Electronic Health Record Classroom (EHR-C) and Case-Based Learning (CBL)

Gail March Cohen, Ph.D.
Goal: The purpose of this Zipinar is to give a quick overview of the application of Electronic Health Record Classroom (EHR-C) to case-based learning (CBL).

Learning Objectives: By the end of this Zipinar, you will be able to:

• Describe the EHR Classroom (EHR-C) and case-based learning (CBL)
• Follow the CBL teaching steps
• List the advantages and challenges of applying the EHR-C to a CBL class
• Identity additional resources for using the EHR-C
What is an Electronic Health Record?

Electronic Health Records (EHRs) are digital files of a patient’s chart and includes critical patient care documentation, provider and patient communication, quality analyses, ordering, medication prescribing, and reconciliation.

The difference between an electronic medical record (EMR) and electronic health record (EHR) is that the EHR can move with the patient to other healthcare providers or across states while an EMR stays with the healthcare provider(s).

The EHR Classroom is a learning tool created in Epic training environment to help students acquire and practice skills for clinical problem-solving and patient care though safe and effective utilization of diverse and authentic patient cases. Learn more.
What are the benefits of using an EHR?

1. Medical Knowledge
2. Practice-Based Learning and Improvement
3. Patient Care
4. Interpersonal and Communication Skills
5. Professionalism
6. Systems-Based Practice

1. Can access multiple mock patient records to build knowledge base and uses standardized medical terms
2. Instructs best practices and opportunities for research and quality improvement topics
3. Learner workflow: reduced time in gathering patient history or PE and can track a patient over time
4. Learners spend less time gathering and more time synthesizing data with small group
5. Patient-provider experience rather than recall of memory
6. Shows integration of a network of healthcare providers

What are the challenges in using EHRs?

**Instructional:**
- A learning curve to use EHRs and other versions available than Epic
- Requires a lot of time to prepare mock patient records to study
- Use of EHRs not well integrated into medical education and often presented as an abstract training of the technology
- Fear of inaccurate patient information due to “leave no box unchecked”
- Absence of accreditation of EHR competencies

**Learner:**
- Digital natives may think EHR replaces dialog with patient
- Automated clinical decisions may hamper learners developing clinical reasoning
- Overuse of time on computer and declining bedside skill
- Not all clinical sites use the same EHR system

**Technical issues**
- Loss of internet connection
- Need to update data regularly

Medical School Curriculums* Using EHR

**George Washington SOM** uses EHR in all 4 years with virtual, standard, and fake patients.

**New York University SOM** has a virtual patient panel with deidentified data for students to write notes.

**Oregon Health Sciences University** receive clinical informatics instruction, uses an institutional EHR in OSCEs with standardized patients, and has a case-based curriculum.

**Regenstrief Institute, Indiana University SOM** has an EHR Clinical Learning Platform with deidentified patient data to practice writing orders, entering notes, reviewing data, and creating a care plan.

**University of California Irvine SOM** is having first year medical students chart patient records in an EHR to minimize errors and maximize patient quality care.

**University of Connecticut SOM** uses a Teaching Electronic Health Record (tEHR) in collaboration with Indiana University for its Stage 1 curriculum with three virtual families.

**University of Iowa Carver COM** developed EHRU for use in an interprofessional curriculum.

**University of Michigan** developed VistA for Education (VFE) a version of US VA computerized patient record system

**Vanderbilt University SOM** has a student electronic portfolio to securely upload student’s patient notes for faculty to evaluate.

**Warren Albert Medical School of Brown University** has a longitudinal EHR curriculum within its clinical doctoring course series with mock patient data.

*This is a sampling of medical using EHR in their curriculums.*
How to begin with EHR-C?

Pictured here is an example of an EHR-C patient snapshot. This [LINK](http://example.com) will go to the EHR-C OUME webpage with instructions on accessing EHR-C, Patient search, create a patient, handbook, student resources, and a Patient Profile Cookbook.
Examples of EHR-C Applications at UMMS

<table>
<thead>
<tr>
<th>Course</th>
<th>EHR-C Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Working Cells &amp; Tissues (BWCT) &amp;</td>
<td>• Shared metabolic case</td>
</tr>
<tr>
<td>Doctoring &amp; Clinical Skills (DCS)</td>
<td></td>
</tr>
<tr>
<td>Development, Structure &amp; Function (DSF)</td>
<td>• Donor cases</td>
</tr>
<tr>
<td>Lab</td>
<td></td>
</tr>
<tr>
<td>Principles of Pharmacology (POP)</td>
<td>• Ophthalmic medication</td>
</tr>
<tr>
<td>Infections (INF)</td>
<td>• Patient with cavitary lung disease</td>
</tr>
<tr>
<td>Integrated Case Exercises (ICE)</td>
<td>• GI cases</td>
</tr>
<tr>
<td>Doctoring &amp; Clinical Skills (DCS)</td>
<td>• Cases to build course</td>
</tr>
<tr>
<td>Longitudinal Preceptorship Program (LPP)</td>
<td>• Hospital session cases</td>
</tr>
<tr>
<td>Cancer Concepts</td>
<td>• Mock tumor board</td>
</tr>
<tr>
<td>Medicine Clerkship</td>
<td>• H&amp;P entry</td>
</tr>
<tr>
<td>Family Medicine Clerkship</td>
<td>• Part of simulated McQ family</td>
</tr>
<tr>
<td>Center for Academic Achievement CAA</td>
<td>• Clinical Problem Solving skills</td>
</tr>
<tr>
<td>Admissions</td>
<td>• Patients for BACCMD program</td>
</tr>
<tr>
<td>Graduate School of Nursing GSN</td>
<td>• Simulation</td>
</tr>
</tbody>
</table>
What is Case-Based Learning (CBL)?

Case-Based Learning is an instructional method for any group of 2-20 participants who come together with a facilitator to problem-solve a presented clinical case.

• Requires guided active learning as the case evolves with clinical data
• Includes questions and pauses for reflection
• Emphasizes the process to problem-solve the case
• Employs critical thinking skills that build on basic clinical knowledge
1. Tell a story and recognize the relevant information in EHR-C
2. Define the problem – the chief complaint and pertinent positives and negatives – avoid jumping to premature judgement
3. Determine what information is missing and suggest additional tests
4. Identify potential causes that created the problem (the differential diagnoses)
5. Elicit treatment ideas to solve the problem and prioritize
6. Agree on the treatment action
Advantages of EHR Classroom & CBL

<table>
<thead>
<tr>
<th>For the Learner</th>
<th>For the Facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Organizes the clinical information</td>
<td>• Presents clinical EHR scenarios to build student’s experiences</td>
</tr>
<tr>
<td>• Provides a simulated clinical experience to practice skills</td>
<td>• Strengthens appropriate use of EHR</td>
</tr>
<tr>
<td>• Increases student confidence in working with EHR cases</td>
<td>• Guides student responses on a given case through CBL</td>
</tr>
<tr>
<td>• Offers a testing ground for their clinical thinking process</td>
<td>• Provides an opportunity for facilitator to witness student’s clinical reasoning</td>
</tr>
<tr>
<td>• Encourages peer teaching</td>
<td>ability</td>
</tr>
<tr>
<td>• Engages with EHR cases in a meaningful way</td>
<td>• Gives feedback to peer successful behavior in discussing case</td>
</tr>
<tr>
<td>• Identifies care delivery quality including SDOH</td>
<td>• Presents longitudinal and interprofessional experiences</td>
</tr>
</tbody>
</table>
## Suggested EHR in Case-Based Learning

**EHR Classroom as a tool provides:**

1. Logging learner EHR encounters
2. Selection of patient’s record and automatically extracting data
3. Data collection to identify chief complaint
4. Opportunity to discriminate relevant information
5. Real-life role play
6. Clinical decision support for differential diagnosis and additional diagnostic tests
7. Practice in entering diagnosis and treatment plan

**CBL**

1. Learner signs on system
2. Navigates to mock patient record
3. Access initial data to identify chief complaint
4. Reviews patient’s history and physical exam results
5. Discusses case
6. Generates a differential diagnosis and may order more tests
7. Enters diagnosis and order for medications or procedures
Your Thoughts?

Please click on this [LINK](#) and take the brief survey and share your thoughts about this Zipinar.

For Residents, fellows, graduate students and medical students; please enter your name and site so that UMMS and your clinical site knows you viewed this Zipinar.

*Thank you for taking the time to view this quick overview.*
Reading Sources


University of Iowa Carver College of Medicine. EHRU project. Available at http://www.medicine.uiowa.edu/EHRU/. Verified 1/2/15.
