CHAPTER 7

Electronic Health Records
Pretest (True/False)

• The HIPAA Security Rule established protection for all PHI stored in electronic format.
• It is not possible to incorporate word processing files that were originally transcribed into the EHR.
• A provider can use an EHR system to find out if a patient’s cholesterol levels have increased significantly over a certain period of time.
• A drug utilization review and a formulary alert essentially perform the same functions within an EHR system.
• The abbreviation Rx stands for therapy (or prescriptions).
EHR Definition

“…any information relating to the past, present or future physical/mental health, or condition of an individual which resides in electronic system(s) used to capture, transmit, receive, store, retrieve, link and manipulate multimedia data for the primary purpose of providing health care and health-related services.”
EHR Definition (continued)

- Not just the data that is stored electronically, but what can be done with it, or its *functional benefits*
- Considered as part of PHI per HIPAA Security Rule and is therefore protected
Why are EHRs Important?

- Provide access to complete, up-to-date records of past and present conditions which improves:
  - Patient health
  - Quality of care
  - Patient safety
IOM’s (Institute of Medicine of the National Academies) Eight Core Functions of EHR

1. Health information and data
2. Result management
3. Order management
4. Decision support
5. Electronic communication and connectivity
6. Patient support
7. Administrative processes and reporting
8. Reporting and population health
CPRI’s (Computer-Based Patient Record Institute) Three Key Criteria for EHR

• Capture data at the point of care
• Integrate data from multiple sources
• Provide decision support
Social Forces Driving EHR Adoption

- Health and safety concerns
  - EHR will improve access to patient’s medical information, helping to reduce preventable medical errors

- Healthcare costs
  - EHR provides access to complete, current records of past and present conditions, improving patient health, quality of care, patient safety, thereby helping to reduce costs

- Mobile society
  - Today, patients typically move or change doctors more and see multiple specialists; EHR improves continuity of care by allowing practitioners to share exam records, and test results
Forms of EHR Data

1. Digital image data
2. Text-based data
3. Discrete data
1. Digital image data
   - Images retrieved and displayed by computer, but require human interpretation
   - Includes scanned documents, diagnostic images, digital x-rays, annotated drawings, or sound recordings
2. Text-based data
   - Files imported from outside (word processor) sources
   - Files may be searched by computer for research purposes
   - Includes word-processed transcription documents
3. Discrete data
   - Permits instant searching, retrieval; may be combined or reported in different ways
   - Subcategorized into fielded data and coded data
   - May be used for alerts, health maintenance, and data exchange
EHR Coding Systems: Called *Nomenclatures*

- Have many more codes than billing codes; used to describe the detail of exam, such as symptoms, history, observations, plan.
- Examples include:
  - SNOMED-CT, Medcin
  - LOINC (for lab tests)
Functional Benefits of EHR

1. Health maintenance
2. Trend analysis
3. Alerts
4. Decision support
Functional Benefits of EHR

1. Health maintenance
   - Improves patient health through prevention and disease management
   - Includes immunizations, patient education, counseling, and screening
   - Analyzes data to identify patient eligibility for clinical trials or chronic disease management
Figure 7-2 Health Maintenance screen. (Courtesy of NextGen.)
2. Trend analysis
   – Presents test results, vital signs, other EHR data from several dates in side-by-side comparison
   – Allows clinician to spot trends in patient’s health records
   – Examples: cumulative summary reports, graphs, growth charts, and flow sheets
3. Alerts
   – Notifies provider of a special situation
   – Appears automatically
   – Examples include DUR (Drug Utilization Review) alert, formulary alerts, lab results

   – Note: DUR is for drug interactions; Formulary Alerts are for indicating when a drug is not covered by insurance.
Figure 7-5  Electronic prescription DUR alert. (Courtesy of Allscripts, LLC.)
4. Decision support
   – Provides access to relevant, evidence-based information
   – Includes defined protocols, results of case studies, standard care guidelines, drug formularies, or dosing guidelines
Capturing and Recording EHR Data

- **Lab test orders and results:** Can be interfaced to merge directly into patient’s chart for immediate viewing.
- **Transcription:** Word processing files can be imported directly as EHR text records; more accessible and searchable than scanned materials.
- **Radiology studies:** Digital images can be directly incorporated and associated with radiology reports, or appear as part of the record (PAC system).
- **Vital signs:** Can be entered directly into EHR from device; common in hospitals, less common in medical offices.
Capturing and Recording EHR Data (continued)

- **Patient’s problem list**: Can be updated using the EHR, which can also generate the list for the provider.

- **History and symptom information**: Can be entered directly by patient via waiting room computer.

- **Prescriptions**: When written using EHR are automatically recorded as part of workflow.
Point-of-care Documentation

- Improves accuracy and completeness of the patient record
- Involves completing SOAP note before patient leaves office (in medical office setting)
- Involves nurses entering vital signs, nursing notes at bedside (in inpatient setting)
- Saves time and costs
- Allows provider to sign note immediately
- Allows patient to leave with complete copy of medical record and referrals, improving patient care and compliance
Data May Be Entered Into EHR

• Nurse and medical assistant-entered data
  – Includes initiation of exam record, information on chief complaint, updates of allergy records, and so on

• Patient-entered data
  – Provides valuable source of first-hand information

• Clinician-entered data
  – Saves on dictation time and transcription costs
  – Ensures correct calculation of billing and diagnosis codes
Figure 7-8  Instant medical history on a kiosk in the waiting room. (Courtesy of Primetime Medical Software & Instant Medical History.)
Figure 7-9  Summary screen allows patient to review answers. (Courtesy of Primetime Medical Software & Instant Medical History.)
EHR System Features

- Lists
  - Allows clinician to view subset of nomenclature used for particular condition or type of exam
- Forms
  - Displays desired group of findings
- Search
  - Provides quick way to locate desired finding in nomenclature
- Prompt
  - Generates list of findings clinically related to finding
- Flow sheets
  - Allow clinicians to view data from multiple encounters in columnar form; allows for side-by-side comparison
- Electronic ordering
  - Allows provider to write order and document in exam note in one step
- Protocols
  - Lists of tests, treatments, therapy, or plans of care recommended for certain diagnoses
Electronic Signatures

- Clinician signs EHR electronically after completing exam note or order
- Three criteria for valid electronic signatures:
  - Message integrity
  - Nonrepudiation
  - User authentication
Authentication

• Healthcare organizations need clear policies regarding electronic signatures
• Users should always:
  – Log on to the EHR as yourself
  – Log off when you are through
  – Keep passwords or PIN numbers private
EHR: “Meaningful Use”

- Set of standards defined by CMS Incentive programs
- Governs the use of electronic health records
- Allows providers and hospitals to earn incentive payments by meeting specific criteria
EHR: “Meaningful Use” Benefits

- Complete and accurate information
  - Providers have info needed to provide best possible care
  - Providers know more about patients before they are examined
- Better access to information
  - Providers have greater access to info earlier
  - Providers can share info more easily with other providers
- Patient empowerment
  - Patients can receive electronic copies of their records
  - Patients can securely share their health info over Internet with their families
EHR: “Meaningful Use” Stages

<table>
<thead>
<tr>
<th>Stage 1: Data Capture and Sharing 2011-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronically capturing health information in a standardized format</td>
</tr>
<tr>
<td>Using that information to track key clinical conditions</td>
</tr>
<tr>
<td>Communicating that information for care coordination processes</td>
</tr>
<tr>
<td>Initiating the reporting of clinical quality measures and public health information</td>
</tr>
<tr>
<td>Using information to engage patients and their families in their care</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 2: Advance Clinical Processes 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>More rigorous health information exchange (HIE)</td>
</tr>
<tr>
<td>Increased requirements for e-prescribing and incorporating lab results</td>
</tr>
<tr>
<td>Electronic transmission of patient care summaries across multiple settings</td>
</tr>
<tr>
<td>More patient-controlled data</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 3: Improved Outcomes 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving quality, safety, and efficiency, leading to improved health outcomes</td>
</tr>
<tr>
<td>Decision support for national high-priority conditions</td>
</tr>
<tr>
<td>Patient access to self-management tools</td>
</tr>
<tr>
<td>Access to comprehensive patient data through patient-centered HIE</td>
</tr>
<tr>
<td>Improving population health</td>
</tr>
</tbody>
</table>

(HealthIT.gov)
Figure 7-16  Workflow in a medical office fully using EHRs.