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Transitional Care Pharmacists Bridge Hospital-to-Home Gaps for Geriatric Patients

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Learning Objectives

- Describe the impact of post-discharge pharmacist transitional care services on geriatric patients
- Discuss the methods employed to launch post-discharge pharmacist transitional care services
- Calculate the potential return on investment for this type of pharmacist transitional care program

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Background

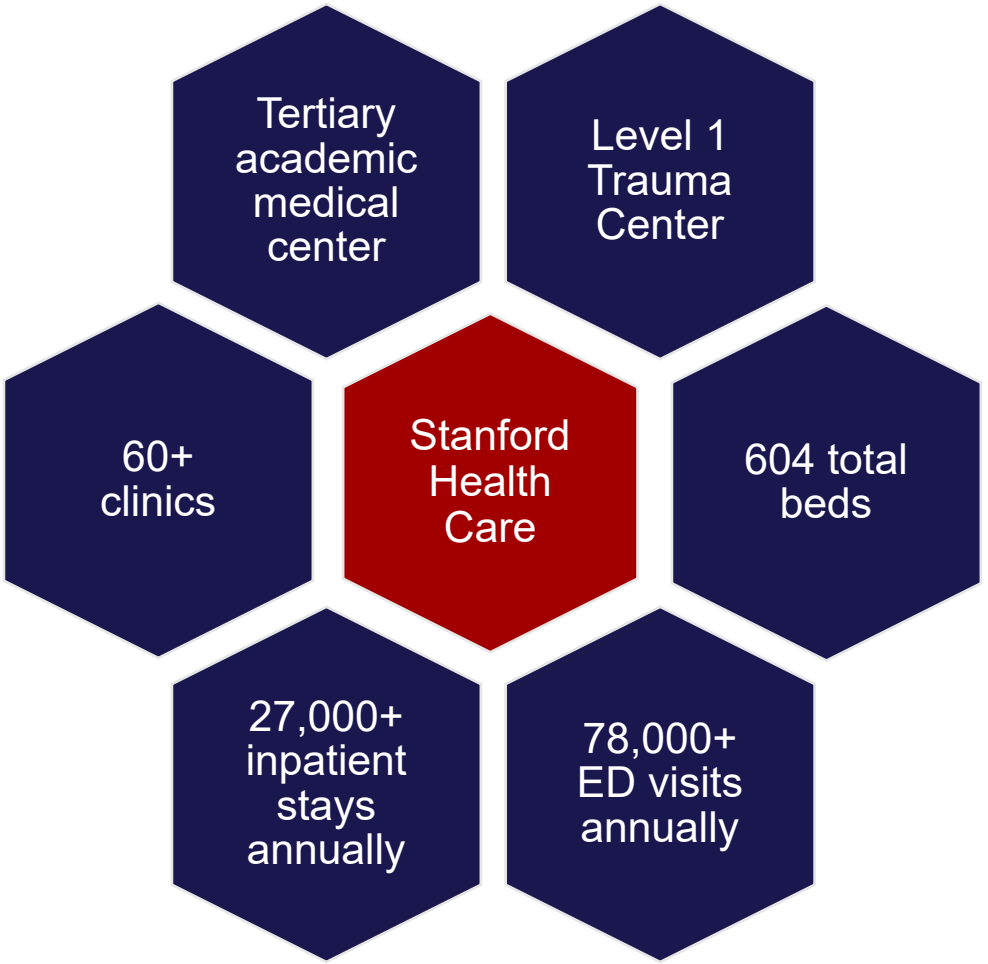
- Hospital readmissions are common and often preventable, with historically 20% of Medicare patients readmitted within 30 days of hospital discharge[1]

- Centers for Medicaid and Medicare Services (CMS) increases reimbursement when provider bills post discharge transitional care management (TCM) codes instead of traditional evaluation and management (E&M) codes[2]

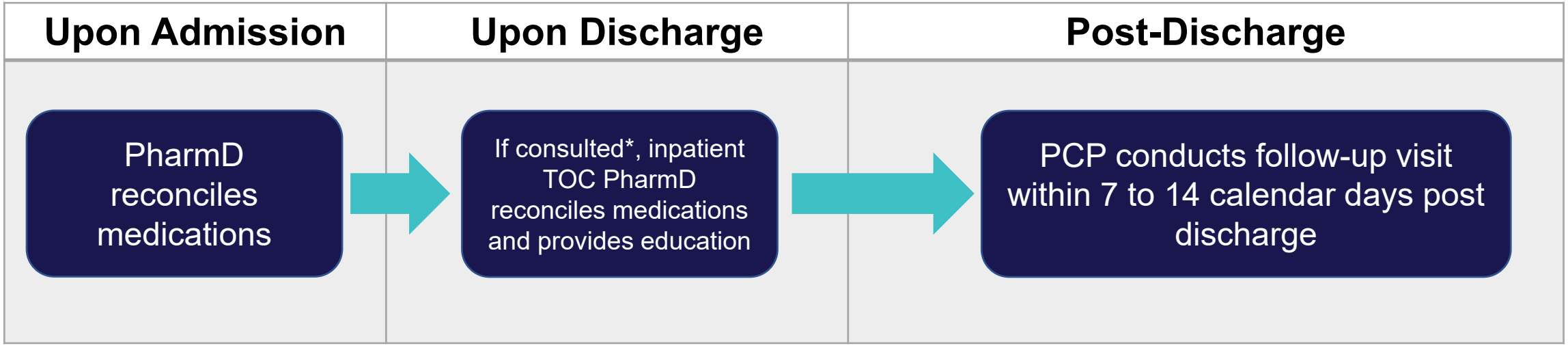
- Geriatric patients are particularly vulnerable to the consequences of ineffective transitions of care (TOC) due to multiple comorbidities, polypharmacy, and changes in pharmacokinetics and pharmacodynamics[3]

[1]Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med*. 2009;360(14):1418-1428.
[2]*Billing for Transitional Care Management Services*. *American Society of Health-System Pharmacists*. (June 2018).
[3]Halasyamani L, Kripalani S, Coleman E, et al. Transition of Care for Hospitalized Elderly Patients – Development of a Discharge Checklist for Hospitalists. *J Hosp Med*. 2006;6:354-360.

About the Institution



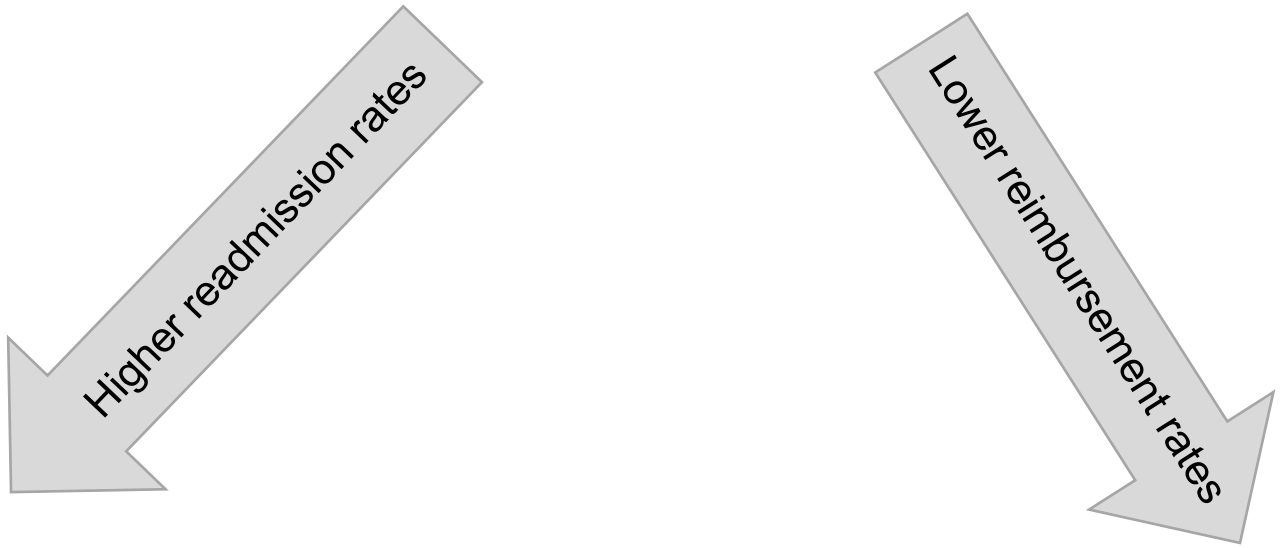
Transitions of Care: Current State



*Target populations: General Medicine, Cardiology/Heart Failure, Hematology/Oncology, or Neurology

Problem Statement

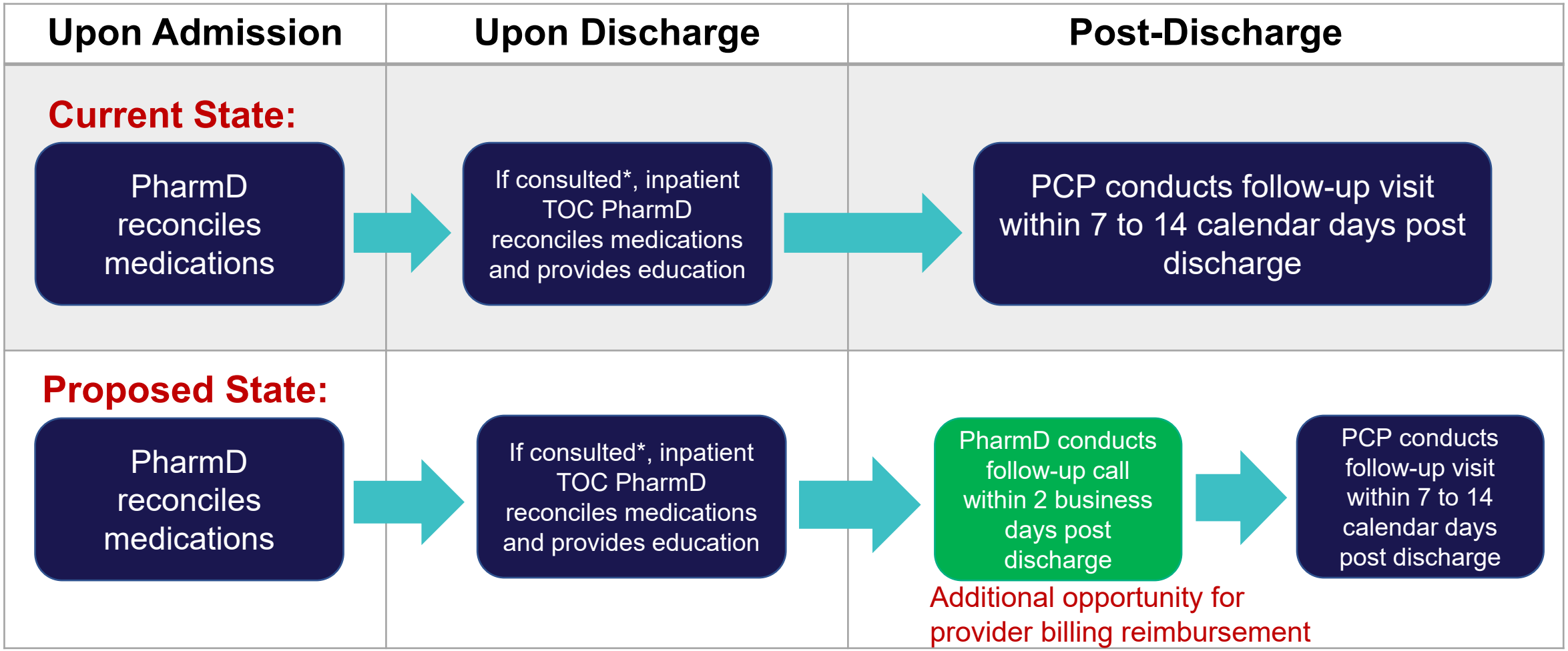
Stanford Health Care currently does not have an ambulatory care pharmacist for post discharge TOC despite rising hospital readmission rates and costs.



Higher hospital costs

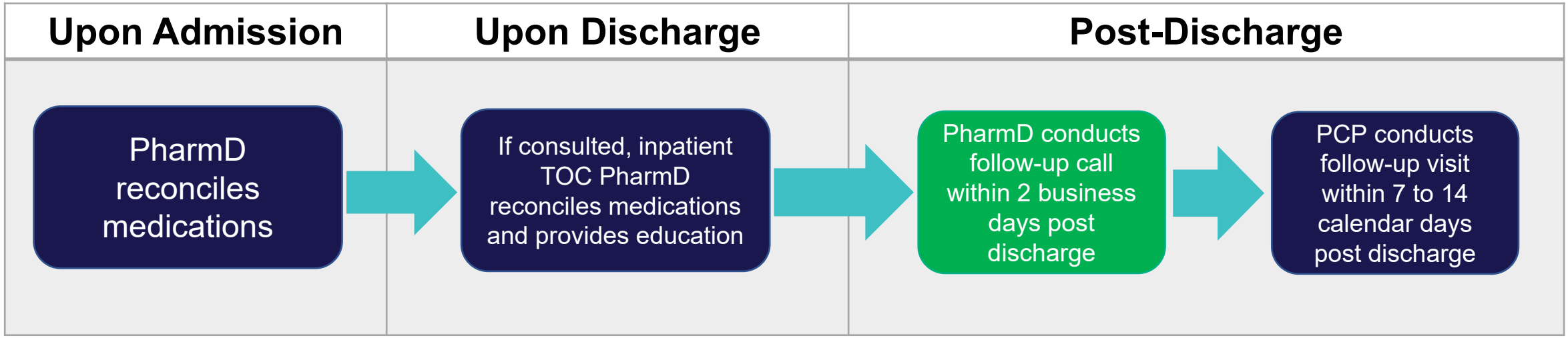
Lower revenue

Transitions of Care: Proposed State



*Target populations: General Medicine, Cardiology/Heart Failure, Hematology/Oncology, or Neurology

Additional Reimbursements with Post Discharge PharmD through PCP Billing



- Transitional Care Management (TCM) refers to the coordination of a patient's transition from hospital to a community setting
- Additional reimbursement if seen by post discharge PharmD prior to PCP visit:[4-5]
  - CPT TCM code 99496 – PCP within 7 calendar days post discharge = $90 per patient*
  - CPT TCM code 99495 – PCP within 14 calendar days post discharge = $70 per patient*

*Average reimbursements

[4]HCPro. (2020, January 6). *CMS increases payment and removes billing restrictions for TCM services*. Revenue Cycle Advisor. Retrieved July 24, 2022.

[5]Smith, M. R. (2018, June). *Billing for Transitional Care Management Services Publication Date: June 2018*. Retrieved July 24, 2022.

Study Design

Intervention Period (October 2020 to January 2021)

- Senior Care Clinic PCP notifies PharmD of hospital discharge
- PharmD conducts 3-5 day post discharge patient call
- PharmD documents interventions and routes to PCP prior to 7-14 day PCP visit

Post Intervention (January 2021 to April 2021)

PharmD chart reviews pilot and historical group patients

Potential Types of Pharmacist Interventions

- ✓ Medication optimization
  - ✓ Medication addition
  - ✓ Medication discontinuation
  - ✓ Dosage or frequency adjustment
  - ✓ Therapeutic switch
- ✓ Medication access
- ✓ Symptom triage
- ✓ Identify necessary labs
- ✓ Identify due vaccinations
- ✓ Coordinate PCP follow-up appointment
- ✓ Lifestyle counseling
- ✓ Identify necessary referrals

Documentation Template

Post-Discharge Transitions of Care Pharmacy Telephone Follow-Up

Date: @TD@
Clinic: Senior Care
PCP: @PCP@

@NAME@ is a @AGE@ old @SEX@ who was contacted for post hospital discharge pharmacy follow-up.

Admission diagnosis category: {ADMDIAGNOSISCATEGORY:44122}
Primary admission diagnosis: ***

Medication Assessment:

- Post-discharge medication reconciliation
  - New Medications:
    1.
  - Discontinued Medications:
    1.
  - Continued Medications:
    1.
- Medication Access:
  - Patient has access to all medications? Yes/No
- Medication Adherence:
  - Barriers to adherence: {BARRIERS:44123}
- Medication side effects:
  - Yes/No
- Drug interactions identified:
  - ***/None
- Appropriate medication indications and doses?
  - Yes/No

Symptom Assessment:

- Symptoms resolved: {YES NO: 27925}

Laboratory Assessment:

- Labs needed: ***

Lifestyle Assessment:
Diet: consists of: ***
Based off the above information, {LIFESTYLEMODIFICATIONS:44124} were discussed with the patient today. Lifestyle modifications discussed include: ***
Alcohol consumption? {YES/NO:19371}
Smoker? {YES/NO:19371}

Vaccinations:

- @HMDUE@

Medication list was updated, and patient was counseled on his/her medications. The following intervenable areas were identified by the pharmacist:
{PHARMDINTERVENTIONS:44126}

Inclusion and Exclusion Patient Criteria

Established with a primary care provider (PCP) in Stanford Senior Care Clinic and discharged from SHC to home between October 2020 and January 2021

- Discharged to a skilled nursing facility (SNF) or hospice
- Unable to be reached by telephone
- Admitted for scheduled chemotherapy or elective procedures

Patient Population

Intervention Group
(Discharged October 2020 to January 2021)

44 patients referred

12 patients excluded:
SNF (n=4)
Could not be contacted (n=5)
Elective procedure (n=3)

32 patients included

Historical Group
(Discharged October 2019 to January 2020)

70 patients discharged

33 patients excluded:
SNF (n=25)
Elective procedure (n=6)
Deceased during admission (n=2)

37 patients eligible

Patient Characteristics

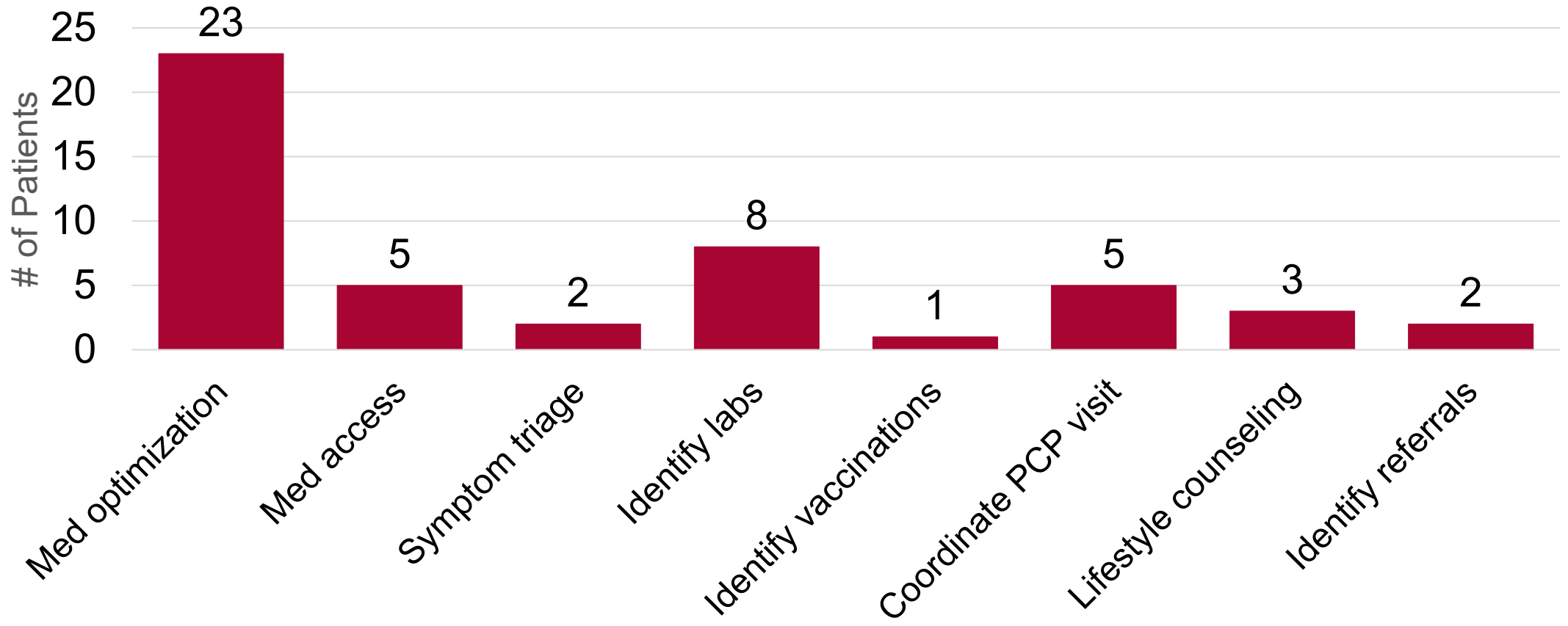
	Pilot Group (n=32)	Historical Group (n=37)	P
Sex Male Female	 8 patients (25.0%) 24 patients (75.0%)	 15 patients (40.5%) 22 patients (59.5%)	 0.07
Average age	88 years (76-103)	87 years (74-102)	0.39
Average length of stay	3.69 days (1-11)	3.38 days (1-15)	0.65
Inpatient TOC pharmacy consult	7 patients (21.9%)	13 patients (35.1%)	0.12
Hospital admission in past six months	12 patients (37.5%)	9 patients (24.3%)	0.07
Average # of scheduled meds	10 meds (1-29)	11 meds (0-23)	0.90
Average # of high-risk discharge meds*	1 med (0-3)	2 meds (0-6)	0.11
Average # of new discharge meds	2 meds (0-7)	1 med (0-4)	0.05

*High-risk meds: antimicrobials, electrolytes, insulin, narcotics, chemotherapies, anticoagulants

Pharmacist Intervention Calls

Patients (n=32)	
Average length of call	13.93 minutes (5-30)
Average number of days patient was successfully contacted post discharge	3.44 days (1-5)
Number of attempts to successfully reach patient One attempt Two attempts Unable to reach after two attempts	 25 patients (78.13%) 3 patients (9.38%) 4 patients (12.50%)
Number of calls successfully completed	28 calls (87.50%)
Adherent to discharge medications	26 patients (81.25%)

Pharmacist Interventions



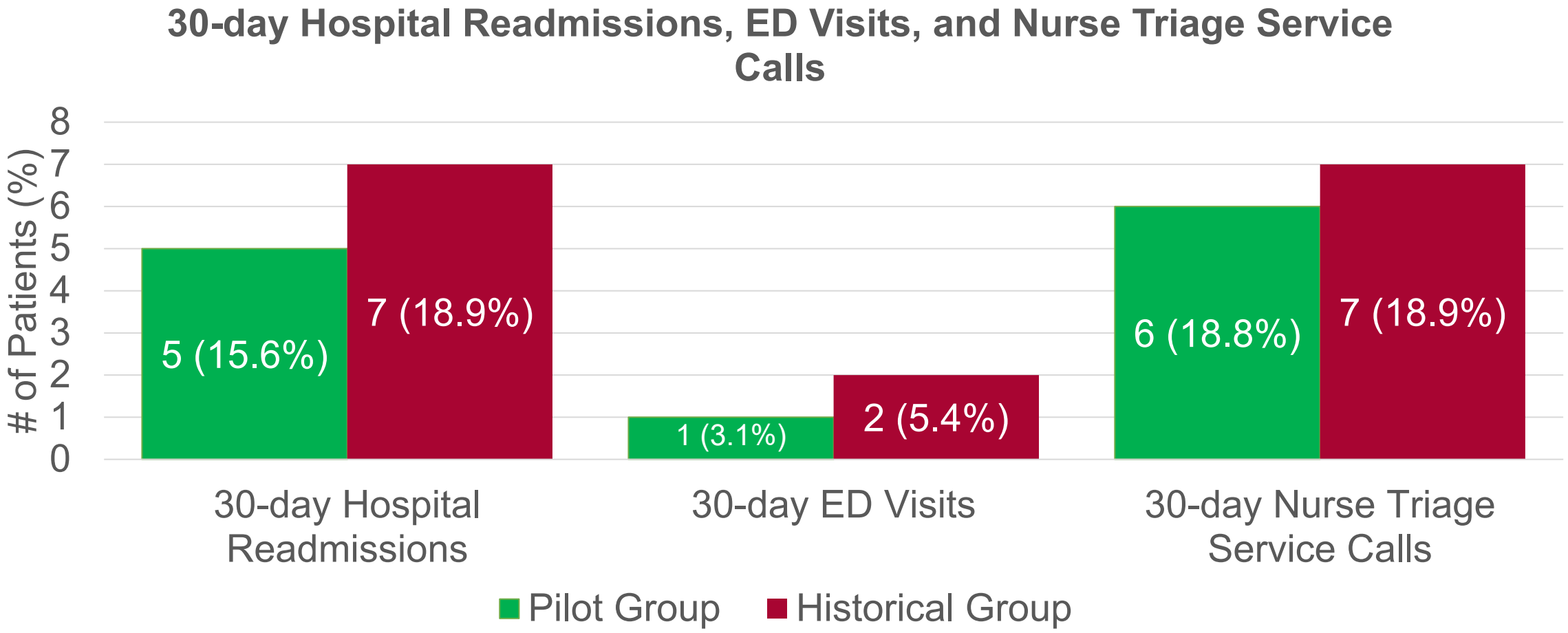
Pharmacist identified 65 interventions, of which 49 (75.4%) were accepted and implemented by the PCP.

Study Outcomes

- **Primary outcome**: all-cause 30-day readmission rates

- **Secondary outcomes**:
  - All-cause 30-day emergency department (ED) visits
  - 30-day Nurse Triage Service Calls
  - Return-on-investment (ROI)
  - PCP satisfaction survey scores

Readmissions, ED Visits, and Nurse Triage Service Calls



Calculating Return-on-Investment

$$\text{ROI} = \frac{(\textcircled{1}\downarrow \text{readmissions} + \textcircled{2}\downarrow \text{ED visits} + \textcircled{3}\downarrow \text{ADEs} + \textcircled{4}\uparrow \text{provider reimbursement}) - \text{PharmD expense}^*}{\text{PharmD expense}^*}$$

*Based on national average pharmacist salary[9]

Average Return-on-Investment Assumptions

Cost and Reimbursement Values	
Cost per SHC hospital readmission	$14,000 per day
Cost per SHC ED visit (Level 5)	$13,000
Cost per adverse drug event (ADE)[6]	$3,500
Additional reimbursement per patient if seen by post discharge PharmD prior to PCP visit[7-8]	$90 (PCP visit within 7 calendar days) $70 (PCP visit within 14 calendar days)
Expense for 1.0 FTE PharmD (based on national average pharmacist salary)[9]	$138,000

1.0 FTE could touch approximately 32 patients/week (based on working 40 hours/week)

[6]Classen DC, Pestotnik SL, Evans RS, et al. Adverse drug events in hospitalized patients. Excess length of stay, extra costs, and attributable mortality. *JAMA*. 1997;277(4):301-6.
[7]HCPro. (2020, January 6). *CMS increases payment and removes billing restrictions for TCM services*. Revenue Cycle Advisor.
[8]Smith, M. R. (2018, June). *Billing for Transitional Care Management Services Publication Date: June 2018*.
[9]Bureau of Labor Statistics. Occupational Employment and Wages, May 2021. Available at: https://www.bls.gov/oes/current/oes291051.htm#st.

Calculating Return-on-Investment

$$ROI = \frac{(\underset{(1)}{\downarrow \text{readmissions}} + \underset{(2)}{\downarrow \text{ED visits}} + \downarrow \text{ADEs} + \uparrow \text{provider reimbursement}) - \text{PharmD expense}^*}{\text{PharmD expense}^*}$$

- From our study, pharmacist involvement lowered readmission rates by 3.3% and ED visits by 2.3%

- Extrapolating to 1.0 FTE pharmacist:

(1) 52.64 hospital readmissions ($736,960) could be prevented in one year

(2) 36.48 ED visits ($474,240) could be prevented in one year

Cost Avoidance for Adverse Drug Events

PCP-accepted interventions between October 2020 and January 2021

Each intervention classified based on clinical severity

Cost avoidance value for each intervention calculated based on literature estimates

Total cost avoidance to hospital estimated

Cornish PL, Knowles SR, Marchesano R, et al. Unintended medication discrepancies at the time of hospital admission. *Arch Intern Med*. 2005;165(4):424-9.

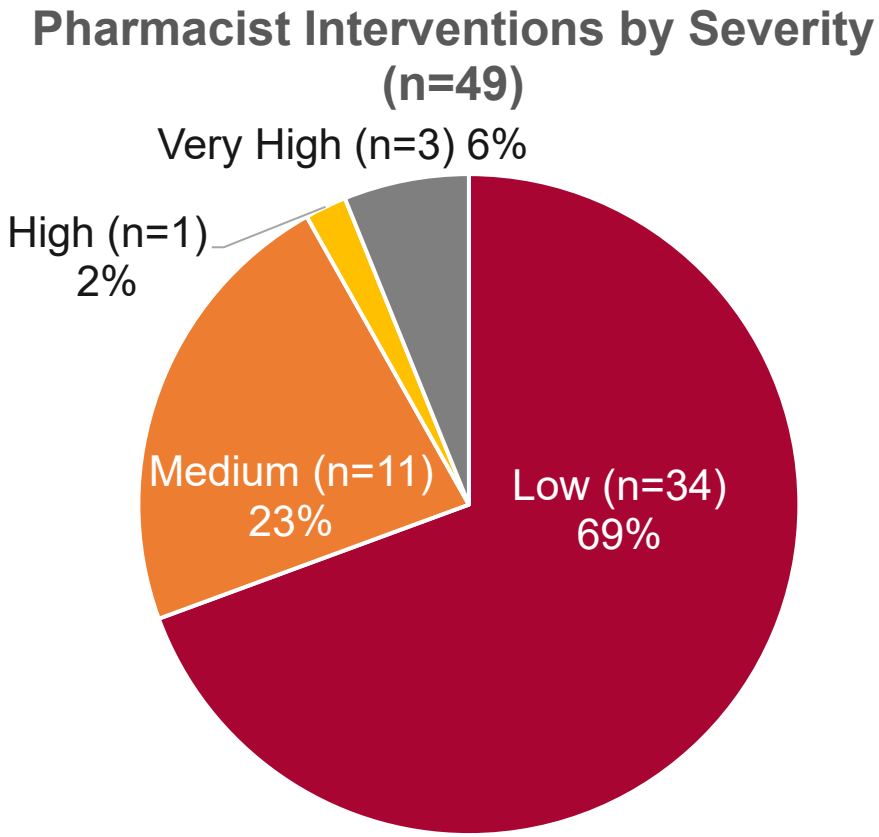
Cost Avoidance for Adverse Drug Events

Probability of preventing an ADE based on assigned severity from published literature:

Rating	Definition	Example	Probability of Preventing ADE
Low	Unlikely to cause patient discomfort or clinical deterioration	Incorrect iron supplement dose ordered	1%
Medium	Potential to cause moderate discomfort or clinical deterioration	Simvastatin switched to atorvastatin due to drug interactions with amiodarone	10%
High	Potential to result in severe discomfort or clinical deterioration	Incorrect venetoclax dose ordered	40%
Very High	Likely to result in readmission or adverse drug event	Patient admitted for diabetic ketoacidosis, not discharged with insulin	60%

Cornish PL, Knowles SR, Marchesano R, et al. Unintended medication discrepancies at the time of hospital admission. *Arch Intern Med*. 2005;165(4):424-9.

Cost Avoidance for Adverse Drug Events



- From our study, an estimated 3.64 ADEs were prevented

- Extrapolating to 1.0 FTE pharmacist:

3 180.90 ADEs ($633,150) could be prevented in one year

Additional Revenue from Provider Billing

$$ROI = \frac{(\downarrow \text{readmissions} + \downarrow \text{ED visits} + \downarrow \text{ADEs} + \uparrow \text{provider reimbursement}) - \text{PharmD expense}^{*}}{\text{PharmD expense}^{*}}$$

(4)

- On average, 50% of patients are seen within 7 days and 50% of patients are seen within 14 days post discharge by PCP

- Extrapolating to 1.0 FTE pharmacist:

  (4) $128,000 of additional provider billing reimbursement in one year

*Based on national average pharmacist salary[9]

Putting it all together…

$$\text{ROI} = \frac{(\downarrow \text{readmissions} + \downarrow \text{ED visits} + \downarrow \text{ADEs} + \uparrow \text{provider reimbursement}) - \text{PharmD expense*}}{\text{PharmD expense*}}$$

$$\text{ROI} = \frac{(\$736{,}960 + \$474{,}240 + \$633{,}150 + \$128{,}000) - \$138{,}000}{\$138{,}000} = 13.29$$

*Based on national average pharmacist salary[9]

Results: Provider Satisfaction Surveys

- All four PCPs who participated in the study completed the satisfaction survey.

Item	Statement	Rating
1	“The process to refer patients to pharmacist services was simple.”	Strongly Agree
2	“Pharmacist identified useful interventions to improve medication use and safety.”	
3	“Pharmacist notes helped me prepare for my follow-up appointments with patients.”	
4	“This post-discharge pharmacist service is essential for our patient population.”	
5	“I recommend post-discharge pharmacist calls as a long-term service for our patient population.”	

Discussion

- Integrating a pharmacist within an outpatient clinic to conduct post discharge interventions may help reduce hospital readmissions, ED visits, ADEs and their related costs

- Outpatient TOC pharmacist model is cost-effective in identifying and resolving medication-related issues, ultimately improving and bridging care transitions between inpatient and outpatient settings

- Data from this type of initiative may be used to support the expansion of post discharge TOC pharmacy services

Lessons Learned

- Small patient sample size, likely due to the four-month intervention period, may have contributed to statistically insignificant results
  - Consider extending intervention period for this type of pilot service

- Lack of automated referrals from the PCPs may have contributed to small patient sample size
  - Consider collaborating with the information technology department to setup an automated referral system to capture eligible patients

- Lack of assessing mutual value of such a service between patients and providers
  - Consider distributing patient satisfaction surveys

Key Takeaways

- Identify a specific clinic or patient population who may benefit most from post discharge pharmacist interventions

- Leverage technology to establish a smooth operational workflow that would maximize outreach to patients

- Be timely in reaching out to patients and providers as necessary to optimize patient care

Questions?

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