

Changes to Anticipated Disposition Prevent Timely Discharge after Total Joint Arthroplasty

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INTRODUCTION: This study assessed preoperative factors associated with increased length of stay (LOS) after primary total joint arthroplasty (TJA). We hypothesize that social support and postoperative rehabilitation influence hospital LOS after TJA.

METHODS:

Retrospective chart review included patients undergoing primary TJA at a single, urban center from January 2018 to July 2021. Patients were identified utilizing current procedural terminology codes for primary TJA. Chart review extracted demographics, social factors, Risk Assessment and Prediction Tool (RAPT) scores, predicted and actual disposition, preoperative agreement with disposition plan, American Society of Anesthesiologists class (ASA), Intensive Care Unit (ICU) utilization and LOS. For calculating significance between categorical variables (preoperative plan, insurance type, ASA class, race, etc...), Pearson's Chi Squared test was performed. For analysis of continuous variables (LOS, Age, RAPT score) Kurskal Wallis or Wilcoxon rank sum tests were performed depending on if the variable of interest had 2 or more ranks, with Kurskal Wallis used when only 2 ranks exist for a variable and Wilcoxon rank sum when more than 2.

RESULTS: 679 patients met the inclusion criteria. Average predicted and actual LOS were 2.4 and 2.7 days, respectively. 336 (49.6%) patients exceeded their anticipated LOS. Insurance type (OR Medicare: 2.72 95% CI 1.80-4.12, Private: 3.37 95% CI 2.17-5.30), RAPT score (OR 0.87 95% CI 0.80-0.95), and change in anticipated disposition (OR 2.83 95% CI 1.65-5.01) were significant predictors of exceeding the anticipated length of stay. Of those a change to disposition plan was the only that was both statistically significant and a modifiable variable. On average, patients who required higher (4.8 ± 3.3 days) and lower (3.7 ± 2.3 days) levels of care had longer LOS than patients who had no change (2.5 ± 1.8 days) in anticipated disposition ($p < 0.001$.) 82 (12%) of patients had a disposition different than anticipated preoperatively. There were no differences in ASA score, ICU usage, or insurance status between groups ($p > 0.05$). Patients requiring either higher or lower levels of care than anticipated had lower RAPT scores, 7.8 and 7.4 respectively at preoperative evaluation compared to 8.6 for patients with no change in anticipated level of care ($p = 0.002$ and $p = 0.040$, respectively). Additionally, preoperative patient agreement with the anticipated discharge plan, 92%, 93%, and 99% respectively for those requiring a step up, step down and no change to anticipated discharge plan predicted whether said plan was changed during hospitalization ($p < 0.001$).

DISCUSSION AND CONCLUSION:

Changes to the preoperative discharge plan designed by social workers using the RAPT scoring system result in prolonged LOS regardless of if the change was to a higher or lower level of care than anticipated. These results suggest that accurate preoperative disposition assessment is one key to decreasing LOS. The administrative burdens of determining a specific facility, acquiring appropriate rehabilitation documentation, and getting insurance approval will increase LOS in patients unexpectedly requiring SNF or SAR placement. In contrast, barriers to home discharge may be less apparent. Delays in seeking insurance approval for home medications due to a change in discharge plan can result in longer hospital stays. Adequately fulfilling requirements for safe home discharge during hospitalization can result in increased LOS despite going to a lower level of care than anticipated.

While RAPT is a good predictor for those with high (>9) or low (<6) scores in our population, those with borderline scores might benefit from further assessment. A key modifiable variable that predicted changes to the discharge plan was patient agreement with the plan. These factors highlight the need for close and reliable communication with the patients regarding discharge planning. By better communicating with the patient and coming to a mutually agreed upon discharge plan, changes to those plans during hospitalization may be reduced thus hopefully reducing prolonged LOS after TJA. We recommend further studies to evaluate alternative preoperative discharge planning tools such as SUPRAS or policy changes such as required patient agreement with discharge plan before operating to decrease unanticipated prolongation of patients LOS after TJA.

Comparing Patients' Predicted and Actual Disposition Location

Characteristic	Higher Level of Care N = 38 ¹	Lower Level of Care N = 43 ¹	No Change in Care N = 597 ¹	p-value ²
Length of Stay (days)	4.8 (3.3)	3.7 (2.3)	2.5 (1.8)	<0.001
Difference between Actual and Predicted LOS (days)	1.4 (3.0)	1.6 (2.2)	0.2 (1.7)	<0.001
Age (years)	66.7 (9.7)	61.1 (12.2)	61.1 (10.3)	0.010
ASA Class				0.14
1	0 (0%)	0 (0%)	4 (0.7%)	
2	16 (43%)	17 (40%)	334 (56%)	
3	20 (54%)	26 (60%)	250 (42%)	
4	1 (2.7%)	0 (0%)	6 (1.0%)	
Required ICU	1 (2.7%)	0 (0%)	8 (1.4%)	0.5
RAPT Score	7.8 (1.9)	7.4 (2.2)	8.6 (2.2)	<0.001 ³
Social Work Phone Call	33 (87%)	35 (81%)	477 (80%)	0.6
Preoperative Agreement with Discharge Plan	34 (92%)	40 (93%)	587 (99%)	<0.001

¹Mean (SD); n (%)

²Kruskal-Wallis rank sum test; Fisher's exact test; Pearson's Chi-squared test