

## Does Inpatient Post-hospital Care Prevents Readmissions after Spine Surgery?

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## **Learning Objectives**

1. To understand the importance of readmission in patient safety and satisfaction.

2. To understand the role of inpatient post-hospital care in preventing readmissions after spine surgery.

#### Introduction

Readmissions are a significant economic burden on the health care system and increasingly being utilized as a metric of quality. Policy makers are implementing penalties in an attempt to reduce readmissions. The impact of where a patient is discharged following spine surgery and the risk of readmission is unkonwn. The aim of the study is to understand the relationship between discharge destination (home versus inpatent post-hospital care) and readmission rates after spine surgery.

## Methods

A total of 1631 patients enrolled in a prospective longitudinal registry and undergoing elective surgery for cervical and lumbar degenerative spine with and without fusion over a period of four-years were included in the study. Readmission rates at 30 days, reasons for readmission, demographic, clinical, and baseline PRO instruments: numeric leg and back pain, ODI, SF-12, and EQ-5D were recorded. The patients were divided into discharged home and inpatient facility to compare readmission rates and risk factors.

# Results

A total of 1444(89%) patients were discharged home and 187(11%) patients discharged to an inpatient facility. In total, 65(4%) patients were readmitted at 30 days. At 30 days there was a similar incidence of readmissions within the patients discharged to an inpatient facility 10(5%) versus patients discharged home 55(4%)(p<0.2). Patients discharged home were significantly younger with an average age of 58 years versus 67 years for the patients discharged to an inpatient facility (P<0.0001). Patients discharged to an inpatient facility had a significantly lower ambulation rate, higher comorbidities, longer hospital stay, longer surgery time, higher complication rate, and worse baseline PRO scores. The predominant causes of readmission for patients discharged home included wound (67%) and medical (27%) complications. In contrast, medical complications (80%) were the main reason for readmission in those discharged to a facility postoperatively. The readmissions related to surgical wound and medical complications were significant higher in patients that were discharged home versus to an inpatient facility (P<0.034,P<0.002,respectively).

	Home (55/1444)	Facility (10/187)	p-Value	
Wound Complication	37 (67%)	1 (10%)	0.034	
Pain	1 (2%)	0	0.94	
Surgery Failure	2 (4%)	1 (10%)	0.67	
Medical Complication	15(27%)	8 (80%)	0.002	
<ul> <li>Wound – Infe</li> <li>Surgery failur</li> <li>deficit</li> <li>Medical - elec</li> <li>retention, othe:</li> <li>PE/DVT ileus</li> </ul>	ction, wound dehis re – persistent symp trolyte abnormality r infection: UTI, PN	cence, <u>pseudome</u> otoms, hardware f 7, persistent n/v, a A, uncontrolled di	ningocele ailure, new ne atrial fibrillatio abetes, renal i	eurologio on, urina insufficie

	Home	(1444)	Innatient Facility (187)	n-Value
Readmission 30-days	55	(4%)	10 (5%)	0.21
Age	58	±13.5	67 ±10.9	< 0.0001
Gender				0.31
Female	687	(48%)	92 (49%)	
Male	759	(53%)	93 (50%)	
Inemployed	749	(52%)	156 (83%)	< 0.0001
Smoker	782	(54%)	111 (57%)	0.19
BMI	30.5	59 ±6.6	31.93 ± 7.6	0.085
mbulatory preoperative				< 0.0001
No	22	2%)	7 (4%)	
Yes with assistance	108	0 (78%)	83 (45%)	
Ves without assistance	281	(20%)	93 (51%)	
Back/Neck Pain Dominant -	107	(7%)	11 (6%)	0.28
.eg/Arm Pain Dominant - Chronic	199	(14%)	16 (9%)	0.026
Pre-Operative Narcotic Use	775	(54%)	98 (52%)	0.34
Neurogenic Claudication	159	(11%)	37 (20%)	0.001
listory of Arthritis	905	(63%)	137 (73%)	0.003
Revision Surgery	313	(22%)	45 (24%)	0.25
listory of Chronic Obstructive Pulmonary Disease (COPD)	51	(4%)	14 (7%)	0.013
History of Congestive Heart Failure (CHF)	35	(2%)	11 (6%)	0.012
History of Coronary Artery Disease (CAD)	257	(18%)	57 (30%)	<0.0001
History of Diabetes	310	(21%)	62 (33%)	0.001
History of Hypertension (HTN)	783	(54%)	139 (74%)	< 0.0001
History of Myocardial nfarction (MI)	54	(4%)	21 (11%)	<0.001
ASA Grade				< 0.0001
1	48	(3%)	0 (0%)	
2	503	(35%)	23 (12%)	
4	894	(62%)	163 (87%)	
Table 3 – Diagnosis and procedu	ire perf	ormed		
		Home (144	4) Innatient Facility (18	7) n-Value
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		10110 (111	4) Inputter Fuchtly (10)	<0.0001

#### 271 (19%) 672 (47%) 60 (32%) 113 (60%) < 0.0001 356 (51%) 210 (30%) 85 (77%) 21 (19%) Lamine omy and Fusio Laminectoms 126 (18%) 4 (4%) <0.0001 e**rvical** ACDF 10 (5%) 48 (26%) 520 (36%) Posterior approach 147 (10%) <0.0001 <0.0001 0.001 Length of Surgery in minutes Length of Hospital Stay in days 170.45 ± 77.5 219.45 ± 85.8 $2.75 \pm 4.2$ 6.57 ± 8.4 urgical complications 1305 (90% 153 (82%) No Yes 139 (10%) 34 (18%) Table 4 - Baseline PRO Scores

	Home (1444)	Inpatient Facility (187)	p-Value
Leg Pain	6.87 ± 2.7	6.23 ± 3.2	0.054
Back Pain	6.5 ± 2.7	7.04 ± 2.5	0.044
ODI Percentage	48.6 ± 15.6	51.8 14.4	0.035
SF-12 Mental Component Score	48.2 ± 11.8	47.9 ± 12.3	0.822
SF-12 Physical Component Score	27.2 ± 9.1	24.9 ± 8.6	0.013
EQ-5D score	0.56 ± 0.38	0.52 ± 0.46	0.431

# Conclusions

Patients discharged to an inpatient facility had comparable readmission rates as to those discharged home, even though the former were an older and sicker population. Therefore, inpatient posthospital care may reduce readmission in a high risk group of patients. Identifying these patients preoperatively will help guide expectations and begin the placement process so as to not prolong length of stay in the hospital.

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