

Higher acute care hospital utilization among medical inpatients discharged with a substance use disorder diagnosis

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BACKGROUND

- Substance use is associated with high rates of utilization
- Substance disorders, which are often treatable, may undermine discharge planning and lead to recurrent utilization
- Re-utilization is expensive and potentially preventable
- Previous studies ignored or excluded substance use disorders
- In general medical inpatients, the contribution of substance use to recurrent acute care utilization has not been studied

OBJECTIVE

To determine if a substance use disorder diagnosis (SU Dx) at discharge is associated with additional emergency department visits and rehospitalizations (acute care hospital utilization)

SUBJECTS AND DATA COLLECTION

SUBJECTS: 738 adults admitted to the medical teaching service at Boston Medical Center (BMC) 1/06-10/07 and enrolled in Project RED, a randomized controlled trial of re-engineered discharge that included a package of 9 pre-discharge services, a comprehensive discharge plan, and a follow-up call from a clinical pharmacist.

DATA COLLECTION:

- At 30 days after hospital discharge:
 - Telephone interviews for readmission, ED visits at BMC, other hospitals
- At 30 and 90 days after discharge:
 - BMC medical record reviewed for readmissions and ED visits

PRIMARY INDEPENDENT VARIABLE:

Substance Use Diagnosis at Discharge (SU Dx)

- Defined by ICD 9 codes: 303 (alcohol dependence), 305.0-305.03 (alcohol abuse), 291 (alcohol-related withdrawal and psychoses), 304 (drug dependence), 305.2-305.7, and 305.9 (drug abuse), 292 (drug-related withdrawal and psychoses)

COVARIATES collected at index hospitalization interview:

- Age, Gender, Race/Ethnicity, Having a PCP (yes/no), PHQ-9 Depression subscale, Homelessness within 3 months (yes/no), Employment

COVARIATES collected by record review:

- Insurance, Charlson Comorbidity Score by discharge diagnoses

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RESULTS

Subject Characteristics

	No SU N=615	SU Dx N=123
Age in years, mean (SD)	50(16)	48(11)
Male	47%	65%
Race/ ethnicity		
Black/ African-American	53%	49%
Hispanic	10%	11%
White	27%	30%
Health Insurance		
Private	18%	9%
Medicare	15%	7%
Medicaid or Free Care	68%	83%
Employed full time	26%	5%
Homelessness, last 3mos	8%	20%
PCP at enrollment	82%	72%
Depressive symptoms	14%	29%
Charlson score	1.2(1.9)	1.3(2.2)

DESIGN and ANALYSES

DESIGN: Observational cohort study using data collected for the Project RED study

ANALYSES: Poisson and binomial regression models were used to compute incident rate (IRRs) and odds ratios (ORs)

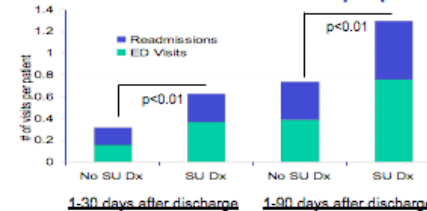
MAIN DEPENDENT VARIABLES:

- # of ED visits + readmissions per subject per 30 and 90 days
 - % of subjects with any ED visit or readmission at 30 and 90 days
- Note that ED visits leading to readmission were only counted once.

EXPLORATORY ANALYSIS:

- Subcategorize alcohol and drug dx to determine whether the association was different by type of substance use

Rates of Utilization: # of visits per patient



Adjusted models

	IRRs (95% CI)	
	No SU Dx N=615	SU Dx N=123
1-30 days after discharge	REF	1.45 (1.09-1.93)
1-90 days after discharge	REF	1.38 (1.13-1.67)

Covariates include age, gender, depressive symptoms (PHQ-9), having a PCP, insurance, homelessness, employment, and the Charlson score

Substance use subcategories

Window after discharge	No SU Dx N=615	ETOH only N=54	Drug only N=52	ETOH & Drug N=17
# visits/person at:		Adjusted IRRs		
1-30 days	REF	0.99	1.79	1.96
1-90 days	REF	1.00	1.57	1.98
# subjects with any visits at:		Adjusted ORs		
1-30 days	REF	0.82	1.96	1.76
1-90 days	REF	0.99	2.09	2.30

Covariates include age, gender, depressive symptoms (PHQ-9), having a PCP, insurance, homelessness, employment, and the Charlson score

Risk of Utilization: # of subjects with any visits

	No SU Dx N=615	SU Dx N=123
Subjects with readmission or ED visit at:		
1-30 days after discharge	22%	33% (p<.05)
1-90 days after discharge	38%	52% (p<.05)
Adjusted models	ORs (95% CI)	
1-30 days after discharge	REF	1.36 (0.86-2.14)
1-90 days after discharge	REF	1.52 (0.99-2.32)

Covariates include age, gender, depressive symptoms (PHQ-9), having a PCP, insurance, homelessness, employment, and the Charlson score

LIMITATIONS

- Independent variable defined by ICD9 codes
- Utilizations outside the BMC system relied on self report

SUMMARY and IMPLICATIONS

- 17% of general medical inpatients had a substance use diagnosis upon discharge
- Higher utilization at 30, 90d for pts with SU Dx
- Higher utilization attributable to subjects with drug use-related diagnoses
- Medical inpatients with SU dx should be targeted for re-engineered discharge programs
- Further study of tailored interventions for this population is warranted