Electronic Medical Records in Education

emrU: EMR simulation & electronic curriculum content delivery in every classroom at the University of Iowa

UNIVERSITY OF IOWA HEALTH CARE

Learning Objectives

Enhance existing curriculum with greater simulation.

Facilitate interprofessional education around team-based care.

Expose students to an EMR prior to use within a live clinical setting.

What is emrU?

An Epic electronic medical record (EMR) software environment dedicated to health science education.

emrU facilitates delivery of curriculum materials, supports team-based care concepts, and exposes students to simulated patients from the beginning of their clinical training.

Background

At Iowa, most health science students are typically not exposed to an EMR system until the latter part of their education, where they gain clinical exposure. While early exposure to the EMR is not a replacement for training, we anticipate that it will ease the student's transition to clinical experiences by reducing the learning curve for EMR competency. Integrating an EMR software system into health science curriculums from day one of a student's professional clinical training opens up several educational possibilities.

Benefits

Simulation in every classroom by default.

Simulated patients, with corresponding medical records, can reach every classroom via pre-recorded videos and past medical history integrated within the EMR. Vastly increases realism.

Ability for students to review medical record.

Students can review the medical record before, during, and after class. They can also review the simulated patient's medical record while completing assignments.

Integrated interprofessional education and/or team-based care.

Students from different disciplines can work together and share a patient's care, coordinated via that patient's medical record and, optionally, care coordination notes.

Infrastructure Required

Several pieces of infrastructure are necessary for this project:

Student and faculty access: account creation and maintenance (including password resets).

- Installing Citrix or other remote-access software on student machines, as well as on departmental computing resources.

Training students and faculty before they use the system.

- This is separate from the educational mission; students come to the first day of class knowing how to navigate a simulated patient's chart to find notes, review lab results, etc.
- The software should enable learning, not become an end unto itself; instructors should be able to use the tool to teach the lesson, not waste time teaching students how to find the patient for today's lesson.

Bridging the gap between the EMR and the requirements of education.

- EMRs were not designed for educational use and must be modified.
- Curriculum designers are not accustomed to designing content for presentation in an EMR.
- To bridge this gap, both the technology and the requirements need to be flexible, communication and established procedures for designing and building simulated patients are necessary.

Implementation

- We created a separate Epic EMR software environment known as emrU. emrU is used ***only for educational purposes*** across our health sciences colleges and ***contains no real patient data***.
- Technical staff partner with course instructors to define educational content for inclusion in this simulated environment.
- Based on input from course instructors, patient records are created to match learning objectives. These records unfold parallel to classroom instruction – provider notes telling the story of the patient, supported by radiology and laboratory results.
- These realistic medical records also typically include past medical history, medications and orders, and the family and social history of the patient. All of this is designed to reinforce and support classroom instruction.
- Outside of class, students are able to login to the system remotely and view the medical record – to review the lesson, double-check a lab result, or to complete homework.
- The system is accessible on- and off-campus, 24/7/365 (excepting occasional system maintenance).

Implementation Timeline

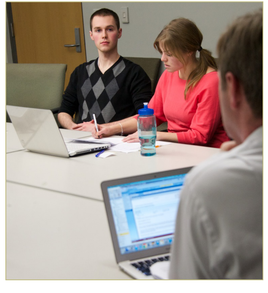
0-3 months	· Send FTE to Epic training, begin internal marketing. · Isolate an existing Epic software environment solely for educational use.
3-6 months	· Build first patients from existing paper cases. · Grant students & faculty access to the system. · ***College of Medicine go live!***
6-9 months	· Build additional patient cases for College of Medicine. · Build first patient case for the Interprofessional Education initiative.
9-12 months	· ***Expand student access*** across the health sciences for Interprofessional launch. · ***Interprofessional Education go live!*** · ***College of Pharmacy go live!***
12-15 months	· ***College of Nursing go live!*** · Document the project. · Build more patient cases for new & existing clients.

Resources and Goverance

- One FTE + technical support staff. (Budget 1.5FTE/2+ years to launch project & maintain over time).
- Existing EMR installation at partner medical center.
- Monthly committee, include everyone (medicine, nursing, pharmacy, hospital representatives, Information Technology, etc).

A simulated patient's medical record typically includes:

- encounters
- notes
- past medical history
- medications
- orders
- family & social history
- recent vitals
- laboratory results
- radiology images



Outcomes

Students effectively learned curricular content and gained basic competency of the electronic medical record. Survey instruments were designed and administered to students and faculty at the conclusion of each semester. Example survey questions included "Distribution of curricular content through cases presented in the EMR was an effective learning tool." and "I believe I will be better prepared to transition into the clinical use of the Epic electronic heath record during clerkships as a result of my experience with the emrU. Survey results and analysis from at least one semester to be presented.

Challenges

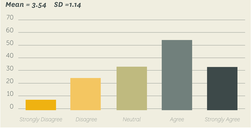
- #1 request: Active, evolving chart.
- EMR not designed for classroom use.
- Communication/culture.
- Training for non-clinical faculty, intro for students.
- Training vs. education.
- Evolving curriculum.

Feedback

Student Survey Responses

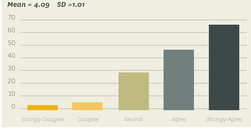
"emrU (EPIC - the Electronic Medical Record) was easy to navigate."

(Response Rate: 150/153 = 98%)



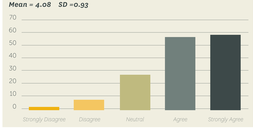
"I believe I will be better prepared to transition to the use of EPIC (EMR) during clerkships as a result of my experience with emrU."

(Response Rate: 150/153 = 98%)



"Learning about Electronic Medical Record through the use of cases in emrU was a positive experience."

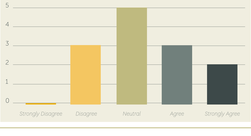
(Response Rate: 150/153 = 98%)



Faculty Survey Responses

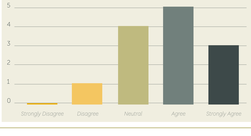
"Students effectively learned about the Electronic Medical Record through utilizing emrU."

(Response Rate: 13/34 = 38%)



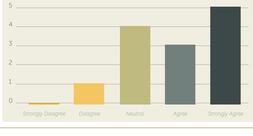
"Distribution of curricular content through cases presented in emrU was an effective learning tool."

(Response Rate: 13/34 = 38%)



"Utilizing emrU to present cases to students was a positive experience."

(Response Rate: 13/34 = 38%)



Takeaway

Bringing EMRs to your curriculum is a technology advancement that both clinicians and educators with clinical experience alike appreciate. After the project is launched, the difficulty becomes keeping up with the demand and bridging the gap between educational needs and tools offered by EMR technology.

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