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Regenstrief tEMR gives medical students rare real world experience in patient care

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The Regenstrief Institute is an internationally respected informatics and healthcare research organization, recognized for its role in improving quality of care, increasing efficiency of healthcare delivery, preventing medical errors and enhancing patient safety. Credit: Regenstrief Institute, Inc.

With the goal of transforming medical education to include real world electronic medical record experience, clinician-informaticians from the Regenstrief Institute and the Indiana University School of Medicine have developed the Regenstrief tEMR.

Regenstrief tEMR, short for Regenstrief teaching electronic medical record system, is built upon the Regenstrief's Institute's expertise in biomedical informatics and is a specially developed version of the electronic medical record system used at Eskenazi Health. The institute is known for the development of the Regenstrief Medical Record System, the longest continually operational electronic medical record system in the world.

The Regenstrief tEMR contains the records of 10,000 patients of all ages whose records have been scrubbed so they cannot be identified. All patient records are given false names and identifying information is purposely scrambled. Because it contains actual, although anonymized and continuously updated patient data, the Regenstrief tEMR provides a real world environment where students can learn to handle real health care situations. Students learn to virtually "care" for patients with multiple, complex problems.

"The Regenstrief tEMR is unique in its use of real patient data, its method to deliver educational content and its ability to evaluate students as they care for patients in 'virtual clinics,'" said Regenstrief Institute investigator Blaine Takesue, M.D., team lead of the Regenstrief tEMR. "The Regenstrief tEMR can even query students about what they were thinking while interacting with the system and caring for their patients. It can also show a student what his peers did in the same or similar situation."

All students can be assigned to the same patient within the Regenstrief tEMR for comparison purposes across a class or each student can "care" for a different patient. Both are useful learning scenarios.

"Electronic medical record systems are complicated and students need to learn how to use them before they begin to practice medicine. These are the tools of their trade," said Dr. Takesue. "Like the actual clinical

electronic medical record system at Eskenazi Health, the Regenstrief tEMR takes advantage of the fact that most, if not all, of the students are experienced Internet users and incorporates familiar Internet functions to improve usablity."

By monitoring how students use the system to provide simulated care for patients, the Regenstrief tEMR could provide significant information to medical educators. Did the student understand how this drug works and its side effects? Did they check the patient's potassium level? Did the student order too many or two few diagnostic tests? Did the student focus on the most urgent problem? How did the student's recommendations differ from ideal treatment or from what the actual treating physician did?

According to Dr. Takesue, who is an assistant professor of clinical medicine at the IU School of Medicine, the real world learning opportunity provided by the tEMR is becoming more important as medical students across the country are increasingly "locked out" of electronic medical record systems and not allowed to enter orders or notes due to legal and financial restrictions.

The Regenstrief tEMR has gone live as a key component of Indiana University School of Medicine's innovative new curriculum. This curriculum includes lessons with emphasis on traditional subjects like health care and clinical decision-making. It also focuses on "new" issues such as cost consideration for medication and tests, quality improvement and patient safety. The Regenstrief tEMR is currently used in a course for second-year medical students. In 2016, the tEMR will be available to first-year medical students and by 2018 will be used by students in all four years of medical school.

The IU School of Medicine has nine campuses across the state and is the nation's largest medical school. Because of the school's wide

geographical spread, the tEMR is being accessed by students and teachers over the Internet.

Seventy other medical schools across the country have expressed interest in the Regenstrief tEMR as a subscription Internet service. The Regenstrief tEMR's development was supported in part by a grant to Indiana University and the Regenstrief Institute from the American Medical Association through its Accelerating Change in Medical Education initiative. The Thomas Jefferson University and University of Connecticut medical schools are currently in the process of evaluating the use of the Regenstrief tEMR for their curricula. This first expansion is being supported by a supplemental grant from the Regenstrief Foundation.

"Unfortunately, changes in medical education often lag behind advances in medical care", said Bradley Allen, M.D., Ph.D., IU School of Medicine senior associate dean for medical student education. "The tEMR allows us to show students the substantial benefits of an electronic health record to the care of patients while at the same time pointing out potential pitfalls and areas of weakness of these systems. The importance of verifying information that is in the electronic record is a key concept they must learn in order to promote quality health care and patient safety."

Provided by Indiana University