

## ***Improved Clinical Outcomes Through Enhanced Pathway Adherence: A Prospective Study of 10,267 Hip Arthroplasty Patients in a Regional Healthcare System***

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### **INTRODUCTION:**

Enhanced recovery programs are increasingly adopted in arthroplasty care, but large-scale evidence on the impact of pathway adherence remains limited. This prospective study evaluated the relationship between adherence to a Rapid Arthroplasty Assessment and Care (RAAC) pathway and postoperative outcomes following total hip arthroplasty (THA) within a regional hospital network.

### **METHODS:**

A prospective cohort of 10,267 patients undergoing total hip or knee arthroplasty across a regional healthcare system of 37 hospitals was analyzed. Patients were categorized by adherence level (low, mid, high). Primary outcomes included total length of stay (LOS) and 30-day postoperative complications. Multivariable regression was used to assess independent associations between adherence and outcomes, adjusting for confounders.

### **RESULTS:**

Higher adherence to the RAAC pathway was independently associated with shorter LOS ( $p < 0.001$ ) and fewer 30-day complications ( $p < 0.001$ ), without increasing emergency department visits or readmissions.

Four specific RAAC elements were independently associated with shorter LOS ( $p < 0.001$ ): preoperative anemia screening and management, preventive NSAID use, opioid-sparing anesthesia, and early mobilization ( $\leq$  postoperative day 1)

Six specific pathway elements were significantly associated with reduced complications ( $p < 0.001$ ): smoking cessation intervention, less restrictive preoperative fasting, antiemetic prophylaxis, opioid-sparing anesthetic approach, multimodal pain management, and early mobilization ( $\leq$  postoperative day 1).

### **DISCUSSION AND CONCLUSION:**

This large-scale prospective study demonstrates that increased adherence to a standardized arthroplasty recovery pathway significantly improves clinical outcomes and decreases hospital stay. It further identifies key actionable elements that can guide targeted quality improvement in surgical care delivery.