Using Technology to Increase Medication-Related Core Measure Compliance for Patients with Acute Myocardial Infarction and Heart Failure

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Primary Intended Outcomes

1. Improve the use of evidence-based therapies in patients discharged from the hospital following an Acute Myocardial Infarction (AMI).
2. Improve AMI medication-related Core Measure scores.
3. Attain top decile status for AMI and Heart Failure (HF) Core Measure all-or-none bundle scores.

Relevant PPMI Recommendations

B24. Every pharmacy department should:

B24f. Play a critical role in ensuring that the hospital or health system adheres to medication-related national quality indicators.

B26g. Play a critical role in ensuring that the hospital or health system adheres to medication-related evidence-based practice guidelines.

Situation Analysis

Core Measure all-or-none bundle compliance for HF and AMI was 93 percent and 95 percent, respectively, in the summer of 2010. These scores reflected the focused efforts of many departments and individuals, and for HF was a great improvement from the prior scores of 77 percent. Most of the continued Opportunities for Improvement (OFIs) were medication-related (e.g., the absence of an evidence-based medication at discharge without a documented rationale, medication mismatch on the discharge summary vs. the patient discharge medication list, etc.).

In addition, for AMI Core Measures, a new medication-related standard was coming online in the fall.
of 2010. A cursory review predicted an 83 percent compliance rate with this measure, so we expected our 95 percent all-or-none bundle score to drop to approximately 80 percent.

The 150-bed Heart and Vascular Tower of Roper Hospital is housed within the larger 350-bed facility, which is part of a 650-bed regional community health system. Several features of the environment are noteworthy and influenced the nature of our Core Measure challenges and our ultimate solution.

First was the transitional nature of our medical record system. Some parts were electronic. However, many parts, such as physician orders and progress notes, were still on paper. At that time, discharge summaries were verbally dictated and transcribed, introducing human error into the medication list data collection.

Another factor we had to take into account was staff-related. It was critical to seek and receive the support and compliance of our 16 private practice cardiologists in order to institute a workable new system. Additionally, as a non-teaching institution, we lack traditional “rounds” with cardiologists, thus limiting the face-time between the clinical pharmacy staff with physicians.

Clinical pharmacy staff resources at Roper Hospital are lean. Until recently, we have 3.3 full-time equivalents (FTEs) to:

- Provide clinical coverage to 30 medical/surgical ICU beds via rounds with the Intensivist Service,
- Manage the Antimicrobial Stewardship Program,
- Staff house-wide pharmacokinetic consults and anticoagulation monitoring, and
- Provide clinical services to cardiology patients.

Two FTEs were recently added to lead our system as we improved medication reconciliation across the transitions of care, for a total of 5.3 clinical FTEs to manage all clinical services and medication reconciliation activities.

The 93 percent and 95 percent Core Measure compliance rates for HF and AMI were achieved with a labor-intensive and largely paper process that focused energies after the patient was discharged. The Core Measure data abstraction nurses contacted the attending physician by fax, phone, e-mail, or in person to obtain documentation regarding why a medication was not prescribed. Physician responsiveness to requests for documentation was variable, and they expressed dissatisfaction with the process.

Our goal was to find a method that would:

1. Increase medication-related Core Measure compliance to 100 percent,
2. Require no additional personnel,
3. Increased the efficiency required to obtain documentation, and
4. Be perceived as convenient and seamless to our physician customers.
Service Description

Roper Hospital purchased HealthCare Solutions (HCS) software in 2009 to facilitate compliance with The Joint Commission standards concerning medication reconciliation across the transitions of care. The software includes customizable functionality that permits the screening of medications prescribed at discharge according to predetermined criteria.

A patient is identified and “tagged” as an AMI patient by a member of the pharmacy clinical staff. Patients are identified concurrently by a review of admitting diagnoses and alerts are received by pharmacy staff for all troponin levels > 0.5 ng/mL. A cursory review of their medical record follows to ensure patients with troponin elevations for non-infarction reasons, such as myocarditis, are excluded.

At the time of discharge, medications are electronically selected by the prescriber. These tagged patients are electronically screened by HCS for the presence of aspirin, beta-blocker, and statin prescriptions. If all are prescribed, the process continues without pause. However, if a medication is not present, an alert is presented to the prescriber. The alert permits the prescriber to:

1. Select “This is not an MI patient,”
2. Document a rationale for not prescribing a medication, or
3. Add a medication to the discharge prescriptions.

The HCS software also permitted the importation of the discharge medication lists directly into the discharge summary, thereby eliminating the need for physicians to verbally dictate the lists. This automated cut-and-paste feature eliminated the medication list mismatches that sometimes occurred and resulted in Core Measure failures for HF.

Key Elements for Success

1. Clear and detail-oriented communication with the software developers at HCS. Our medication reconciliation pharmacists worked closely with the software developers to create the content and appearance of the alert features.
2. Testing after software upgrades are installed to ensure the new features function as expected.
3. When initiating tag system, case by case physician education outlining role at time of discharge.
4. Good working relationships with the physicians and nurses involved with the discharge process. Two-way communication and feedback are imperative.
5. Empowerment of the pharmacy staff involved to detect problems and make changes independent of administrative oversight. A rapid response to fix problems is imperative.
6. Involvement and support of the hospital IT department.

Resource Utilization

Personnel: No direct expenses were incurred. Existing clinical pharmacy staff members developed and maintain these systems. Developing and testing a new software feature takes an estimated 40 hours of pharmacist’s time. Ongoing personnel time to identify and ‘tag’ AMI patients and perform quality checks and improvements takes approximately two hours per week.

PPMI
Pharmacy Practice Model Initiative
IT and other infrastructure: The hospital IT department administers the system and provides system patches and upgrades.

Recognized Intangible Benefits
Prior to instituting this new program, a labor-intensive review of a patient’s medical record was required to determine why a medication was not prescribed upon discharge. The new electronic method locates all this data in one place for easy retrieval by data abstractors.

The physicians appreciate the fact that this process results in less follow-up documentation after a patient is discharged. With fewer phone calls and letters to respond to after the fact, they comply with the brief pause that is occasionally required at discharge to either prescribe a medication or document why a medication shouldn’t be prescribed. Furthermore, the physicians no longer have to dictate lengthy lists of medications and dosages. This makes the process more accurate and adds to physician satisfaction.

Outcome Measures
1. AMI Core Measure all-or-none bundle: Baseline, 95.2 percent; past 12 months, 99.7 percent
2. HF Core Measure all-or-none bundle: Baseline, 93.2 percent; past 12 months, 100 percent

Lessons Learned
1. Targeted and user-friendly electronic alerts can positively affect physician prescribing and documentation.
2. Front-line nurses are integral to the discharge process; their awareness of what change is taking place is crucial.

3. The ongoing personnel resources required to identify and tag patients for selected discharge medication screening needs to be acknowledged and assigned up front.

Other Considerations
The targeted medication alerts only function if the patient is “tagged.” The ongoing process to identify appropriate patients concurrently (and to not identify any false-positives) is the only substantial ongoing time commitment. The AMI patient identification is fairly streamlined, but must be done daily, or every 48 hours at the outside, to function at 100 percent accuracy. With weekends and holidays, this can be a challenge at times.

Testing and trouble-shooting after software upgrades and patches is critical. Since this software is in use 24/7, unanticipated glitches need to be identified and resolved quickly.

The model can be tailored for many other medication-related quality and evidence-based standards, including anticoagulation in atrial fibrillation; aspirin, statin, and P2Y12 inhibitor after PCI; and angiotensin-converting enzyme inhibitors, beta-blockers, aldosterone antagonists, and hydralazine/nitrate (as appropriate) for patients with systolic heart failure.

Suggestions for Other Hospitals/Health Systems
While a team is definitely needed for the overall project, having one communicator with the software vendor is extremely valuable. There is definitely a learning curve for the clinical pharmacist regarding how to communicate with IT staff and vendors.