

Instituting a Clinical Pharmacy Case Management Approach to Improve Clinical Outcomes in Cirrhosis Patients after Hospital Discharge

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The authors disclose no financial or personal relationships with commercial entities.



BACKGROUND

- 15-25% of older hospitalized patients are readmitted within 30 days¹
- In the US, the prevalence of cirrhosis is approximately 0.27% (~633,323 adults)²
- Cirrhosis complications represent one of the highest rates of hospital admissions
 - > 150,000 hospitalizations/year³
 - Costs ~\$4 billion dollars/year³
 - > 30,000 deaths per year⁴

Previous studies of cirrhosis patients at the University of Michigan Health System (UMHS)^{5,6}

- Retrospective study of cirrhosis patients (n=402) discharged from UMHS between 7/1/06 and 7/1/09⁵
- 69% had at least one non-elective readmission within 1 month
- 22% of those readmissions were possibly preventable
- # of medications on discharge was a strong predictor of readmissions

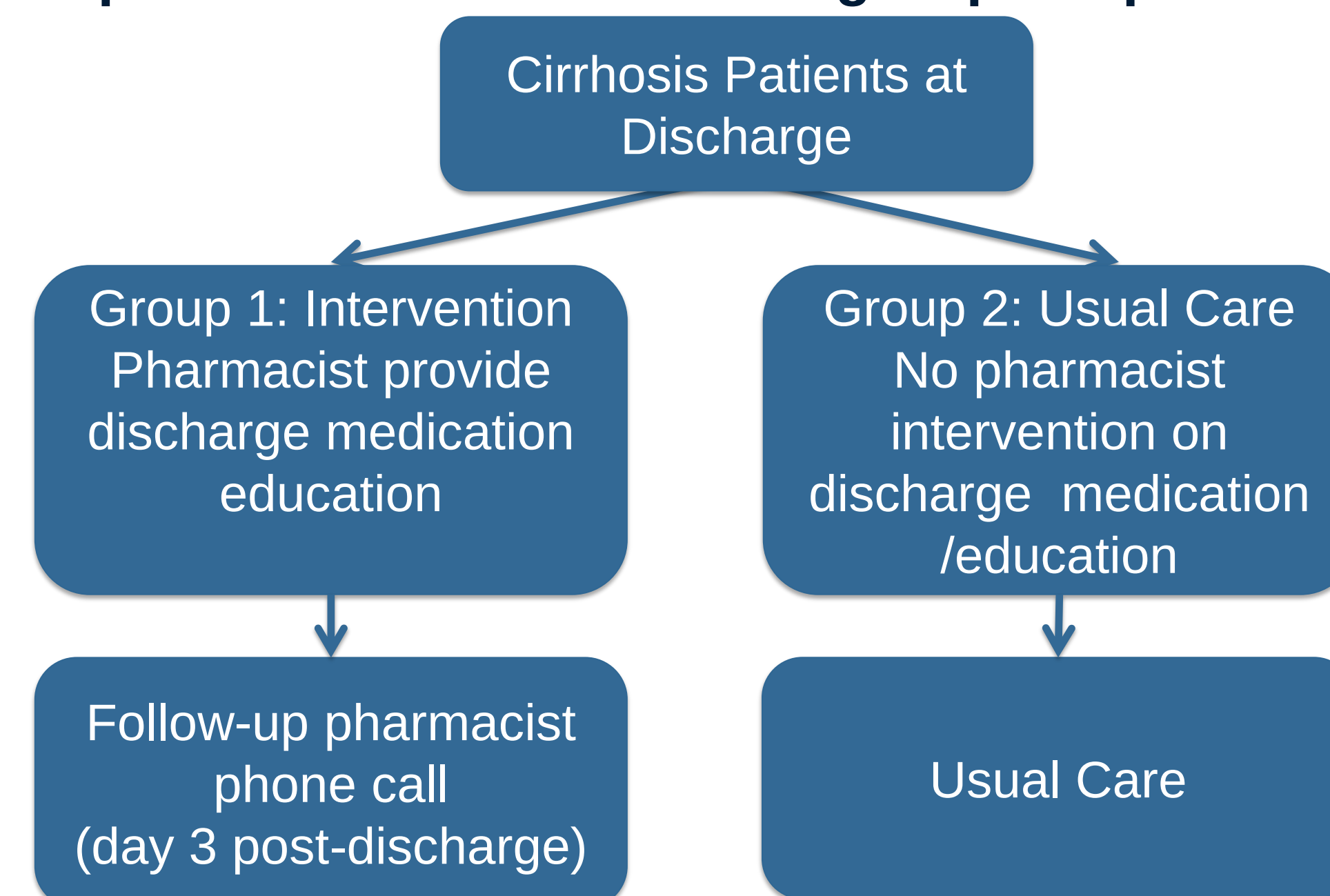
- Survey of 150 patients (covering diet, medication, and health maintenance activities), showed 53% of questions were answered correctly, improving to 67% after educational intervention⁶

OBJECTIVES

- Specific Aim 1:**
 - To determine the impact of the pharmacy transitions of care practice model on the utilization of health care resources in cirrhosis patients compared to control
- Specific Aim 2:**
 - To describe medication-related interventions conducted by transitions of care pharmacist following patients' discharge
- Specific Aim 3:**
 - To describe medication-related issues identified by the Medication Access and Adherence Tool (MAAT)⁸

METHODS

- This study evaluated the effectiveness of a quality improvement pilot implemented on Medicine – GI/Hepatology Service from 9/28/15 to 3/1/2016
 - Transitions of care model: attending hepatologist, medical residents, +/- GI/Hepatology fellow, +/- medical students, discharge planner, and clinical pharmacist
- Inclusion Criteria:**
 - Cirrhosis patients who are being discharged to home from GI/Liver service after an admission for cirrhosis complications
- Exclusion Criteria:**
 - Post-liver transplant
 - Patients discharged to outside facilities
- Comparative evaluation of two groups of patients**



- Day of Discharge Activities:**
 - Provide discharge medication counseling/handout
 - Administer number connection test to assess hepatic encephalopathy
- Post-Discharge Activities:**
 - Follow up phone call within 3 business days after hospital discharge
 - Administer MAAT survey which assesses the following domains:
 - Medication access, knowledge, side effects and taking behaviors
- Medication-related interventions included:**
 - Therapeutic drug monitoring; resolved missing medication by patient; resolved missing medication due to prescribing error; addressed wrong dose or wrong medication taken by patient; provided counseling or addressed adherence; addressed adverse drug event (ADE)/drug interaction; addressed worsening condition with provider(s)

PRELIMINARY RESULTS

- Pharmacists contacted 28 patients within 72 hours of their hospital discharge (82.3% of the total number of patients attempted to be reached). 41.1% of those contacted were caregivers.

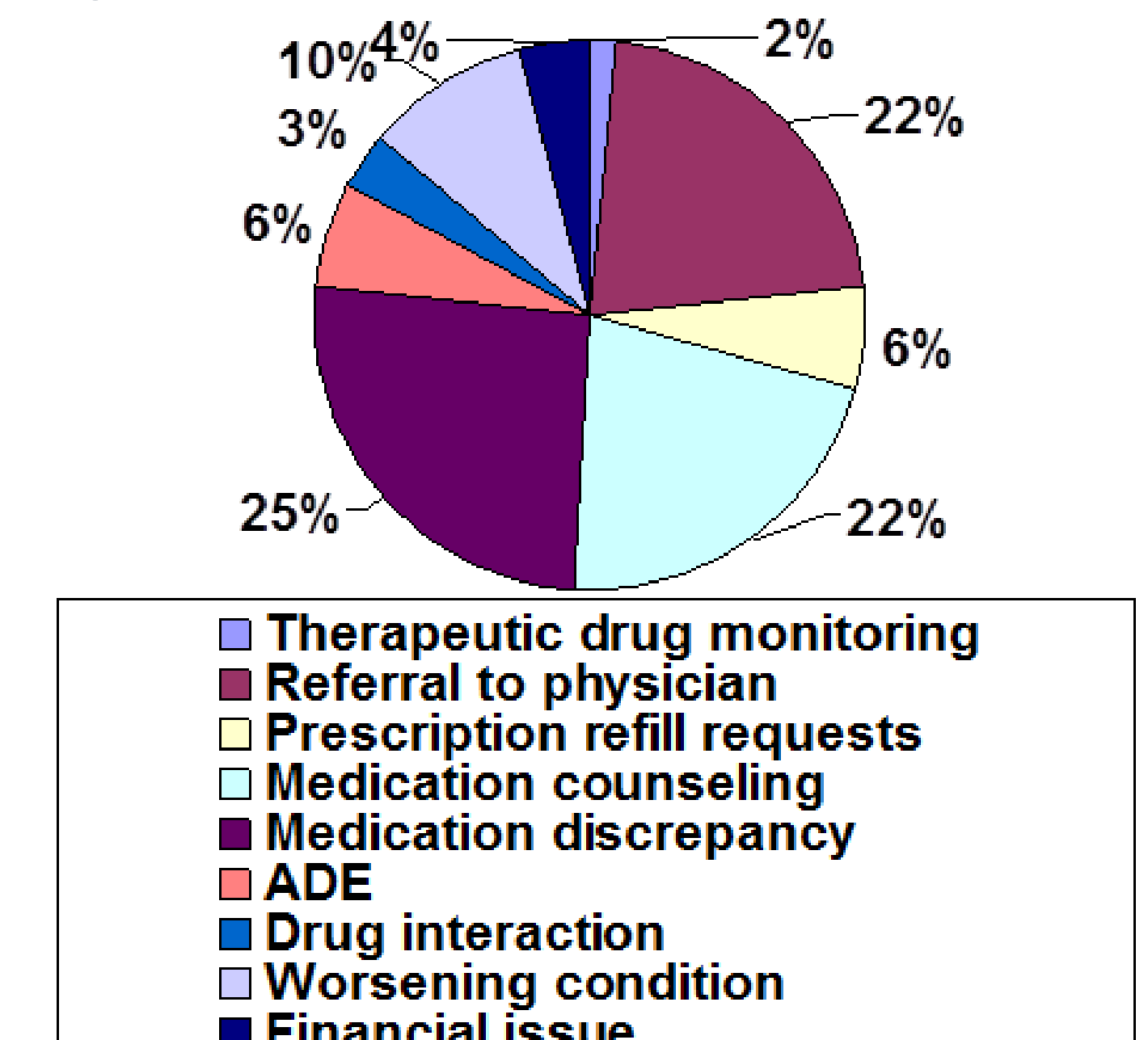
Patient Characteristics

Description	Control (n=31)	Intervention (n=34)	P value
Age (years)			
Mean	54.3 ± 11.3	53.3 ± 11.7	0.73
Range	25-70	19-70	
Sex			
Female	13 (41.9%)	10 (29.4%)	0.29
Male	18 (58.1%)	24 (70.6%)	
MELD, mean +/- SD	18.5 ± 6.0	16.3 ± 5.5	0.17
Type of Liver Disease			0.29
Alcoholic Liver Disease	7 (22.6%)	12 (35.3%)	---
NASH	8 (25.8%)	7 (20.6%)	---
HCV	4 (12.9%)	5 (14.7%)	---
Other	15 (48.3%)	10 (29.4%)	---
Type of Liver Complication			
Ascites	26 (83.9%)	26 (76.5%)	0.54
Varices	24 (77.4%)	24 (70.6%)	0.53
Hepatorenal Syndrome	4 (12.9%)	2 (5.9%)	0.41
Spontaneous bacterial peritonitis	9 (29%)	7 (20.6%)	0.43
Hepatic Encephalopathy	22 (71%)	25 (73.5%)	0.82
Hepatocellular Carcinoma	6 (19.4%)	5 (14.7%)	0.74
Portal Vein Thrombosis	5 (16.1%)	6 (17.6%)	1
PSE Stage			
None	---	5 (14.7%)	
0-1	---	9 (26.5%)	
1-2	---	10 (29.4%)	
2-3	---	1 (2.9%)	
3	---	2 (5.9%)	
3-4	---	2 (5.9%)	
Mean +/- SD (Range) Number of Medications at Discharge	11.1 ± 5.2 (1-24)	10.8 ± 4.2 (2-23)	0.80

Pharmacist Interventions

At Hospital Discharge	
Time of pharmacist-patient interaction at discharge (min)	
Education: Mean	23.9 ± 11.9
Total Encounter: Mean	52.6 ± 25
Number of patients with medication-related interventions	28 (82.3%)
Mean number of interventions per patient	1.6 ± 1.3
During 3 Day Post-Discharge Follow Up	
Time of pharmacist-patient interaction during follow up (min)	
Education: Mean	26.9 ± 17.2
Total Encounter: Mean	51.5 ± 34.6
Number of patients with medication-related interventions	25 (73.5%)
Mean number of interventions per patient	2.65 ± 2.1

Medication-Related Interventions Categorized by Type



Outcomes

Description	Control (n=31)	Intervention (n=34)	P value
Length of Stay (days)			
Mean mean +/- SD	4.6 ± 3.8	5.4 ± 5.1	0.458
Range	1-16	2-26	
ED visits within 72 hours	2 (6.4%)	0	0.224
Readmissions within 30 days	19 (61.3%)	17 (50%)	0.36
# of Readmissions within 14 days	13 (41.9%)	11 (32.4%)	0.424
Mortality	1 (3.2%)	1 (2.9%)	1

CONCLUSIONS

- Pharmacists made 1.6 medication-related interventions per patient at discharge and 2.65 interventions after discharge
- Most common types of medication-related interventions were medication discrepancies, referral to physician, medication counseling and management of/referral for worsening condition
- Pharmacists spent on average 25 minutes with each patient at and after discharge
- There was no difference in readmission rates and mortality between groups; however, there were fewer in readmissions in the intervention group
- Pharmacists can positively impact patients' care during transition from hospital to home by resolving important medication-related issues that occur at and after discharge

