Opioid Reduction Program for Total Knee Replacement Patients Statistical Analysis Plan

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Data Analysis: The demographics and background variables across the two treatment groups will be compared to assess the integrity of the random assignment and check for expected balance between known covariates. Our primary analysis is an intent-to-treat analysis.

Aim 1: We will determine intentions to reduce opioid use at 4 weeks and differences in MMEs by group at 12 weeks based on general linear and mixed models that account for the repeated measures and available covariate information (gender, race, age, socioeconomic status, etc., as well as relating to amount of opioid prescribed and experienced pain levels). The main independent variable in each analysis is treatment assignment (marginal p-value of 0.05 used as cut off to declare significance). We will also test mediation and moderation[1] using covariates listed in the measures. Especially, we will conduct a descriptive heterogeneity of treatment effect analysis (HTE)[2] with respect to sex/gender and race. Our study is not powered to detect interaction effects and the descriptive nature of this HTE suggests that we will not adjust for multiplicity in testing.[2]

Aim 2: We will conduct a linear regression to examine the predictive utility of cumulative MMEs on functional recovery total score as an outcome at each follow up visit. Possible confounders like pain (allowing for more activities as well as reduction of opioids) will be especially studied.

References

1. VanderWeele TJ. Explanation in Causal Inference - Methods for Mediation and Interaction. New York: Oxford University Press; 2015.

2. Varadhan R SE, Louis TA, Segal JB, Weiss CO. Review of Guidance Documents for Selected Methods in Patient Centered Outcomes Research: Standards in Addressing Heterogeneity of Treatment Effectiveness in Observational and Experimental Patient Centered Outcomes Research. Paper presented at: PCORI;2012.