



Execute Change by Understanding Your Joint Replacement Patient Outcomes

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March 2009

Joint Replacement Clinical Outcomes

With the increased emphasis on cost and quality transparency in health care, it is imperative to define and measure the quality of care provided to patients. Accelero Health Partners has developed a clinical outcomes comparative database that allows hospitals to track the number of complications and understand the impact on both length of stay and key financial indicators. The database contains surgical case information including financial data, length of stay, primary procedure code and all of the diagnosis codes for each case. There is a “present on admission” indicator that is used to distinguish the pre-existing diagnosis from one that occurs after the patient is admitted. Accelero Health Partners defined a list of diagnosis codes by industry standards that trigger diagnosis codes that occur after admission as “occurrences”. For ease of comparison, diagnosis codes are organized into like categories called “complication groupings.”

When we analyze data from our clinical outcomes database that contains 10,000 total joint cases from October 2007-August 2008 for primary hip and knee joint replacements cases, the data illustrates the impact complications have on length of stay. As shown in the table below, the average length of stay for DRG 470 is more closely managed to the geometric mean length of stay (GMLOS) than for DRG 469.

DRG	Description	Cases	ALOS	GMLOS	ALOS Variance
469	Major joint replacement or reattachment of lower extremity with MCC	673	7.64	6.9	0.74
470	Major joint replacement or reattachment of lower extremity without MCC	9,284	3.60	3.6	0

Generally DRG 470 has an average length of stay close to the GMLOS, however the impact of complications such as urinary tract infections, hemorrhage/hematoma, DVTs and delirium create a 41% increase in length of stay (1.43 days) compared to those patients who do not have a complication during their hospital stay. Due to the higher medical complexity of DRG 469, the impact on complications is much greater than the DRG 470 patient population. The DRG 469 cases have an average length of stay 25% higher (1.6 days) than the GMLOS.

DRG	Description	Cases	ALOS	LOS Variance	% Increase in LOS	Average Complication Rate
469	Without complications	203	6.52	1.60	25%	69.8%
	With complications	470	8.12			
470	Without complications	8,602	3.49	1.43	41%	7.3%
	With complications	682	4.92			

The frequency of occurrence and impact on length of stay varies by complication and DRG. The following two tables illustrate how frequently complications occur within each complication grouping. For example, in DRG 470 on average, when there is a urinary complication, the length of stay increases to 5.03 days. Urinary complications account for half of those complications occurring during admission. Pneumonia, on the other hand occurs in 30% of those patients in DRG 469 with complications increasing the length of stay to over 11 days. Understanding the distribution of complications and the impact on length of stay is critical to providing an extraordinary joint replacement program.

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Frequency of Occurrences in Cases With Complications		
DRG 469		
	Accelerero Comparative	
Complication Grouping	ALOS	% of Occurrences
Pneumonia/Respiratory Infection	11.20	29.9%
Renal Failure	7.41	25.6%
Urinary Complications	9.43	16.5%
Surgical Complications	10.77	7.6%
Other (i.e. delirium, ileus, sepsis, etc.)	12.64	6.5%
Myocardial Infarction	9.92	5.7%
DVT/PE	8.71	4.8%
All Other Complication Groupings	11.77	3.3%

Frequency of Occurrences in Cases With Complications		
DRG 470		
	Accelerero Comparative	
Complication Grouping	ALOS	% of Occurrences
Urinary Complications	5.03	50.7%
Surgical Complications	5.33	15.0%
Other (i.e. delirium, ileus, sepsis, etc.)	5.75	12.7%
Hemorrhage/Hematoma	4.52	11.2%
DVT/PE	5.74	4.1%
All Other Complication Groupings	6.78	6.4%

Identifying the root cause of a hospital's complications is paramount to executing change. They can be defined in three ways:

1. No documentation of co-morbidities that may put the patient at risk for postoperative complication
2. Operational variances occur that are not part of the defined clinical pathway
3. Documentation in the medical record does not accurately represent the care provided

Through the implementation of a quality team to track, manage and improve clinical outcomes, Accelerero partners have effectively executed change that has resulted in reduced complication rates and a reduction in the amount of bed days used to support the patients with complications.

Although each complication requires a specific process to reduce the volume of complications, overall, the following strategies and tactics have been applied successfully:

- Improved medical preparation of elective patients
- Improved documentation of co-morbidities and postoperative care to more accurately represent the care provided
- Early detection of at-risk patient population during hospital admission
- Implementation of a risk reduction plan for at-risk patients
- Continued trending, at a detail level, to identify improvements and recognize opportunities

As the transparency of outcomes continues to increase throughout healthcare, it is critical to effectively and efficiently identify the cases with complications, to have processes in place to regularly review these cases, to determine potential causes and most importantly implement solutions.