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Total Joint Replacement Pathway: An Evaluation of Preoperative Education

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Introduction/Background

Total Joint Replacement (TJR) is one of the most common elective orthopedic procedures performed in the world, leading to 2000-2010 being declared by the WHO as the "Bone and Joint Decade." One million hip replacements are performed annually of which the United States has the highest per capita expenditure at \$4095. (H Merx, 2002). The increase is expected as baby boomers enter the >65-year-old demographic and there is increased utilization by the <65-year-old demographic as obesity becomes a national epidemic. (Steven M. Kurtz PhD, 2009).

At the Lehigh Valley Health Network (LVHN) in 2016, nearly 2500 total knee or hip arthroplasties were performed and accounted for close to 2% of the networks revenue. In past years, LVHN had implemented a TJR pathway to improve patient experience and prepare for Bundle Payments from Medicare. The pathway provides a tool to examine and create improvements for patients and reduce cost. Last year, the Pre-Admission Patient Education Class (PAPEC) portion of the pathway was expanded, and attendance improved from 15% to 35%. Given that these classes are time consuming and require network resources, the next step in improving the process was to determine if the classes have had a benefit for patients. Determining what effect PAPEC has is necessary for the health network to expand, modify, or attenuate the current program.

Problem Statement

The Pre-Admission Patient Education Class attendance has increased since undergoing improvements in December of 2015. After the increase in attendance, the affect it has on Length of Stay (LOS) and 30 day readmission rates was studied.

Methodology

This was a quality improvement project and therefore exempt from IRB approval. It involved a retrospective chart review of patient data from Jan 2016 to November 2016 through McKesson Enterprise Intelligence, Tableau, and records of PAPEC attendance. The chart review was done looking at the top 4 performing Joint Reconstruction surgeons at LVHN: Drs. Anbari, Lebby, Pollice, and Ververeli. The metrics examined for each surgeon were type of joint, LOS, 30 day readmissions, LOS by day, and class attendance. Regression and correlational analysis were performed on these metrics to look for relationships.

In addition to reviewing charts, a PAPEC class was attended and booklet materials examined. Previously they had been evaluated for Flesch-Kincaid Grade Level, but not for content. The content was compared to that which is recommended in current literature on the topic. Further, the types of metrics used in current data collection instruments was examined.

Results

From January 2016 to November 2016, the top 4 surgeons performed 1099 Total Knee Replacements (TKR) and 591 Total Hip Replacements (THR). Of those operations, 828 patients attended PAPEC, averaging 48.91% for the year. Average attendance for the year by surgeon was 43%, 48%, 34%, and 55% for Drs. Anbari, Lebby, Pollice, and Ververli, respectively. Analysis shows a weak correlation between LOS and PAPEC class attendance. However, for Dr. Pollice's 244 patients, class attendance and LOS had a strong correlation at -0.72. A closer look at his data was done but no clear reason emerged for this relationship.

Class and booklet materials were found to be easy to follow and understand. The class was found to focus on expectations from nursing and PT/OT perspectives on basic functions of living. This contrasts with the literatures recommendations to focus on pre-operative anxiety, peri-operative pain expectations, and early mobility.

Figure 1. Monthly Mean PAPEC Attendance vs. Length of Stay

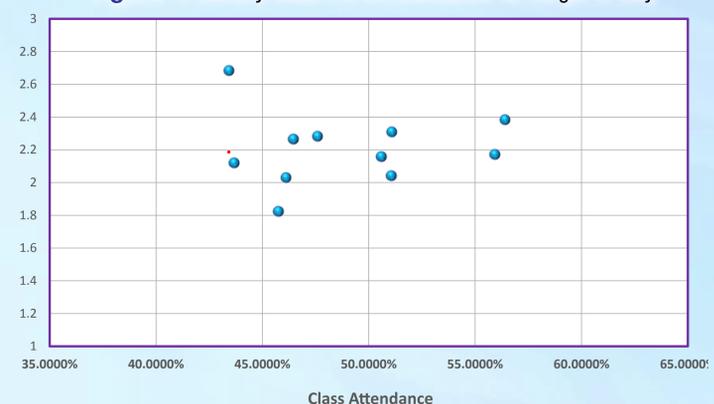
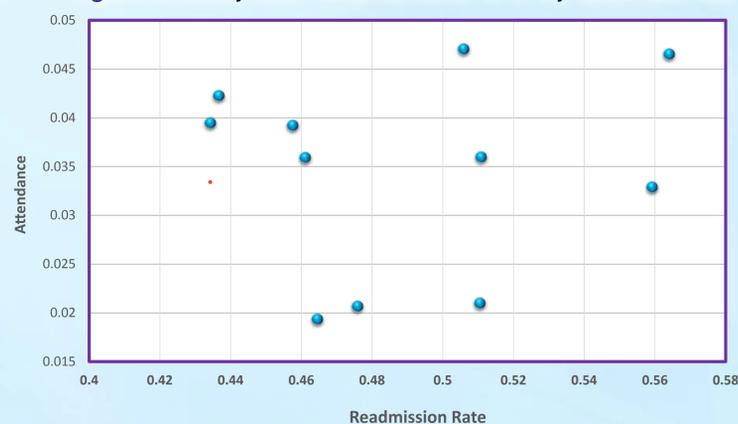


Figure 2. Monthly Mean PAPEC Attendance vs. 30 day Readmission Rate



Conclusions and Future Implications

For this study, quantitative measures of LOS and readmission rates were used, but patient satisfaction and community appeal were not. The data does not show a relationship between LOS or readmission rates and PAPEC attendance which is in line with what the literature says. However, Dr. Pollice's promising correlation may be worth examining with future study. However, it is highly recommended that recommendations for data collection are followed to study the patients more accurately.

Although there is not a clear relationship between PAPEC attendance and LOS or Readmission rate, there may be other benefits that are not measured such as patient satisfaction, community appeal, etc. For the 2500, TJR procedures performed annually at LVHN, it is important to optimize every one of these measures. With further study and implementation of class content recommendations, PAPEC will likely show tangible benefit.

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