds new referral: cardiology 6. Adds new scheduled test: cardiac ultrasound	
P. Resigns encounter	How does the system handle resignature events and differentiate them from the original closing events? If the EHR system is to be integrated or interfaced with a billing system, how does the documentation function interact with the billing system to avoid duplicate billing for the same event and to provide coding edits or corrections?

Note

1. AHIMA. "Update: Maintaining a Legally Sound Health Record--Paper and Electronic." *Journal of AHIMA* 76, no. 10 (2005): 64A-L. Available online in the FORE Library: HIM Body of Knowledge at www.ahima.org.

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