CUSTOMER INNOVATION SPOTLIGHT

South Shore Hospital ED Prioritizes Med Rec for High-Risk Patients With Complexity Scores and Epic Workflow Enhancements

Innovation at South Shore Hospital

As a recognized care organization and technology leader, South Shore Hospital continues to find new and innovative ways to provide the best care possible to their patients. In 2021, it prioritized efforts within the Emergency Department (ED) to reduce costly adverse drug events (ADEs) and potential readmissions that commonly come from patients admitted through the ED.

EDs by nature are fast-paced, hectic environments where clinical decisions need to be made quickly, often with limited information. Patients may be unconscious or unable to communicate, making manual or verbal confirmation of a patient's home medication list problematic.

With over 300 patient visits per day to the ED, and a third of those patients routinely admitted, South Shore Hospital understood that improving the process and tools that their clinicians use to gather a patient's medication history within the ED could address major sources of organizational pain: avoidable medication errors, preventable ADEs, potential hospital readmissions, and staff satisfaction with technology.

South Shore Health

South Weymouth, MA | 390 beds | EHR: Epic

About South Shore Hospital

South Shore Hospital is part of South Shore Health, the largest independent health system in southeastern Massachusetts. It is the area's leading provider of acute and outpatient care, and the state's only Level II trauma center south of Boston. The organization has been recognized with five consecutive "A" grades from The Leapfrog Group for hospital safety and has earned ANCC Magnet Recognition® for nursing excellence. In late 2020, South Shore Hospital was certified as Level 7 Acute in CHIME's Digital Health Most Wired, a program designed to elevate the health and care of communities around the world by encouraging the optimal use of information technology.

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A 3-Step Process for Managing High-Risk Patients and Reducing ADEs

South Shore Hospital rolled out a three-step approach to reducing ADEs:

STEP 1 Formally assign ownership of medication history gathering to the pharmacy department to reduce known errors.

STEP 2 Provide the pharmacy team with tools and technology to best equip them to gather and confirm a patient's medication history.

STEP 3 Develop an in-workflow complexity score to identify and prioritize complex patients who require the highest level of scrutiny and are at greatest risk for an ADE.

Step 1: Pharmacy Team Ownership

The nursing department previously had responsibility for gathering and confirming a patient's medication list but balancing that responsibility alongside their other duties was problematic and led to known errors. Formally assigning ownership of gathering medication history to the pharmacy department was a logical first step in reducing errors, ensuring safer transitions of care, and maximizing ED staff productivity.

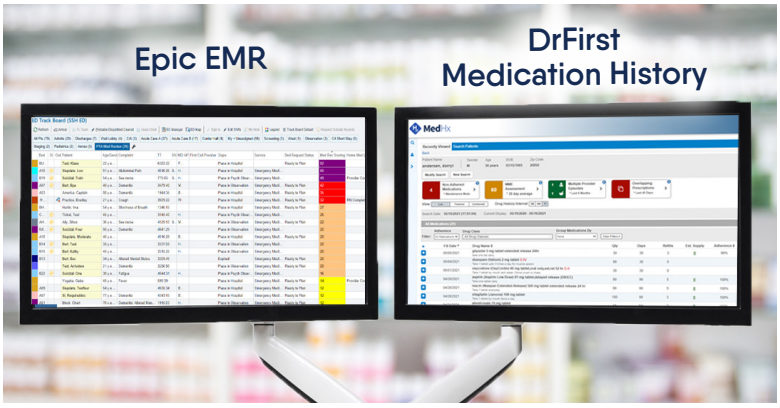
Step 2: Clinical Workflow Support

Next, South Shore implemented additional technology in its Epic electronic health record (EHR) system to support the process of gathering and confirming a patient's medication history. DrFirst provides a combination of local and national medication history sources directly within the native Epic workflow for the most comprehensive database of medication history available. Along with providing data from HIEs and other EHR partners, DrFirst identifies and connects local pharmacies for healthcare organizations that share mutual patients and makes the dispensed fills available as part of their medication history.

DrFirst's clinical-grade AI adds another layer of clinical workflow support with patented artificial intelligence that normalizes prescription instructions (known as sigs) into consistent terms, safely infers missing information, and pre-populates drug and sig information within the Epic EHR so clinicians don't need to manually enter medication information.

South Shore also leveraged the web-based medication history solution for clinical insights into patients' medication history. Just as a spreadsheet of raw data doesn't provide the same level of insight as a dynamic chart or graph, the medication history solution takes the data provided within the Epic workflow and visualizes it in a web-based application to reduce cognitive effort.

Visual timelines within the medication history solution give a quick view of adherence gaps and remaining fills, along with the ability to sort by drug class. Map views let clinicians identify potential opioid abusers seeking prescriptions from multiple providers across state lines.



And because the DrFirst medication history solution is not part of the EHR, pharmacists are able to find patients before they're admitted to the hospital, or by alternate spelling and zip code.

Pharmacy workstations at South Shore Hospital are set up with two screens: one displaying the Epic workflow and patient record, and another with the DrFirst medication history solution with the same patient's medication list. The lead medication history technician acts as the "air traffic controller" that uses this data to properly prioritize which complex patients need medication reconciliation first, and which technician will perform the medication reconciliation.

Step 3: Complexity Scoring and Prioritizing Med Rec for High-Risk Patients

Hospitals are facing increasing scrutiny and legislation on how to actively manage high-risk patients to reduce ADEs and readmissions. California Senate Bill No. 1254 requires a pharmacist at a hospital pharmacy to obtain an accurate medication profile or list for each high-risk patient upon admission of the patient, and other states are likely to follow suit.

To ensure pharmacy technicians focus efforts on high-risk patients especially, South Shore Hospital created a patient complexity score embedded in their Epic EHR to standardize complexity scoring for their patients. This helps identify and prioritize medically complex patients and allows these patients to be evenly distributed across the pharmacy team.

The complexity score was built on key factors such as:

- Age
- Active problems (such as congestive heart failure, diabetes, COPD, and pulmonary hypertension)
- High-risk medications on the prior-to-admission list (such as warfarin, immunosuppressives, anticonvulsants, and antiplatelets)
- If the patient has been assigned a provider
- If a medication history consult has been requested

The higher number of points assigned to the patient, the higher they rank on the pharmacy team's priority list. South Shore used the Epic Founding build around complexity scoring for patients (in the context of medication reconciliation). This framework allowed the hospital to score and organize patients directly within their workflow. They also customized the ED track board with a prioritized patient list for pharmacy technicians, which organized patients by complexity but also noted patients that had been missed in the ED and had made their way up to an inpatient floor.

Initial Results From Med Rec Priority and Workflow Enhancements

With DrFirst medication history and clinical-grade AI installed, South Shore Hospital is now finding clinically actionable medication history on 91% of patients queried. Along with prioritizing high-risk patients, the staff is getting more information on high-risk medications than with previous platforms.

In the first five months with DrFirst solutions, the hospital found:

- 7,712 Abuse-related medications
- 2,962 Cardiovascular medications
- 1,515 Thyroid disease medications
- 1,499 Anticonvulsants
- 1,274 Steroids and immunosuppressants
- 946 Antipsychotics
- 598 Diabetic therapy medications
- 169 Anticoagulants

"South Shore Hospital prioritizes patient safety, and **the goal of improving the medication reconciliation process has been a top strategic priority** for our organization. We realize that using pharmacy technicians and pharmacists to complete medication histories (using accurate and complete data) is best practice, but unfortunately, this is a limited resource in our institution. To best utilize this valuable service, **we have incorporated a complexity score for admitted patients embedded into our electronic health record.** Our goal is to review the medications of our most medically complex patients first, then work our way through other admitted patients as time allows. **By prioritizing patients by their complexity score, we are increasing medication safety and improving clinical outcomes."**

Rachel Blum, PharmD
Clinical Pharmacy Manager, South Shore Hospital

ADEs and Errors

Peer-reviewed studies have investigated the downstream effects of patients admitted through the ED and the potential for ADEs as a result of inaccurate medication history. Studies show:

- Up to 70% of patients have errors on their medication list when admitted to the hospital through the ED, and up to 59% of these errors can cause harm.[1]
- One-third of inpatient orders contain errors, with 85% of these originating from the medication history collected during the admission process.[2]
- Medication histories collected by nursing and hospitalist staff for high-risk patients have an average of eight medication errors by the time the patient is transitioned from the ED to inpatient care. (This reduces to 1.5 and 1.4 errors per patient when the medication history is performed by a pharmacy technician and pharmacist, respectively.)[3]

Sources:

1. Cornish et al. 2005, Unintended Medication Discrepancies at the Time of Hospital Admission

2. Gleason et al. 2010, Results of the Medications at Transitions and Clinical Handoffs (MATCH) Study: An Analysis of Medication Recociliation Errors and Risk Factors at Hospital Admission

3. Pevnick et al. 2018, Improving admission medication reconciliation with pharmacists or pharmacy technicians in the emergency department

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