

# PILOT IMPLEMENTATION PROJECTS IN LOW- AND MIDDLE-INCOME COUNTRIES TO GUIDE SURGICAL QUALITY IMPROVEMENT USING BEST PRACTICE RECOMMENDATIONS

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## INTRODUCTION:

Adherence to Best Practice Recommendations (BPRs) has been shown to improve morbidity and mortality in surgical healthcare delivery in low and middle-income countries (LMICs). The G4 Alliance International Standards and Guidelines working group established 11 BPRs under the topics of surgical infection, trauma, and maternal health to serve as a framework for implementation of surgical quality improvement (QI) and scale-up initiatives in LMICs.

## METHODOLOGY:

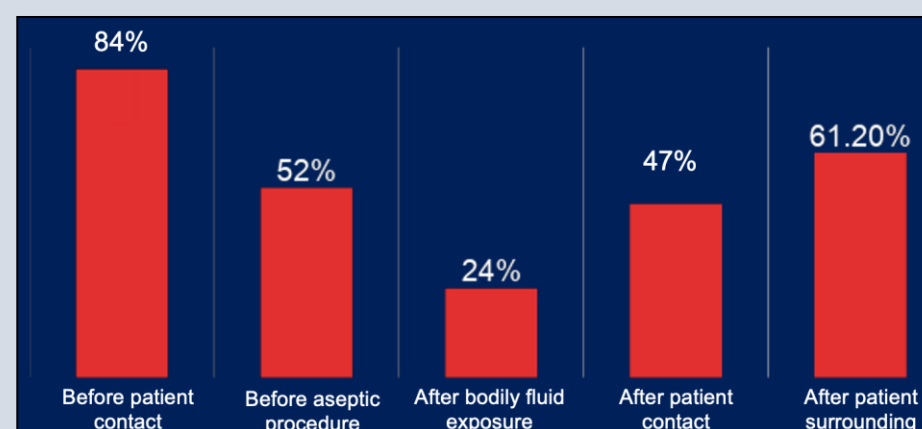
Three LMIC healthcare centers were chosen to participate in the implementation pilots through existing cross-collaborative partnerships. Participants included a children's hospital in Laos, an academic tertiary-care hospital in Nigeria, and a healthcare system in the region of Oromia in Ethiopia. Local teams were assembled to conduct needs assessment analyses prior to implementation study design. The projects are ongoing and preliminary results are presented using descriptive analysis.

## RESULTS:

The BPRs chosen for each site were: hand hygiene in Laos, antimicrobial stewardship in Nigeria, and trauma in Ethiopia. Regarding the Laos pilot, the World Health Organization (WHO) hand hygiene observation tool was used to determine baseline hand hygiene compliance.

**Figure 1.** Data collection tool used to measure baseline hand hygiene compliance at Laos Friends Hospital for Children

Data from 328 observations demonstrated that overall hand hygiene compliance was 43.9% with 56.1% missed hand hygiene opportunities. A pre-implementation perception survey showed that healthcare workers overestimate both their own and their co-workers' hand hygiene compliance.



**Figure 2.** Missed hand hygiene occurrences stratified by the WHO 5 essential moments of hand hygiene

Regarding the Nigeria pilot, a gap analysis was conducted to investigate antibiotic use and surgical site infections in the surgical wards of the hospital. Results showed that an average of 505 urine and wound swabs were collected from admitted patients monthly, with the most common organisms isolated being Providencia A. and E. Coli. The indication for antibiotic prescription was prophylactic versus empiric in 81.2% of cases, with the most common antibiotics used being metronidazole, ceftriaxone, and cefixime-clavulanic acid.

**Table 1.** Data collection tool used to measure baseline hand hygiene compliance at Laos Friends Hospital for Children

Antibiotics	Frequency* (n=35)	Percent (%)
IV Ceftriaxone 1g	13	37.1
IV Tandak 1.5g (Ceftriaxone+Sulbactam) 1.5g	11	31.4
Tab Marcfix 325mg (Cefixime +Clavulanic acid)	10	28.6
Tab Cefuroxime 500mg	6	17.1
Tab Levofloxacin 500mg	5	14.3
Ciprofloxacin 500mg	3	8.6
IV Flagyl	2	5.7
IV Amoxil 1.2g	1	2.8
Enrofloxacin 500mg	1	2.8
IV Meropenem 1g	1	2.8
IV Gentamicin 80mg	1	2.8
Cap Ampicillin + Cloxacillin 1gm	1	2.8

Lastly, regarding the Ethiopia pilot, the current emergency medical technician (EMT) national curriculum as set by the Ethiopian Ministry of Health was reviewed by local experts and knowledge gaps were identified. A 15-module supplemental curriculum with learning objectives was developed to augment existing educational sessions, with additional topics such as managing large-scale events, transport of emergency patients, advanced life support, and establishing quality standards.

## Conclusion:

Through international collaboration spearheaded by local stakeholders, we initiated baseline needs assessments and gap analyses in 3 countries to identify pillars and metrics on which to build-up implementation projects based on the 11 BPRs. These scalable pilot projects can be used as a framework to promote further optimization and standardization of safe and quality surgical care in LMICs.

