Standardized Preoperative Pathways Continue to Improve Hip Fracture Quality

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Purpose: The purpose of this study was to assess the hospital quality measures and outcomes of operative hip fracture patients before and after implementation of an anesthesia departmental protocol assigning decision for a preoperative transthoracic echocardiogram (TTE) to the hospitalist co-managing physician.

Methods: Demographics, injury details, hospital quality measures, and outcomes were reviewed for a consecutive series of hip fracture patients. In May of 2019 the new protocol was instituted. Patients were split into 2 cohorts, those who presented prior to the protocol (PRE-P), and those who presented after (POST-P). Comparative analyses were conducted.

Results: Between September 2015 and June 2021, 968 patients presented to our institution and were diagnosed with a hip fracture. POST-P patients were less likely to undergo a preoperative echocardiogram, experienced a shorter time to surgery, shorter length of stay, and an increase in amount of home discharges as compared to PRE-P. POST-P also had lower complication risks for urinary tract infection (UTI) and acute blood loss anemia. There were no differences seen in inpatient or 30-day mortality. Multivariable linear regression demonstrated a patient's comorbidity profile (Charlson Comorbidity Index [CCI]) and their time of presentation (PRE-P or POST-P), were both factors (P<0.01) in a patient's time to surgery.

Conclusion: A standardized preoperative work-flow protocol, notably which physician evaluates and determines if a patient would benefit from undergoing a preoperative TTE for medical optimization, allows for a streamlined perioperative course for hip fracture patients. This allows for a shortened time to surgery and length of stay with an increase in home discharges and was associated with a reduced risk of common index hospitalization complications including UTI and anemia.

Outcomes	Pre-Protocol	Post-Protocol	Overall	*P Value*
All Patients, n (%)	557	411	968	
Hospital Quality Measures, n (%)				
Time to Surgery (d), Mean (SD)	1.47 ± 1.67	1.05 ± 0.96	1.29 ± 1.43	**<0.01**
LOS (d, *mean ± std)	6.70 ± 4.23	5.74 ± 3.60	6.29 ± 4.00	**<0.01**
Need for Advanced Level of Care, n (%)	110 (20%)	74 (18%)	184 (19%)	0.494
Discharge Home, n (%)	154 (28%)	159 (39%)	313 (32%)	**<0.01**
Preoperative Echo, n (%)				
Transthoracic Echocardiogram	196 (35%)	41 (10%)	237 (24%)	**<0.01**
Mortality				
Inpatient, n (%)	10 (2%)	3 (1%)	13 (1%)	0.155
Within 30 days, n (%)	22 (4%)	12 (3%)	34 (4%)	0.393
Complications, n (%)				
Sepsis/Septic Shock	9 (2%)	6 (1%)	15 (2%)	0.85
Pneumonia	25 (4%)	14 (3%)	39 (4%)	0.397
Deep Vein Thrombosis/Pulmonary Embolism	18 (3%)	9 (2%)	27 (3%)	0.334
Myocardial Infarction	6 (1%)	4 (1%)	10 (1%)	0.877
Acute Renal Failure/Acute Kidney Injury	34 (6%)	32 (8%)	66 (7%)	0.295
Stroke	3 (1%)	1 (0%)	4 (0%)	0.479
Surgical Site Infection	0 (0%)	0 (0%)	0 (0%)	-
Decubitus Ulcer	10 (2%)	4 (1%)	14 (1%)	0.29
Urinary Tract Infection	61 (11%)	23 (6%)	84 (9%)	**<0.01**
Acute Respiratory Failure	37 (7%)	16 (4%)	53 (5%)	0.064
Anemia	201 (36%)	87 (21%)	288 (30%)	**<0.01**
Cardiac Arrest	9 (2%)	2 (0%)	11 (1%)	0.101

Table 1: Outcome comparison between pre-protocol and post-protocol cohorts.

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device they wish to use in clinical practice.