

# Inpatient Addiction Medicine Consultation on Readmission Rates and Length of Stay

**Keywords:** Addiction consult service; 30-day readmission rate; Length of stay; Inpatient addiction medicine

## Abstract

**Background:** Patients with substance use disorders (SUDs) make up nearly one-third (29.1%) of hospitalized patients in the United States. They also have double the 30-day readmission and emergency department visit rates compared to those without SUDs. The Centers for Medicare and Medicaid Services has penalized hospitals \$3 billion for higher 30-day readmission rates. Addiction medicine consultation has been shown to reduce 30-day readmission. However, their impact on Hospital length of stay remains largely unknown.

**Methods:** We compared admissions of repeat utilizer patients at Stanford Hospital with an ICD-10 diagnosis of a SUD and compared the 30-day readmission rate and length of stay in patients with and without an addiction medicine consult.

**Results:** The 30-day readmission rate and average LOS was 10.4% and 6.11 days for those that received a consult compared to 25.3% and 6.16 days in those that did not. Medicaid and Medicare patients made up 70.3% and 19.0% of the population, and addiction medicine consultation was found to be associated with a 61.4% and 69.5% reduction in 30-day readmission rate, respectively.

**Conclusion:** In patients with SUD who have a history of repeated hospital utilization, admissions that received an addiction medicine consult are associated with a decrease in 30-day readmission rate with no increase in length of stay compared to admissions that do not receive an addiction medicine consult.

## Introduction

Patients with substance use disorder (SUD) make up nearly one-third (29.1%) of hospitalized patients in the United States (Smith et al., 2015). They also have double the 30-day readmission and emergency department visit rates compared to those without SUDs (Walley et al., 2012). For Medicaid patients, alcohol-related disorders rank 3rd in all-cause 30-day readmission rate, while substance-related disorders rank 9th (Hines et al., 2014). Ninety-day readmission rates in SUD Medicaid beneficiaries approach one in two patients at 48.3% (Reif et al., 2017).

The 30-day readmission rate is an increasingly important variable since the Centers for Medicare and Medicaid Services (CMS) established the Hospital Readmissions Reduction Program (HRRP). This program was designed to reduce readmissions by financially penalizing hospitals with high 30-day readmission rates in Medicare patients with certain conditions, and it has already penalized hospitals billions of dollars (Wadhera et al., 2020). There is concern other payers will follow suit and some policymakers have pushed for the HRRP to be expanded to cover all conditions.

Similarly, hospital length of stay (LOS) is another top metric closely monitored by health care systems in order to improve hospital efficiency, costs, and quality of care. LOS can be prolonged by frequently consulting specialists in the hospital, and this can increase complexity and costs in patient care (Stevens et al., 2020). Although



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hospital-based addiction medicine consultation has been shown to reduce 30-day readmission rates (Wakeman et al., 2020), their impact on LOS remains largely unknown. We conducted a retrospective descriptive analysis of SUD patients seen by the addiction medicine consult service at an academic hospital to understand how consultation influenced hospital length of stay and 30-day readmission rates.

Hospitalized patients seen in consultation by dedicated addiction medicine consult services receive specialty addiction medicine management including but not limited to pharmacotherapy, psychotherapy, and linkage to treatment programs for SUDs. This type of consultation has been shown to increase the number of days of abstinence in the first month after hospital discharge, reduce addiction severity, improve engagement with addiction treatment, and decrease mortality (Wakeman et al., 2017; Englander et al., 2019). Stanford Hospital launched an inpatient addiction medicine consult service in fall of 2018. Prior to launching the full-time service, addiction medicine consultation was provided from outpatient providers on an ad-hoc basis to attempt to address the needs of hospitalized patients with SUDs. This ad-hoc service soon grew from 1-2 consults a week to 1-2 consults a day, and eventually grew large enough to justify a dedicated inpatient addiction medicine service. The success of the service in the first year was key to its continued growth. As such, this study focused on the impact of the service in its first year of operation.

## Methods and Findings

We analyzed admissions of repeat utilizers at Stanford Hospital with an ICD-10 diagnosis of a SUD who had their first addiction medicine consult from December 1, 2018 through December 1, 2019 (Table 1). To assess the effect of consultation on repeat readmissions, our analysis focused on repeat utilizers (used the hospital 2 or more times before their first consult). In this population, we compared the 30-day readmission rate and average length of stay in patients with and without an addiction medicine consult during the year following their first consult. We also conducted a subgroup analysis in the Medicare and Medicaid population.

Per our hospital protocol, patients with six hospital visits in a six month period are considered high utilizers and are assigned a

**Table 1:** Patient Characteristics.

Demographics	
Total Unique Patients:	384
Total Unique Hospital Visits:	1,816
Mean age:	47.54 Standard Deviation: 14.48
Male:	71.35%
Female:	28.65%
Race	
White:	55.21%
Latino/Hispanic:	21.61%
Black or African American:	8.85%
Asian:	3.91%
Native Hawaiian or Other Pacific Islander:	1.04%
American Indian or Alaska Native:	0.26%
Other/Unknown/Patient Refused to answer:	9.12%
SUD Diagnosis	
Alcohol:	44.53%
Opioids:	18.23%
Stimulants:	20.57%
Cannabis:	3.39%
Sedative:	1.3%
Other:	11.98%
Insurance	
Medicaid:	70.31%
Medicare:	19.01%
Commercial Insurance/Other:	10.68%

**Table 2:** Average Length of Stay and 30-day readmission rate in patients with and without an addict consult.

	With Consult	Without Consult
Average Length of Stay (days)	6.11	6.16
30-Day Readmission Rate	10.4%	25.3%
Medicare	11.1%	36.4%
Medicaid	20.5%	53.1%

complex care manager to focus on reducing readmissions. Since this confounding intervention was designed to reduce readmissions, we removed high utilizers from our analysis. This study was approved by the Stanford University Institutional Review Board.

In the repeat utilizer population described, 73.4% of hospital admissions contained a consult. The 30-day readmission rate was 10.4% for those that received a consult compared to 25.3% in those that did not (Table 2). The average LOS was 6.11 days in those with a consult compared to 6.16 days in those without.

In the Medicare population, 58.8% of hospital admissions received a consult and the 30-day readmission rate was 11.1% in those that received a consult compared to 36.4% in those that did not. In the Medicaid population, 65.8% of hospital admissions received a consult, and the 30-day readmission rate was 20.5% in those that received a consult compared to 53.1% in those that did not.

## Discussion

Addiction medicine consult service interventions include pharmacotherapy and psychotherapy. They occur alongside the medical care received for a patient’s primary admitting diagnosis and within the time constraints of acute hospital care. This study suggests that addiction medicine consultation reduces 30-day readmission

rates without increasing hospital length of stay. The slight decrease in LOS associated with an addiction medicine consult may be attributed to interventions routinely used to help manage behavioral issues, taper pain medications, treat withdrawal, coordinate safe treatment-oriented discharge plans, and thus expedite discharge.

Considering CMS’s focus on reducing high readmission rates, this study also adds to the literature by looking specifically at the Medicaid and Medicare population, which made up 70.3% and 19.0% of the population, and showed consultation was associated with a 61.4% and 69.5% reduction in 30-day readmission rate, respectively.

There are limitations of our study. We only included readmissions to our hospital. Data from a single institution limits generalizability. It is also possible that the patients were readmitted to other hospitals, which were not included in the current analysis. Secondly, without randomization it is not possible to ascertain whether the observed reduction in readmission rates were due to addiction medicine consult service intervention as opposed to other factors, such as additional care from repeated admissions. Thirdly, the 30-day readmission rate is not the only measure of hospital utilization, and increases in readmission rates at this time point can precede long-term decreases in overall hospital utilization. Future studies are needed to examine 90-day readmission rates or other measures. Fourthly, it is not clear what components of addiction medicine consult services are most effective. Future research should parse out what aspects of an addiction medicine consult service lead to better outcomes, as well as whether the added cost of an addiction medicine consultation is outweighed by reduced 30-day readmission rates that do not increase length of stay.

## Conclusion

In patients with SUD who have a history of repeated hospital utilization, admissions that receive an addiction medicine consult are associated with a decrease in 30-day readmission rate with no increase in length of stay compared to admissions that do not receive an addiction medicine consult.

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