IMPROVE Part 2: Evaluation of Medication Errors in the Perioperative Setting

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Background

- Expert opinion is used to guide decision-making in the perioperative setting, leading to variability in decisions to withhold or continue medications prescribed for chronic illnesses.[a]
- It is unclear which member(s) of the perioperative team are responsible for ensuring accurate reconciliation of chronically prescribed medications, determining which medications should be temporarily discontinued or continued, conveying these instructions to patients, confirming that medication changes were implemented correctly at time of surgery, and ensuring that medications intended to be resumed after surgery are restarted.
- The implications of inappropriate withholding of medications include adverse events such as withdrawal symptoms, disease progression, infection, or thrombosis.[a,b]
- Failure to resume a chronically prescribed medication after surgery has been shown to increase 30 day mortality as well as the likelihood that a necessary medication remains un-prescribed long after the perioperative period is over.[a,b]
- Collaboration with pharmacists in preadmission clinics has reduced postoperative medication discrepancies.[c]
- The prospective evaluation of pharmacist-physician collaboration for perioperative medication reconciliation at the Internal Medicine PeRiOperatiVE (IMPROVE) Clinic pilot study was completed in Fall 2014.

IMPROVE Part 1 Methods

- Design: Prospective, single-arm, pre/post study
- Participants: Adults undergoing non-vascular, non-cardiac surgery referred for outpatient internal medicine preoperative consultation from April 2013 through November 2014
- Intervention:
  - Pharmacist medication reconciliation prior to pre-operative MD visit
  - Correction of medication list discrepancies
  - Documentation within the electronic medical record (Epic) regarding recommendations for medications to be withheld or changed preoperatively and resumed postoperatively
  - Pharmacist medication reconciliation at a postoperative visit
- Measured variables:
  - Demographics
  - Medication discrepancies
  - Patient literacy using S-TOFHLA

IMPROVE Part 1 Results

- 100 patients were enrolled:

Demographics	N=100
Average age, years (range)	62 (35-83)
Gender:	
Male	55
Female	45
Race:	
Caucasian	83
African American	14
Asian	1
American Indian	1
Unknown	1
Comorbid Conditions:	
Hypertension	68
Diabetes	46
COPD	30
Hyperlipidemia	26
CAD	25
Medications:	
Average Rx medications (range)	9 (0-34)
Average OTC (range)	2 (0-14)

- 73 patients underwent surgery: General (n=3), GI/urology (n=53) OB/GYN (n=2), orthopedic (n=7), otolaryngology (n=8)
- Explicit recommendations regarding which medications to hold prior to surgery were found for 30 of 73 patients (41%).
- Discrepancies on the pre-operative medication list were associated with male gender (p=0.023), number of prescription medications (p=0.006), and number of OTC medications (p=0.000014).

- 33 patients returned for the postoperative pharmacist visit:
  - On average, there were 5.09 (+/- 3.71) medication discrepancies on the pre-operative medication list.
  - On average, there were 3.69 (+/- 2.72) medication discrepancies on the post-operative medication list (mean difference 1.39; 95% CI -0.2-3.04, p=0.09).
  - Of the 122 post-operative medication discrepancies, 36 (30%) had been corrected on the pre-operative list, yet persisted.
  - The average S-TOFHLA score was 29.03 out of 36 (range 9-36), indicating that most patients had adequate functional health literacy.

IMPROVE Part 1 Conclusions

- Medication discrepancies are prevalent despite efforts to reconcile the medication list preoperatively.
- There was no significant difference in the number of discrepancies on the pre-operative and post-operative medication list.
- The source of medication discrepancies is not understood.

IMPROVE Part 2 Objectives

1. Identify the sources of error in the medication list in the transitions of care for urology surgical patients.
2. Engage inpatient and outpatient providers to identify strategies to improve care transitions in the operative setting.
3. Using input from key stakeholders, a strategy will be implemented and measured to determine if errors in the medication list are improved.

IMPROVE Part 2 Methods

- Patients with a UF Health primary care provider, who will have planned urologic surgery, are eligible for enrollment.
- The outpatient pharmacist will complete medication reconciliation prior to the pre-operative MD consult visit.
- The inpatient pharmacist, on urology service, will be notified if the patient is cleared for surgery.
- The inpatient pharmacist will complete medication reconciliation on admission.
- Upon discharge, and within 24 hours, the outpatient pharmacist will call the patient to conduct post-operative medication reconciliation.
- Data regarding discrepancies will be collected at each incidence of medication reconciliation to determine the source(s) of error.

References

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b. Lee SM, Takemoto S and Wallace SW. Association between withholding angiotensin receptor blockers in the early postoperative period and 30 day mortality. Anesthesiology 2015;123: 288-306.
c. Kwan Y, Fernandes OA, Nagge JJ, et al. Pharmacist medication assessments in a surgical preadmission clinic. Arch Intern Med 2007;167: 1034-1040.
d. National Coordinating Council for Medication Error Reporting and Prevention: http://www.nccmerp.org/types-medication-errors

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