

CASE STUDY



Foundation Regional Data Warehouse

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The Impact of Opioid Adverse Events

The main objective of this study was to examine 2014-2015 opioid related ADE inpatient data and look for trends in hospital costs and length of stay at hospital systems in the Dallas/Fort Worth area.

Background: Opioids are often the drug of choice for pain relief after major surgeries, but their use is often followed by adverse drug events (ADEs). A study conducted over a 10-year period found that opioids account for 59% of all ADEs that led to increased stays and hospital costs. Adverse effects include unwanted sedation and respiratory depression due to opioid-induced ventilatory impairment (OIVI). Common causes for opioid ADEs include prescribers' lack of knowledge of the strength differences in opioids, improper prescribing and administration of opioids through multiple routes, and inadequate monitoring of patients on opioids.

Methods: Using 2014 and 2015 patient data from the Dallas-Fort Worth Hospital Council Education and Research Foundation's (DFWHC Foundation) 10-member hospital systems, comparisons were made to investigate trends. Patient data was extracted using the DFWHC Foundation's MyIQ Analytics BI tool for patient databases. Specific surgeries, chosen because of their high rate of post-operative pain control (**Table A**), were analyzed. Complications related to ADEs were also evaluated.

Table A: APR-DRG Codes	
221	Major small and large bowel procedures
301	Hip joint replacement
302	Knee joint replacement

Results: In 2014 for the three surgeries included in this study (large & small bowel procedures, hip and knee replacements), 456 ADEs out of 11,718 total cases were observed. In 2015, the number fell to 356 out of 11,090 total cases) ADEs observed; this shows an overall decrease year over year from 3.9% to 3.2% (**Table 1**). The average of all 10 hospital systems established the baseline to which individual hospital systems were compared. In 2014, six out of ten hospital systems averaged >3.9% ADEs (range: 3.13%-10.81%). Half of the ten hospital systems analyzed in 2015 had >3.2% ADEs (range: 2.5%-7.35%). Thus, at the individual hospital system level, the data shows higher ADEs in 2015 than 2014.

Across all hospital systems, the 2014 average length of stay without complications was 6.33 days and with complications was 13.95 days. In 2015, the length of stay without complications was 6.22 days; with complications, it was 15.04 days. This data shows that the length of stay with complications increased from 2014 from 2015 (**Table 1**).

Table 1: 221, 301, 302 Surgeries	2014		2015	
	No Complications	Complications	No Complications	Complications
Length of Stay (days)	6.33	13.95	6.22	15.04
Cost of Care (\$)	90,104	174,119	91,987	194,851
Total Cases (#)	11,718	456	11,090	356
Complications (%)	3.9		3.2	

The 2014 average charges filed with and without complications were \$174,119 and \$90,104. In 2015, the average charges filed with and without complications were \$194,851 and \$91,987. Results indicated a two-fold increase in total charges filed for care with complications versus without complications in 2015. Results also indicated that older (65+ years) patients developed more complications and were slower to recover. Gender analysis showed females were more likely to have the included surgeries and ADEs from total case numbers, but males had higher overall ADE percentages.

Conclusions: Data analysis from 2014-2015 indicated that ADEs from three specific surgeries led to much higher costs and increased hospital stays. Previous research suggests that one possible solution is to include a form of multimodal therapy that would lead to fewer ADEs and greater pain relief than single opioid use. For more information, please visit the publication below. These results demonstrate the need for an Opioid Safety Program task force that includes key stakeholders, such as physicians, pharmaceutical companies, the government, and patient advocates. Ultimately, there needs to be simultaneous changes in medical, legislative, behavioral, educational, and legal areas to effectively combat opioid adverse events.

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