

# Summary of research proposal LROI



**Title:**

Kaplan Meier or Competing risk for analysis of revision in knee and hip arthroplasty surgery?

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**Abstract:**

Analysis of outcome of arthroplasty surgery is generally performed by using survival analysis methodology. Implant failure is the major event of interest in implant survival studies. The estimated survival of an implant based on Kaplan Meier (KM) methodology might give underestimation in some cohort studies. As stated before, revision of the implant is a major event of interest. However, mortality may prevent the occurrence of the event of interest (failure of the prosthesis). In this case the classical KM methodology is not appropriate and a competing risks model must be applied.

The aim of this study is to explain to the clinical community what type of approach can or should be chosen in the presence of competing risks and how results can be interpreted.

The aim of this study proposal is as follows. The LROI hip data will be used to give guidelines to the clinical community about the statistical approaches that can be chosen in different patient cohorts and how they are determined by the study question. If covariates are incorporated in the model, two approaches can be used in the competing risk framework: Cox proportional hazards and the so-called Fine and Gray model. A note of caution is required when researchers need to interpret results based on the two models. In this study interpretation of the results will be explained to the clinical community.

**Approval date**

November 2015