SETTING THE WORLD ON FHIR®

Published by HL7® International, a not-for-profit organization, Fast Healthcare Interoperability Resources (FHIR®) is a standard for exchanging healthcare information electronically

A series of case studies illuminating how HIT professionals are using HL7®FHIR® to improve and advance modern healthcare

CASE STUDY

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BAYSTATE MEDICAL CENTER

The flagship hospital campus of Baystate Health, Baystate Medical Center (BMC) in Springfield, Massachusetts is a 716-bed independent academic medical center and a teaching site of the UMass Chan Medical School-Baystate.

ELIMU INFORMATICS, INC.

Elimu Informatics, Inc. is a team of doctors, nurses, pharmacists, and engineers that bring boots-on-the-ground experience in healthcare workflows and technology. It delivers products and services in the areas of clinical decision support, semantic normalization, patient engagement and third-party workflow integration for some of the most recognized names in the healthcare industry. Elimu helps extend and enhance the native capabilities of clinical applications to improve quality, patient experience and usability.

Goal

To reduce postoperative use of opioids with interoperable clinical decision-support (CDS)

> « The MME App guides clinicians in decreasing opioid dosing during hospitalization. This has led to tangibly reduced opioid prescribing at discharge, which should result in reduced opioid dependency after hospitalization.
>
> — Daniel Engelman, MD, Medical Director, Heart & Vascular Services, Professor of Surgery, Univ. of Mass. Medical School-Baystate
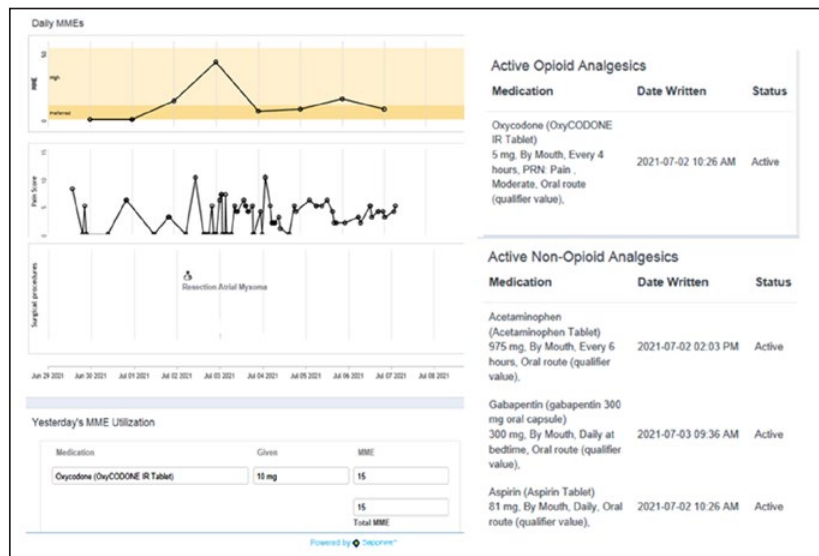
Opportunity

Developed a SMART on FHIR® application that embeds directly into the EHR to aid clinicians in monitoring patients' opioid use and decrease the risk of future dependency

Project

In 2019, 28% of all opioid overdose deaths were due to prescriptions. One of the risk factors for persistent opioid use is the prescription of opioids postoperatively, that are intended only for a brief period to manage surgical pain. Studies have shown that minimizing total Opioid Morphine Milligram Equivalents (MMEs) administered post-operatively correlates with reduced length of stay, costs, incidence of respiratory depression and risk of opioid dependency. The Sapphire Opioid

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[MME Monitor](#) app, developed with design input from the team at Baystate Health, enables the clinical care team to have situational awareness of opioid orders and total MMEs administered so that clinicians can minimize opioid use during hospitalization and after discharge. Unlike most MME tracking tools, the MME Monitor app is 1) used in the inpatient setting, 2) accounts for opiates administered via patches and pumps and 3) calculates total actual administered opioids including orals, injectables and transdermals (not just ordered/prescribed opioids).

The app was built using the Sapphire™ platform, a visual app authoring tool developed by Elimu Informatics.

Many potential interventions can help reduce the use of opioids in the perioperative period, however, calculation of the in-hospital opioid use is very burdensome as it requires parsing through a variety of data sources from the electronic health record (EHR.) Also, because opioids come in varying forms (injectable, tablet, sublingual, etc.) and potencies, monitoring actual intake is difficult and time consuming. The MME app starts with conversion to morphine milligram equivalent (MME). Tallying administrations and converting to MME is the only way to know if a patient's daily opioid intake is increasing or decreasing, and by how much. With the FHIR-enabled MME App, which embeds directly into the EHR, this process happens in seconds. A graphical timeline of daily 24hr MME, together with pain scores and hospital events, is assembled alongside all ordered opioid and non-opioid analgesics to provide complete situational awareness for the care team and enables optimal opioid tapering in preparation for discharge.

Progress

The MME app is being utilized by the [cardiac surgery service and pharmacists at Baystate](#) Medical Center where it is used during rounds with approximately 25 patients per week.

> « The MME App seamlessly integrates with Baystate's Cerner EHR System using HL7 FHIR, a capability provided by Sapphire for all its apps. »
>
> — Aziz Boxwala, MD, PhD, FACMI, President, Elimu Informatics

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