**Summary of research proposal LROI**

**Title:**
Revision rate due to infection with single-dose versus multiple dose antibiotic prophylaxis during primary hip- and knee arthroplasty: a hybrid effectiveness implementation target trial emulation study

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**Abstract:**
Prosthetic Joint Infection (PJI) is a significant issue in joint replacement surgeries, causing additional surgeries and substantial healthcare costs. An effective way of preventing these infections is through the use of antibiotics before and after surgery. However, there is ongoing debate regarding the optimal dosage regimen for these antibiotics to achieve maximum effectiveness. In the Netherlands, most hospitals currently give multiple doses of antibiotics for hip and knee replacement surgeries. A new upcoming guideline recommends using only one dose of antibiotics, which could have several benefits. It might reduce the need for antibiotics overall, decrease the work for nurses, and shorten hospital stays. However, it is unclear if this change is safe or effective.

This study aims to compare the effectiveness of the current multi-dose antibiotic method with the new single-dose approach. We will also look at how well hospitals adopt this new guideline (implementation) and compare the healthcare costs associated with both antibiotic regimens. By studying real-world data from surgeries and patient records, we want to determine if the single-dose strategy is as effective at preventing infections and reducing the need for additional surgeries.

This study could provide healthcare providers and policymakers valuable information, helping them make informed decisions about antibiotic use in joint replacement surgeries. Ultimately, our goal is to improve patient outcomes and reduce the burden of prosthetic joint infections.

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