

## Improving Surgical Outcomes in Resource-Limited Settings: A Quality Improvement Approach to Unplanned Returns to Theatre

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### Abstract

**Background:** Unplanned return to theatre (RTT) is a major concern in surgical care, often reflecting preventable complications that impact patient safety and health system efficiency. While quality improvement strategies are well-established in high-resource settings, their implementation in low-resource environments remains underexplored.

**Objectives:** To evaluate the impact of a multi-modal quality improvement program on RTT rates in general surgery and obstetrics/gynaecology at two tertiary hospitals in Iraq.

**Methods:** This two-centre, quasi-experimental study included 1,133 surgical cases over two cycles: a retrospective baseline (January 2021–January 2022) and a prospective post-intervention phase (March 2022–March 2023). Interventions included staff training on secure surgical knot techniques, enhancement of WHO surgical safety checklist adherence, and mandatory consultant supervision during high-risk operations. Key outcomes included RTT rates, causes, preventability, intensive care unit admissions, and hospital stays.

**Results:** The overall RTT rate decreased significantly from 7.9% in the first cycle to 3.7% in the second ( $p = 0.004$ ). Reductions were observed in both general surgery (6.3% to 3.0%,  $p = 0.048$ ) and obstetrics/gynaecology (10.5% to 4.8%,  $p = 0.037$ ). Sepsis (40.0%), wound dehiscence (34.3%), and haemorrhage (25.7%) were the leading causes of RTT. Incomplete WHO checklist documentation and urgent surgeries were significantly associated with RTT ( $p < 0.001$ ). Most RTT cases (58.6%) were deemed non-preventable, but 32.9% were potentially preventable, and 8.5% were preventable.

**Conclusion:** A structured, low-cost quality improvement program effectively reduced RTT rates in two Iraqi hospitals. Interventions such as surgical technique training, checklist compliance, and consultant supervision may help improve surgical outcomes in resource-limited settings.

