



Evaluation of a Pharmacist-Led Bedside Medication Delivery Service for Cardiology Patients at Hospital Discharge

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UC Davis Medical Center

- Multispecialty, university-affiliated medical center
 - 619 bed tertiary care hospital located in Sacramento, CA
 - Serves approximately six million residents in the region
 - Leapfrog group designated “Top Hospital”
- Pharmacist-led transitions of care (TOC) services
 - New service initiated in July 2013
 - Two clinical pharmacists and one pharmacy technician



Our Story

- University Hospital Consortium (UHC) Webinar and literature review of TOC services
- Patient Satisfaction
- Initiation of Delivery System Reform Incentive Program (DSRIP) in 2010
- Creation of the BEAM service



Need for Transitions of Care

- Healthcare transitions are plagued with pitfalls
 - Up to half of hospitalized patients have ≥ 1 medication discrepancies present at the time of discharge
- Pharmacist intervention can improve care coordination, resulting in:
 - Reductions in the number of medication discrepancies
 - Lower rates of preventable medication-related events
 - Improved medication adherence
 - Increased patient satisfaction

Patient Satisfaction is a Key Component

- Huge move in the emphasis from the process of care to the patient experience
- Some reimbursements now hinge on patient satisfaction despite adequately provided care
- Satisfaction scores going up as a nation, and we are graded on a curve!
- UHC webinar showed TOC services associated with marked improvement in HCAHPS scores



Financial Considerations

- Improving patient care is the top priority
- Avoiding penalties is a close second
- Improving patient satisfaction is tied for second
- Additionally, for specific patients, it can be financially sustainable for us to fill discharge prescriptions
- All of the above = \$\$\$\$ and improved quality

Upcoming Factors

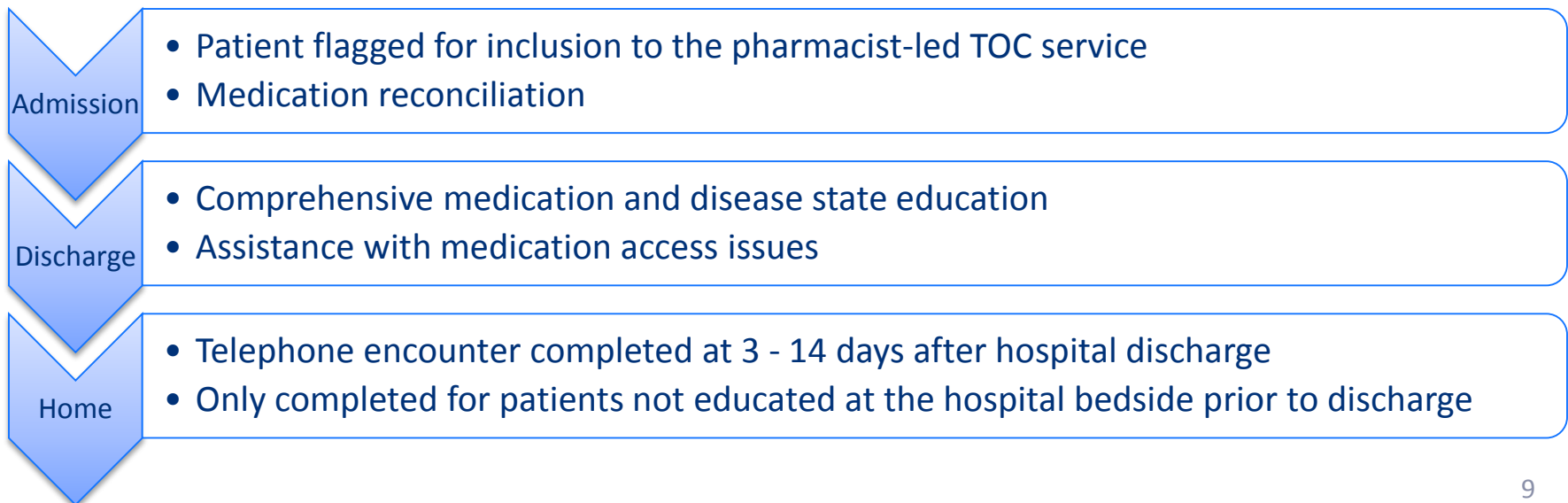
- HRRP – Hospital Readmission Reduction Program
- Changes in P4P/VBP in the clinics
- Medication reconciliation and TOC services are on the Joint Commission and DPH radars
- DSRIP – Delivery System Reform Incentive Pool

UCDMC DSRIP Initiative

- Identified ten interventions for process improvement within specific areas of the healthcare system
- Project 4 – Conduct Medication Management
 - Expanded the role of pharmacists in various care settings
 - Targeted three main high-risk disease states
 - Instituted the following medication safety strategies:
 - Optimize patient’s medications prior to discharge
 - Reconcile medications at the time of discharge
 - Provide patient education

High-risk for Readmissions Team

- One of six inpatient TOC services at the UCDCMC
- Targets patients admitted with a principal diagnosis of:
 - Acute myocardial infarction (AMI)
 - COPD exacerbation
 - Pneumonia



Bedside Education and Access to Medications (BEAM)

- Designed to capture patients already receiving reformed discharge services from our pharmacist-led TOC team
- Conducted as a three-month pilot project
 - Targeted cardiology patients admitted for acute MI (AMI)
- All interventions were conducted in-person at the bedside



Project Objectives

- Primary Objective
 - Assess medication initiation rates for anti-platelet agents, cardio-protective antihypertensive medications, and statins
- Secondary Objectives
 - Determine 30-day post-discharge healthcare utilization
 - Evaluate the degree of patient satisfaction associated with BEAM services
 - Describe the institutional cost benefit of the BEAM service

Methodology

- Single-center, prospective, intervention study
- Three-month intervention period
 - January 1, 2014 to March 31, 2014
- Pre-intervention group
 - Patients who received standard TOC inpatient services from the High-risk for Readmissions team between October 1, 2013 to November 31, 2013
 - TOC services were conducted in-person or by telephone within 14 days of hospital discharge

Inclusion Criteria

- Age 18 years and older
- Patients admitted to the UCDCMC cardiology service

Exclusion Criteria

- No clinical signs and symptoms consistent with a diagnosis of AMI, documented electrocardiographic evidence of AMI, or enzyme evidence of MI or ischemia
- Physician documentation excluding acute coronary syndrome or an acute plaque rupture
- Transfer to an SNF, rehabilitation facility, or outside hospital
- Passed away during the hospitalization
- Patient decision to leave against medical advice

Exclusion Criteria – BEAM only

- Pharmacy limitations not allowing BEAM services
- Patient discharged during BEAM non-operational hours
- Declined pharmacist-led BEAM services

Study Definition

- Medication initiation
 - Receipt of a medication prescribed at hospital discharge
 - Determined from pharmacy prescription fill data
 - Day one = the day of discharge from the hospital

Project Population

409 patients admitted to the cardiology service between 1/1/2014 to 3/31/2014

386 Patients Excluded:

- Patients without evidence of AMI (N=200)
- Documentation excluding ACS or acute plaque rupture (N= 113)
- Transfer to an SNF, rehabilitation facility, or outside hospital (N=10)
- Passed away during the hospitalization (N=2)
- Patient decision to leave against medical advice (N= 6)
- Pharmacy limitations not allowing BEAM services (N=9)
- Patient discharged during BEAM non-operational hours (N=33)
- Declined pharmacist-led BEAM services (N=13)

23 patients met study criteria

Patient Demographics

	BEAM Group (N = 23)	DSRIP Group (N = 46)	P value
Patient Demographics			
Age (years), mean \pm SD	61.7 \pm 10.21	62.4 \pm 13.0	0.83
Sex (% male)	73.9 %	67%	0.361
BMI (kg/m), mean \pm SD	28.1 \pm 5.5	28.9 \pm 5.6	0.575
Race (%)			
Caucasian	17 %	35 %	0.006
African American	13 %	13 %	1.0
Hispanic	17 %	11 %	0.308
Asian	9 %	2 %	0.063
Not Specified	43 %	39 %	0.66
Past Medical History			
Diabetes mellitus	39 %	37 %	0.88
Hypertension	78 %	76 %	0.867
Dyslipidemia	48 %	56.5 %	0.288
Chronic kidney disease	17 %	6.5 %	0.037
Active tobacco use	22 %	30 %	0.259

High-risk Demographics

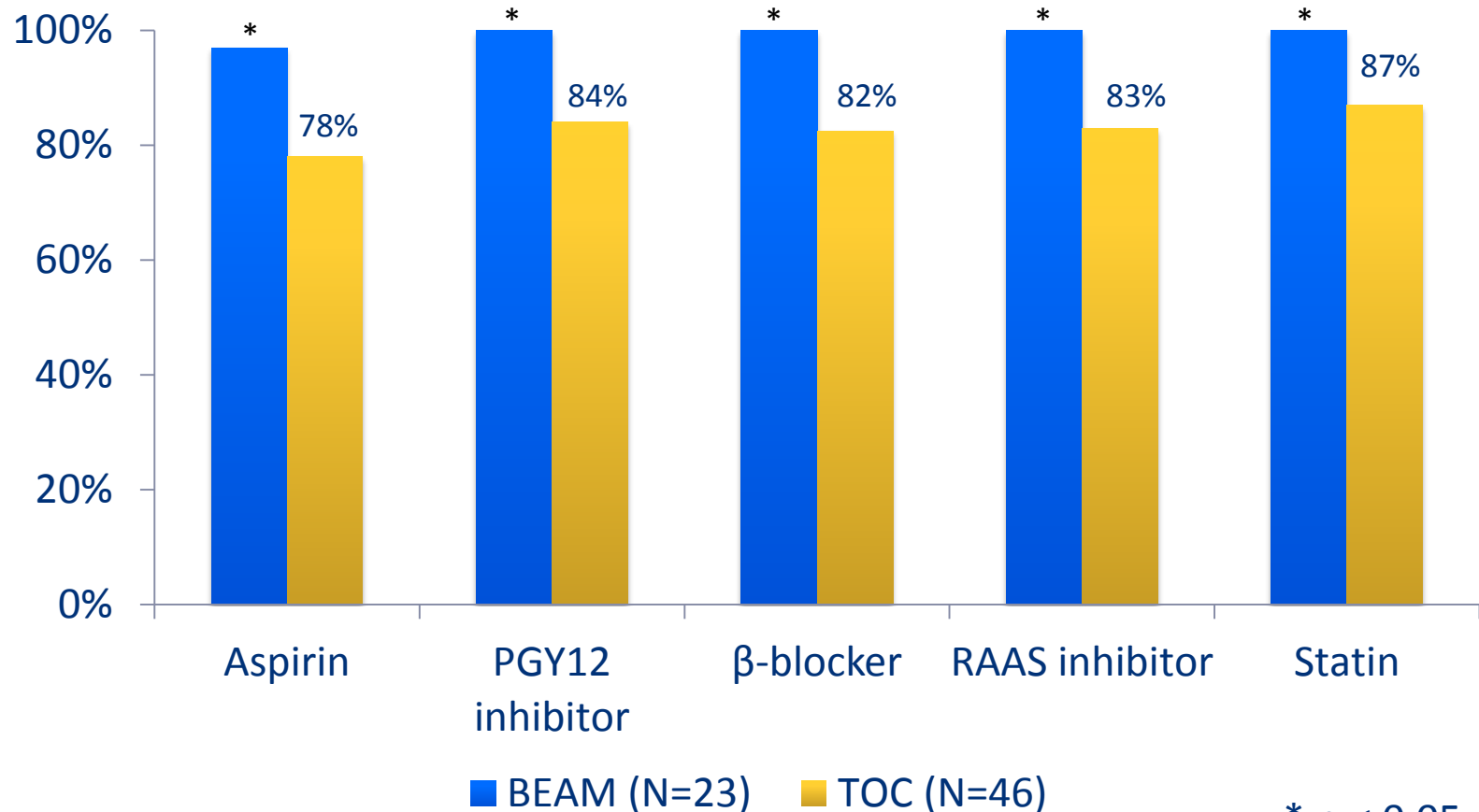
	BEAM Group (N = 23)	DSRIP Group (N = 46)	P value
Seen by an PCP prior to hospital admission (%)	78 %	70 %	0.259
Insurance Demographics (%)			0.160
Medicare	17 %	26 %	0.007
Medi-cal	13 %	2 %	0.06
Dual medicare and medi-cal	22 %	35 %	0.867
Private	22 %	24 %	0.239
County	13 %	7 %	0.107
Federal (VA, Tricare)	4 %	11 %	---
Workmen's compensation	4 %	---	---
Incomplete or lack of coverage	4 %	11%	0.107
One or more hospitalizations in past year (%)	22 %	9 %	0.019
One of more ED visits in past year (%)	13 %	13 %	1.0

Characteristics of Hospital Admission

	BEAM Group (N = 23)	DSRIP Group (N = 46)	P value
Length of hospital stay (days), mean \pm SD	3.2 \pm 2.3	4.7 \pm 4.4	0.131
Disease classification at discharge, No. (%)			
STEMI	4 (17)	17 (37)	0.002
NSTEMI	18 (78)	28 (61)	0.014
Unstable Angina	---	---	---
CAD	1 (4)	---	---
ACS	---	1 (4)	---
Procedural Interventions, No. (%)			
Cardiac catheterization with stent placement	16 (70)	31 (67)	0.761
Cardiac catheterization without stent placement	3 (13)	6 (13)	1.0
Coronary artery bypass graft (CABG)	---	2 (4)	---
Aspiration thrombectomy	---	1 (2)	---
Medical Management	4 (17)	4 (9)	0.141
Robotic 1-vessel CABG	---	2 (4.3)	---

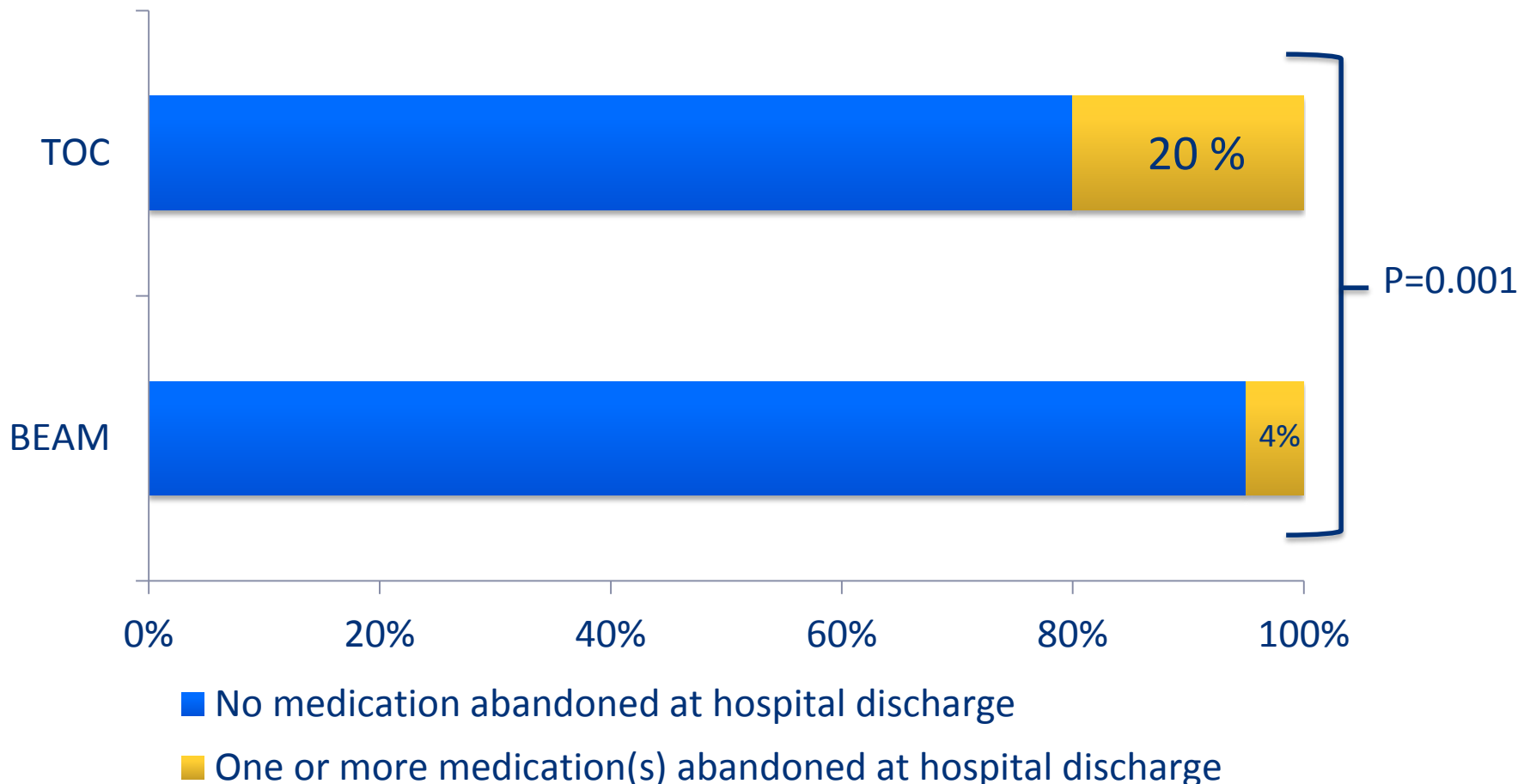
Primary Objective: Medication Initiation Rates

Medication Initiation Rate on Day 1 of Hospital Discharge



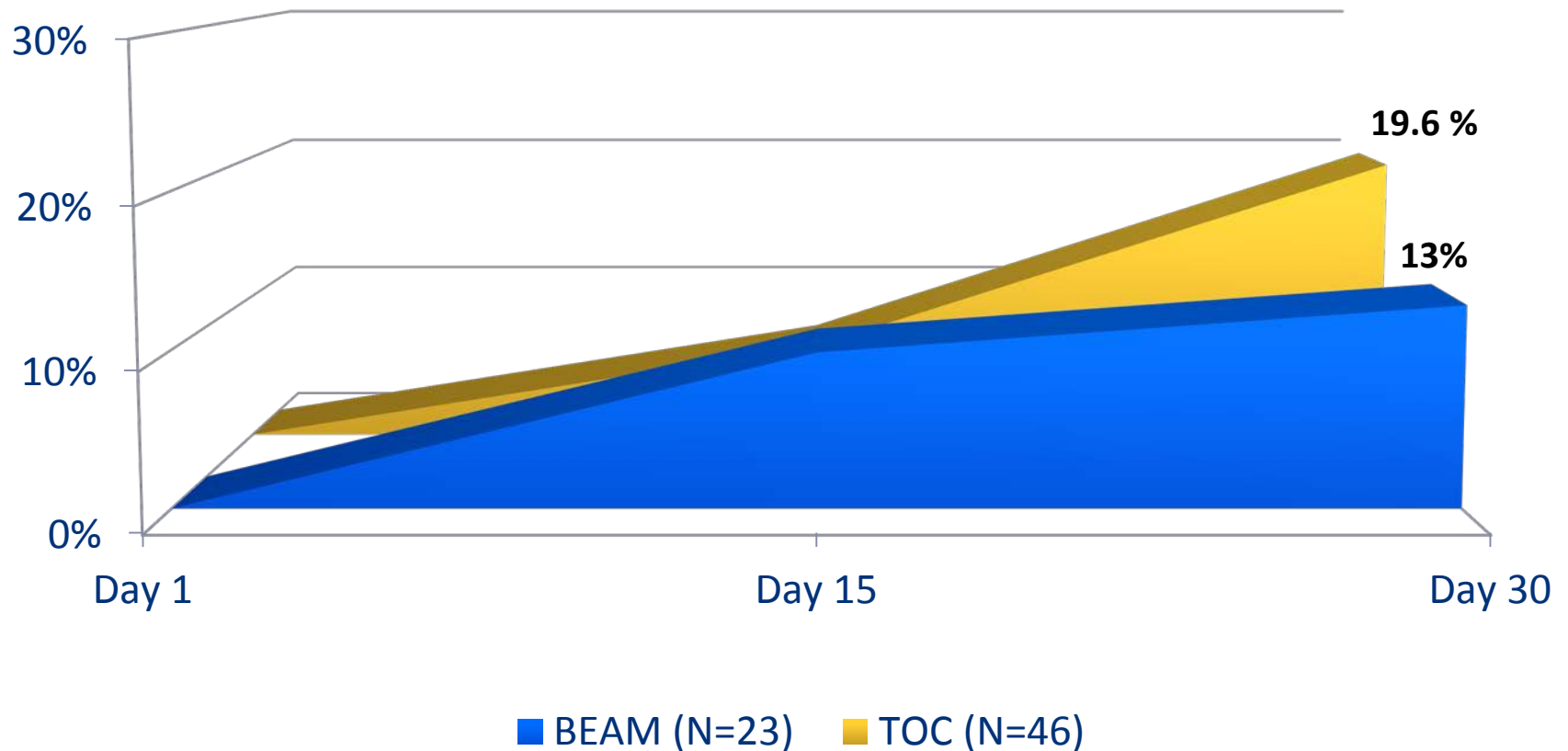
Primary Objective: Medication Initiation Rates

Medication Abandonment Rate on Day 1 of Hospital Discharge



Secondary Objective: 30-day post-discharge Healthcare Utilization

Rate of unplanned 30-day Emergency (ED) or Hospital Readmission



Secondary Objective: Patient Satisfaction associated with BEAM

- Will be collected from HCAHPS hospital survey data
- Encompassed five main questions
 1. During this hospital stay, staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left.
 2. When I left the hospital, I had a good understanding of the things I was responsible for in managing my health.
 3. When I left the hospital, I clearly understood the purpose for taking each of my medications.
 4. Using any number from 0 to 10, what number would you use to rate this hospital during your stay?
 5. Would you recommend this hospital to your friends and family?
- **Data pending** return of mailed surveyed results

Secondary Objective: Projected Institutional Cost Benefit of BEAM

- Internal retail pharmacy
 - Approximately 35% of discharge prescriptions are filled at UC Davis outpatient pharmacy
- Reduction in future hospital length of stay (LOS)
 - Average hospital LOS for AMI = 4.5 days
 - Hospital-adjusted expenses per inpatient day = \$2706
- Projected reduction in 30-day readmission rates of 6.6%

Potential projected cost savings of roughly \$800 for each cardiology patient who received BEAM services

Sustainability of BEAM

- High potential for sustainability of the service
- Revenue generated from UCDCMC outpatient prescriptions
 - May help offset associated costs of program maintenance
- Delivering medications to the bedside gives pharmacists the opportunity to provide patient-centered education
 - Improve patient health literacy and clinical outcomes
 - Increase patient satisfaction and possibly HCAHPS scores

Barriers to conducting BEAM Services

Healthcare Considerations

- Coordination of discharge responsibilities
- Effective communication
- Restrictions on available pharmacy services
- Delaying patient discharge

Patient Considerations

- Patient loyalty to their usual “home” pharmacy
- Lack of funds for medication copay charges at discharge
- Delaying patient discharge

Summary

- BEAM significantly increased initiation rates for all medications prescribed for secondary prevention of CVD
- Reduction in 30-day ED or hospital readmission was seen when BEAM services were utilized by our TOC team
- Future reductions in hospital length of stay appeared to have the greatest projected institutional cost savings
 - HCAHPS patient satisfaction survey data is pending

Future Directions

- Transitioning BEAM to a consult service
- Expansion of BEAM services to other high-risk patients, specifically COPD exacerbation and pneumonia
 - Potentially expanding hospital wide depending on resources and physician demand for the discharge service
- Awarded the 2014 Cardinal E3 grant
 - Support for educational supplies and translational services



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