Health system assessment for safe surgical care in rural Nicaragua


Global Initiative for Children's Surgery
Operation Smile Nicaragua
Kenya Medical Research Institute, Center for Global Health

9th Annual CUGH Conference, New York, 2018

Funded by UBS Optimus
Background

- Globally 5 billion people lack access to surgical care (Meara J et al.)
  - rural populations vulnerable
- 5.9 million spread over 130,373 square kilometers
- One of the least dense countries in the world
- Rural population face significant barriers to accessing surgical care: distance, poor road infrastructure, extreme weather, & poverty

Partnership

NICARAGUAN MINISTRY OF HEALTH

OPERATION SMILE

GICS
Aim

- To implement an integrated surgical project with health facility and community interventions
  - A baseline assessment of the Nicaraguan health system's capacity to provide safe surgical care in its rural zones
PHASE I
Baseline Assessment

- MOH data review & Organization Desk Review to evaluate burden of disease & end user satisfaction
- Hospital Infrastructure Assessment
- Surgical workforce
- Baseline hospital outcome measures
- Baseline assessment at control sites
- Stakeholder workshops to assess needs & priorities

PHASE II
Implementation

- Surgical Care Provision
- Weekly data collection on hospital outcome measures
- Monthly data collection on community outcome measures
- Interim evaluation at 6 months

PHASE III
Review Impact

- Compare baseline & post implementation community outcome measures
- Compare baseline & post implementation hospital outcome measures
- Compare outcomes at implementation and control sites
- Data analysis & Reports
- Dissemination of results & stakeholder meetings

PHASE IV
Scale Up

- Baseline assessment at scale up sites
- Implementation at scale up sites
- Review impact at scale up sites
Methods:

- A retrospective analysis
- 2 district hospitals in the Northern Pacific Region: Siuna & Bonanza
- Outcome measures: surgical workforce density, surgical volume, perioperative mortality rates, equipment/infrastructure, access to essential medicines, & financing

<table>
<thead>
<tr>
<th>Tools</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. World Health Org Surgical Assessment Tool</td>
<td></td>
</tr>
<tr>
<td>2. Optimal Resources for Children's Surgery Tool</td>
<td></td>
</tr>
<tr>
<td>3. World Federation of Societies of Anesthesiologists Assessment tool</td>
<td></td>
</tr>
<tr>
<td>4. Harvard Program in Global Surgery &amp; Social Change Qualitative Assessment Tool</td>
<td></td>
</tr>
</tbody>
</table>
Access to essential medicines

Adequate supply of oxygen, antibiotics, and IV fluids
Workforce Density

- Las Minas
- Lancet 2030

Infrastructure

- **Power**
  - Avg Score
  - Goal

- **Water**
  - Avg Score
  - Goal

- **ORs**
  - Avg Score
  - Goal
<table>
<thead>
<tr>
<th></th>
<th>Assessment</th>
<th>Possible Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Professional Status</td>
<td>✔️</td>
<td>• ANARE</td>
</tr>
<tr>
<td>• Professional organizations</td>
<td>✔️</td>
<td>• Recruitment, CME opportunities</td>
</tr>
<tr>
<td>• Training, certification, accreditation</td>
<td>✔️</td>
<td>• Education/Hospital Administration</td>
</tr>
<tr>
<td>• Records and Statistics</td>
<td>Needs improvement</td>
<td>• QI/M&amp;M</td>
</tr>
<tr>
<td>• Peer Review and incident reporting</td>
<td>Needs improvement</td>
<td>• Work with Hospital Administration/MOH</td>
</tr>
<tr>
<td>• Facilities, equipment</td>
<td>Needs improvement</td>
<td>• OR Team building</td>
</tr>
<tr>
<td>• WHO surgical safety list</td>
<td>Needs improvement</td>
<td>• Education OR Teams (SAFE, EPM, American Heart, PACU)</td>
</tr>
<tr>
<td>• Peri-anesthetic care</td>
<td>Needs improvement</td>
<td>• Work with Hospital Administration</td>
</tr>
<tr>
<td>Pre-anesthetic care, checks, monitoring during anesthesia, post-anesthesia care</td>
<td>Needs improvement</td>
<td>• Work with Hospital Administration</td>
</tr>
</tbody>
</table>
Conclusion:

- A major success of the Nicaraguan health system: financial protection from catastrophic expenditure & essential medicines adequate

- To improve access to surgical care in rural Nicaragua:
  - investments in infrastructure, equipment & human resources - particularly in anesthesia providers
  - need for monitoring and evaluation of patient outcomes including perioperative mortality and complication rates & use of the WHO surgical safety checklist
## Monitoring & Evaluation

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Siuna</th>
<th>Bonanza</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased surgical volumes</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Mortality rates</td>
<td>0.8%</td>
<td>0%</td>
</tr>
<tr>
<td>Complication rates</td>
<td>2.2%</td>
<td>1.6%</td>
</tr>
<tr>
<td>WHO safety checklist use rates</td>
<td>68%</td>
<td>85%</td>
</tr>
</tbody>
</table>
Way forward: Community Engagement
Acknowledgements

Sara Estrada, MD
Wesley Sequeira, BA
Maria Lucia Espinosa, MD
Rodrigo Arce, MD
Vincent Were, BA, MPH, PhDc
Brian Otieno, BA
Faye Evans, MD
Isobel Marks, MD
Karime Ulloa, BA

GICS Team: Doruk Ozgediz MD, Dan Poenaru MD, PhD, Emily Smith PhD, Kokila Lakhoo MD, Keith Oldham MD, Diana Farmer MD, Emmanuel Ameh MD
Siuna & Bonanza District Hospitals