Safe Surgery 2020

Improving the quality of surgical care in the Lake Zone of Tanzania

DECEMBER 5, 2018
SAFE SURGERY 2020 APPROACH

- Partnership with governments and facilities
- Focus on local surgical priorities
- Suite of interventions: staff, space, stuff, systems
- Build local capacity and empower surgical teams
- Evaluation to promote learning about how best to strengthen surgical services in LMICs
RESEARCH AIMS

To assess the impact of the Safe Surgery 2020 suite of interventions on the quality of surgical care for patients

- **Short-term: surgical quality processes**
  - Adherence to surgical safety checklist

- **Medium-term: surgical complications**
  - Rate of surgical site infections (SSIs), sepsis and maternal sepsis
THEORY OF CHANGE

Impact
Reduced adverse events, disability and death

Long-term outcomes
Improved surgical quality

Medium-term outcomes
Reduced surgical complications

Short-term outcomes
Improved surgical quality processes

Interventions (4 S’s)

Staff
- Leadership training
- Mentorship – in person & virtual (Project ECHO)
- Clinical skills training
- Safe Anesthesia training

Stuff
- Facility Accelerator Fund ($10,000 USD)
- Anesthesia machine and patient monitors
- Touch Surgery

Space
- Sterilization training

Systems
- Data Strengthening Intervention
- Biomedical technologist engineer training
STUDY DESIGN AND SETTING

- **Study Design**
  - Pre and post study with comparison group

- **Setting**
  - 10 intervention facilities in Mara and Kagera
  - 10 control facilities in Geita, Shinyanga & Simiyu

- **Typical facility**
  - District government hospital
  - 100-300 beds
  - Bellwether procedures: C-Sections and laparotomies, no open fractures

[Map of the study area showing regions: Mara, Kagera, Geita, Shinyanga, Simiyu, and Lake Victoria]
**METHODS**

### Surgical Safety Checklist

- **Sample**
  - Major surgeries
- **Data collection (pre: Feb-April 2018; post: March-May 2019)**
  - Direct observation by trained data collectors (MDs) using SSC observation tool
  - Weekly data quality checks by research team
- **Limitations**
  - Hawthorne effect
- **Analysis**
  - Differences-in-difference

### SSIs, sepsis & maternal sepsis

- **Sample**
  - Post-operative patients
  - Post-natal patients
- **Data collection (pre: Feb-April 2018; post: March-May 2019)**
  - Daily surveillance of post-op and post natal patients by trained data collectors (MDs) using SSI/sepsis/maternal sepsis screening tool
  - Weekly data quality checks by research team
- **Limitations**
  - Outpatient events not captured
  - No post-discharge follow-up
- **Analysis**
  - Differences-in-difference
ADHERENCE TO SURGICAL SAFETY CHECKLIST AT BASELINE

- **All SSC items**
  - Intervention: 15%
  - Control: 19%
  - Comparison: p < 0.01

- **Safety checks**
  - Intervention: 35%
  - Control: 33%
  - Comparison: p = 0.0896

- **Teamwork & communication**
  - Intervention: 4%
  - Control: 1%
  - Comparison: p < 0.01

Intervention (n 626)  Control (n=611)
<table>
<thead>
<tr>
<th>Condition</th>
<th>Intervention (n)</th>
<th>Control (n)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical site infections</td>
<td>1547</td>
<td>1570</td>
<td>0.30</td>
</tr>
<tr>
<td>Postoperative sepsis</td>
<td>425</td>
<td>442</td>
<td>0.61</td>
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<tr>
<td>Maternal sepsis</td>
<td>3910</td>
<td>4596</td>
<td>0.09</td>
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RISK FACTORS

- Lack of appropriate vaginal cleansing prior to a C-section was associated with 4.0 times the odds of developing an SSI ($p<0.05$).
- Patients whose surgery lasted longer than 1 hour had increased odds of developing post-operative sepsis ($p<0.001$) and maternal sepsis ($p<0.001$).
- Women who underwent a C-Section had 6.6 times the odds of developing maternal sepsis compared to those who had an SVD ($p<0.001$).
KEY FEATURES

Stakeholder engagement with MoH, PORALG, RHMTs & surgical teams to identify local priorities.

Cross-cutting, multi-modal approach to improving surgical quality.

Multi-center quasi-experimental study to contribute to evidence base.

Quality Data collection by trained Tanzanian medical doctors + weekly quality checks by research team.
Salome Kuchukhidze, MPH*; Shehnaz Alidina, SD, MPH*; Tenzing N. Lama, MPH; Sarah Maongezi, MD, MPH; Ntuli Kapologwe, MD, MPH; John G. Meara, MD, DMD, MBA; Mark Shrime, MD, MPH, PHD, FACS; Asha Varghese, MBA; David Barash, MD; Erastus Maina, MPH; John Varallo, MD, MPH; David Zurakowski, PhD; Steven Staffa, MSc; Chase Reynolds; Augustino Hellar, MD**; Gopal Menon, MD**

- *Joint first authors
- **Joint senior authors
ASANTE SANA
ADHERENCE TO SS2020 SURGICAL SAFETY CHECKLIST AT BASELINE

Overall Adherence

1) Pre-op antibiotic within one hour
2) Operative site cleansing
3) Appropriate vaginal cleansing (C/S)
4) Pulse oximeter on and functioning
5) Verbal confirmation of operating site
6) Completion of sponge count

Adherence to safety and teamwork indicators

1) Discussion about airway & aspiration risk
2) Discussion on readiness to proceed
3) Discussion on anticipated blood loss
4) Discussion on difficulty & duration of case
5) Discussion on patient specific concerns
6) Discussion on ASA score