Evaluation of a Pharmacist-Led, High-Risk Medication Consultation Service for Geriatric Trauma Patients at a Level-1 Trauma Center

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Disclosure Statement

These individuals have the following to disclose concerning possible financial or personal relationships with commercial entities (or their competitors) that may be referenced in this presentation.

- Corey Bray: nothing to disclose
- Breanna Carter: nothing to disclose
- Lacie Bradford: nothing to disclose
- Emily Garrett: nothing to disclose
- Amanda Torbett: nothing to disclose
- Darren Hunt: nothing to disclose

Problem Statement

Evaluate pharmacist impact on potentially inappropriate medication (PIMs) use in geriatric trauma patients

Background

- Medication reconciliation is important for patient safety
- Challenges to medication reconciliation in geriatric trauma patients
  - Communication barriers
  - Polypharmacy (5 or more medications)
  - Physiologic changes
- Increased risk of adverse drug events
  - Beers Criteria
- Pharmacists play a vital role in medication reconciliation
  - Prevent adverse drug events
  - Targeted interventions (PIMs, psychoactives, beta-blockers)

Purpose

Determine if pharmacists make an impact on potentially inappropriate medications (PIMs) in geriatric trauma patients

- Admission
- Discharge
- 30-day follow up phone call

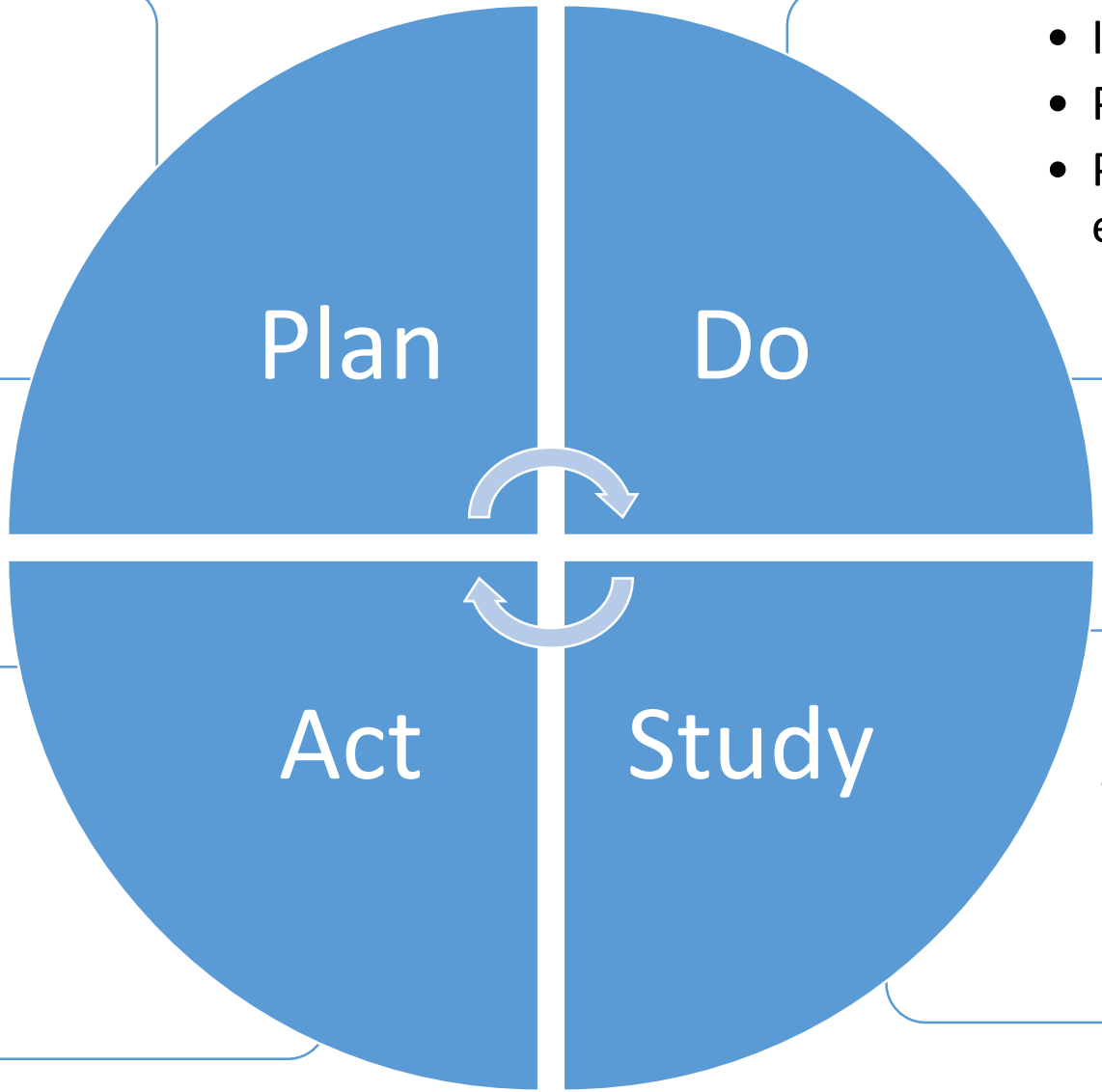
AIM Statement

Between September 2020 and February 2021, pharmacist-led high-risk medication consultation will improve:

- Rate of medication reconciliation completion
- PIMs from admission to discharge
- PIMs from discharge to 30-day follow up
- Readmission rate

PDSA Cycles

- Patient population
- Medications
- Build process
- How-to guide



- Implementation
- Provider education
- Pharmacist education

- Data analysis
- Further implementation
- Refinement

- All study objectives were completed

Objectives

Primary

- Compare the difference in PIMs from admission to discharge

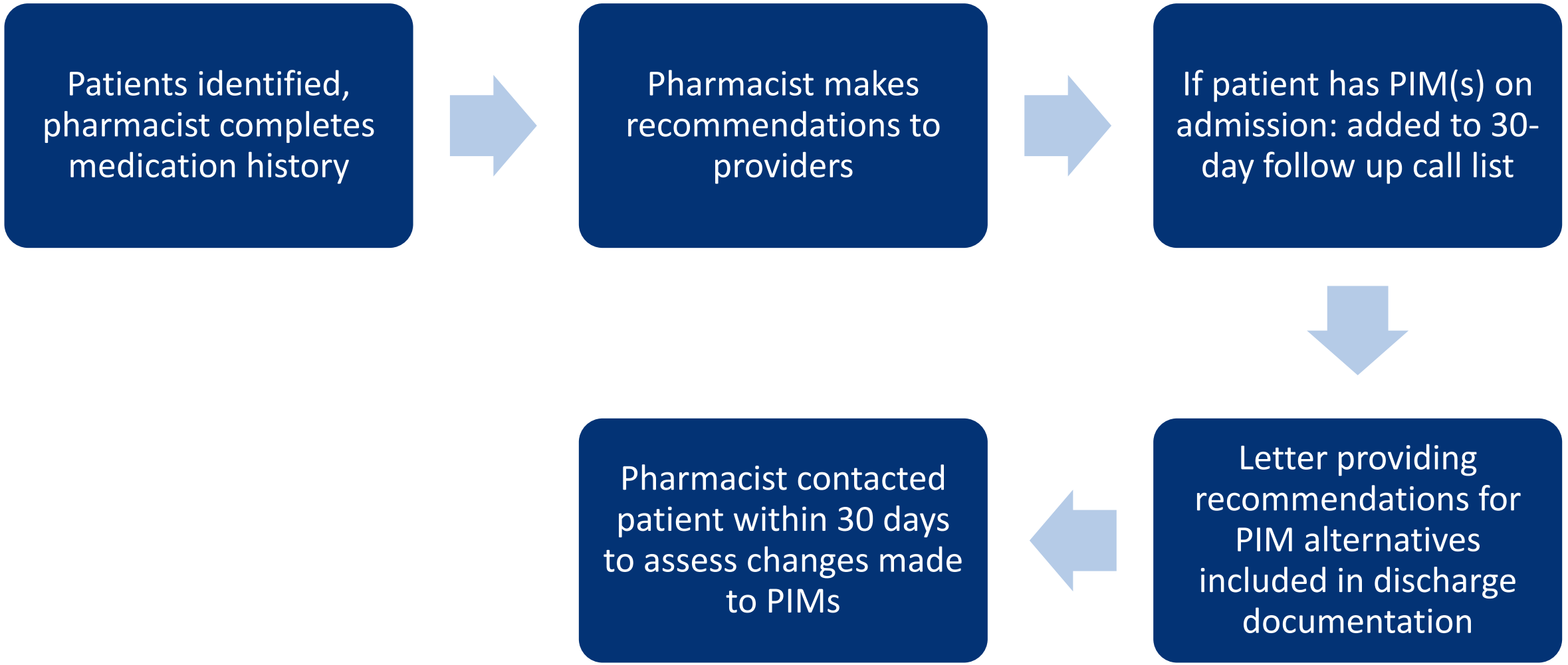
Secondary

- Acceptance of pharmacist recommendations during admission and follow-up
- Hospital and ICU length of stay
- 30-day readmission rate
- Time to medication reconciliation completion
- Number of medication reconciliations completed
- Number of admission and discharge medications
- Complications during admission

Methodology

- IRB-approved, single center, retrospective and prospective study
- Adult patients 65 years and older admitted to the trauma service
- Patients identified for retrospective review via trauma registry data
  - Pre-protocol group: September 1, 2019 → February 29, 2020
  - Post-protocol group: September 1, 2020 → February 29, 2021

Methodology



Statement of Desired Condition

Pharmacist-led high-risk medication consultation service will improve:

- Rate of medication reconciliation completion
- PIMs from admission to discharge
- PIMs from discharge to 30-day follow up
- Readmission rate

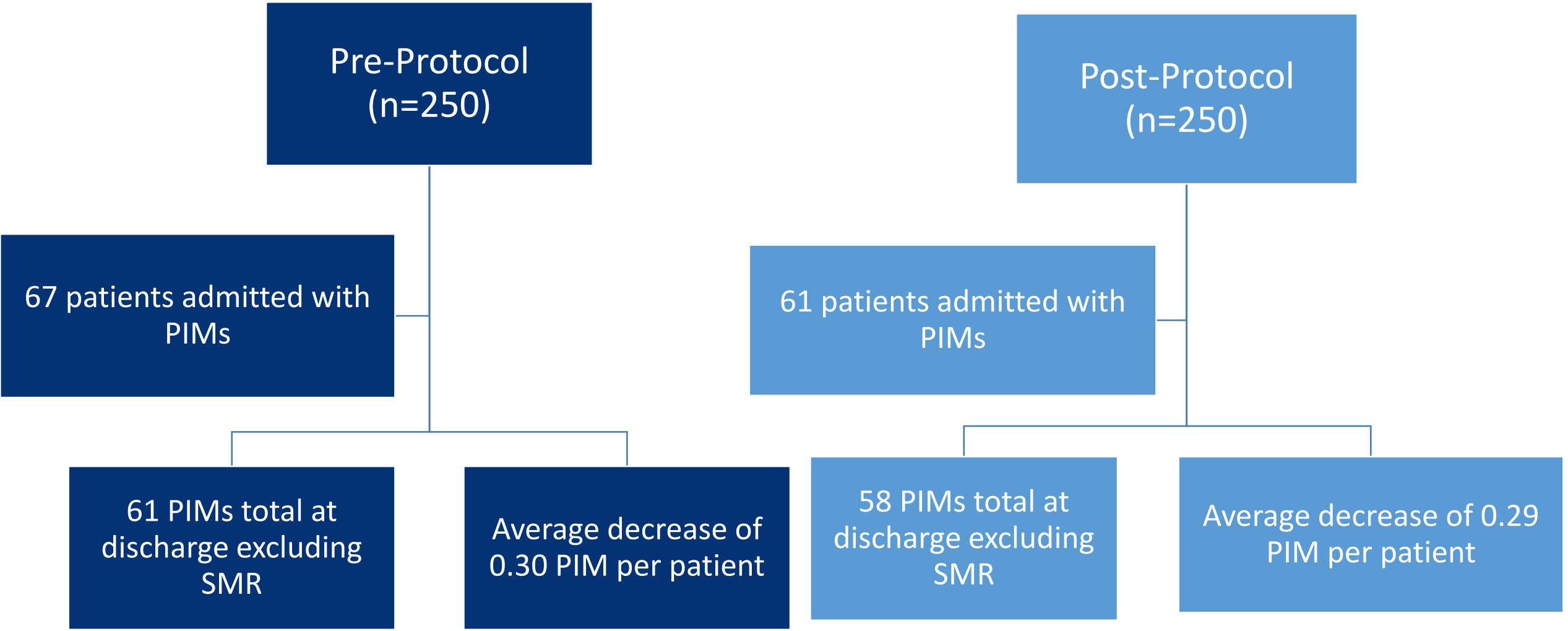
Potentially Inappropriate Medications

Class	Medications
Anticholinergics	diphenhydramine (chronic), hydroxyzine, meclizine, scopolamine, dicyclomine
Antiemetics	promethazine, prochlorperazine
Benzodiazepines/Z-drugs	alprazolam, lorazepam, diazepam zolpidem, zaleplon, eszopiclone
Tricyclic Antidepressants	amitriptyline, imipramine, doxepin
Skeletal Muscle Relaxants (SMR)	cyclobenzaprine, methocarbamol, carisoprodol

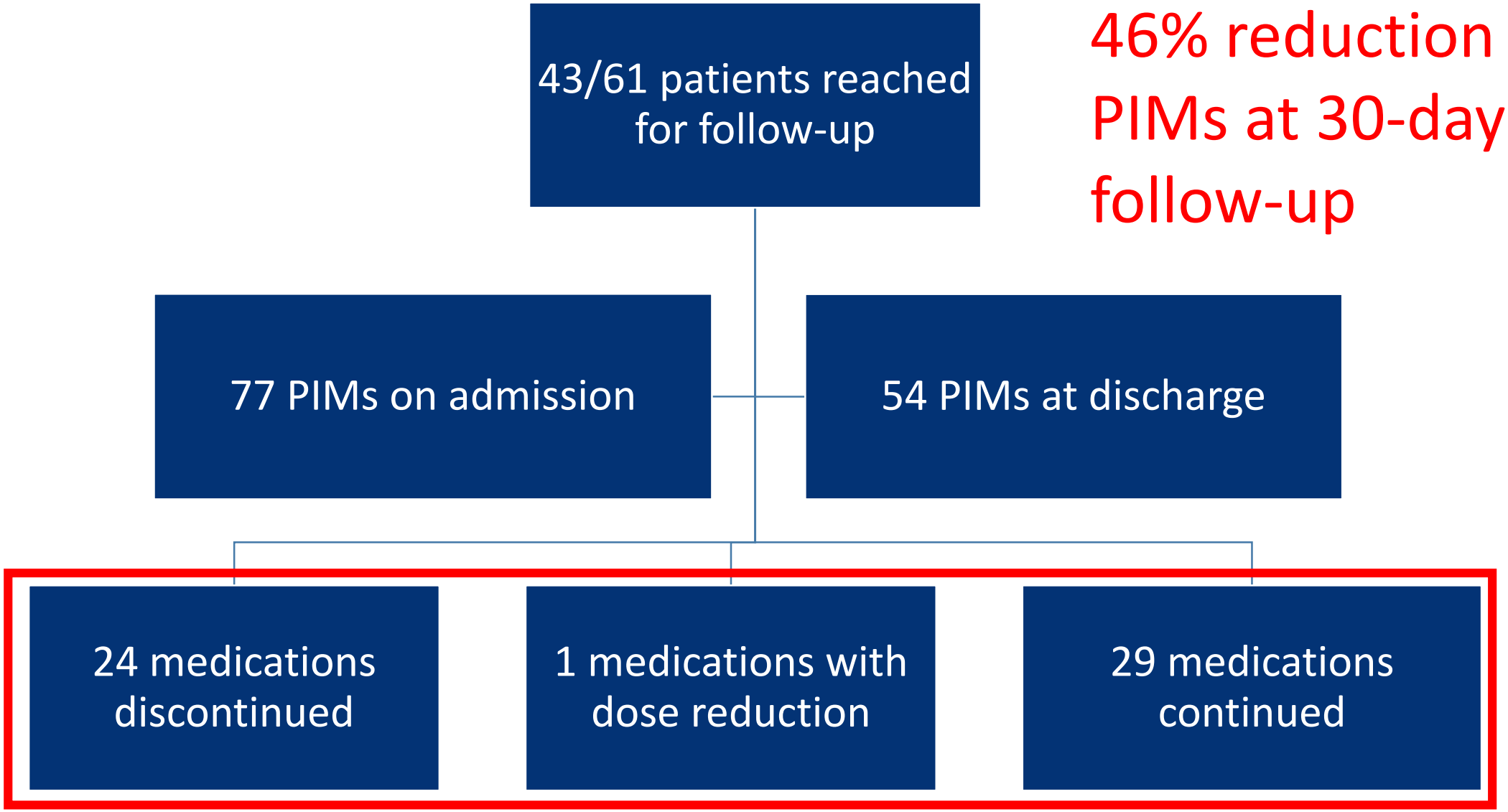
Demographics

	Pre-protocol (n=250)	Post-protocol (n=250)
Age (years, mean ± SD)	78 ± 7.2	77 ± 7.7
Sex (male, n, %)	118 (47.2)	134 (53.6)
Injury Severity Score on Admission (mean ± SD)	12.1 ± 7.9	12.1 ± 7.3
Admission GCS (mean ± SD)	14 ± 2.7	14 ± 2.6
Discharge GCS (mean ± SD)	14 ± 2.9	14 ± 2.9
Atrial Fibrillation Diagnosis Prior to Admission (n, %)	57 (22.8)	44 (17.6)
Anticoagulant Use Prior to Admission (n, %)	62 (24.8)	54 (21.6)
In-hospital Mortality (n, %)	13 (5.2)	14 (5.6)

Primary Outcome



Follow-Up Outcomes Post-Protocol



46% reduction in PIMs at 30-day follow-up

Secondary Outcomes

	Pre-protocol (n = 250)	Post-protocol (n = 250)
Hospital LOS (days, median, 25%-75% IQR)	6 (2, 8)	7 (3, 8)
ICU LOS (days, median, 25%-75% IQR)	4 (2, 5)	4 (2, 5)
30-Day Readmission Rate (n, %)	**28 (11.8)**	**19 (8.1)**
Total # Admission Medications (mean ± SD)	9.7 ± 6.2	7.9 ± 4.6
Total # Discharge Medications (mean ± SD)	11.2 ± 6.3	11.2 ± 5.6
Medication History Completion Rate (n, %)	227 (91)	250 (100)
Pharmacy Completion of Medication History (n, %)	167 (66.8)	250 (100)
Nursing Completion of Medication History (n, %)	55 (22)	0
Physician Completion of Medication History (n, %)	5 (2)	0
Time to Medication History Completion (hours, median, 25%-75% IQR)	**2.6 (1.3, 6.0)**	**17.2 (6.1, 36.3)**

Secondary Outcomes
Complications During Admission

	Pre-protocol (n=250)	Post-protocol (n=250)
ARDS (n, %)	2 (0.8)	1 (0.4)
Pneumonia (n, %)	13 (5.2)	9 (3.6)
Myocardial Infarction (n, %)	0 (0)	2 (0.8)
CVA/TIA (n, %)	5 (2)	1 (0.4)
Atrial Fibrillation During Admission (n, %)	34 (13.6)	37 (14.8)
Unplanned ICU Admission (n, %)	11 (4.4)	4 (1.6)
Unplanned Return to OR (n, %)	4 (1.6)	7 (2.8)
Unplanned Intubation (n, %)	6 (2.4)	3 (1.2)

Secondary Outcomes

	Post-Protocol (n=250)
Total Number of Pharmacist Recommendations	722
Total Number of Pharmacist Recommendations Accepted (n, %)	698 (96.7)
Home Medications Continued (n, %)	402 (55.7)
Home Medications Dose Adjusted (n, %)	35 (4.9)
Home Medications Held/Discontinued (n, %)	261 (36.2)

Conclusion

- Number of PIMs from admission to discharge was relatively unchanged
  - Readmission rate decreased by ~30%
- Number of PIMs at 30-day follow-up decreased by 46% with addition of a pharmacist and inclusion of letter to primary care provider
- Future directions
  - Broadening/refining medication criteria
  - Larger study
  - Roll out to other departments/patients

Acknowledgements

- Breanna Carter, PharmD, BCPS, BCCCP
- Lacie Bradford, PharmD, BCPS
- Emily Garrett, PharmD, BCPS
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- Darren Hunt, MD, FACS

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