Central Malawi District Hospital Surgical Capacity Assessment

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Surgical Need in Malawi

- Malawi Population: 16 Million
- Surgery in Malawi: 50,000/year\(^1\)
  - 312 per 100,000
- Surgery in the US: 16,000 per 100,000\(^2\)
- 11% of Global Burden of Disease is surgical\(^3\)
- 3.5% of 234 million surgeries performed at in low income countries\(^4\)

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Malawian Healthcare System

- Northern, Central, and Southern Regions
- Primary, Secondary, and Tertiary Levels of Care
  - 4 Central Hospitals
    - Kamuzu
    - Mzuzu
    - Zomba
    - Queen Elizabeth
  - 27 District Hospitals
  - 493 Health Centers

Health Monitoring in Malawi

- Human Resources for Health (HRH)
- Health Management Information Systems (HMIS)
- Population and Housing Census
- National Health Accounts
Surgical Capacity Assessment

- Travelled to 8 District Hospitals
- Interviews with surgical clinical officers
- Operating theatre evaluations
- WHO Survey completion
- Surgical Logbook review and analysis
WHO EESC Survey

- Focuses on surgery and anesthesia
- Has been used in over 25 countries
- Widely applicable between countries
## Central Malawi District Hospitals

<table>
<thead>
<tr>
<th></th>
<th>Salima</th>
<th>Kasungu</th>
<th>Dedza</th>
<th>Ntcheu</th>
<th>Mchinji</th>
<th>Nkhotakota</th>
<th>Ntchisi</th>
<th>Dowa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catchment</strong></td>
<td>300,000</td>
<td>693,000</td>
<td>693,000</td>
<td>529,000</td>
<td>473,000</td>
<td>320,000</td>
<td>224,000</td>
<td>556,000</td>
</tr>
<tr>
<td><strong>Bed Number</strong></td>
<td>200</td>
<td>220</td>
<td>280</td>
<td>255</td>
<td>284</td>
<td>400</td>
<td>178</td>
<td>431</td>
</tr>
<tr>
<td><strong>Admissions in one year</strong></td>
<td>11,004</td>
<td>16,767</td>
<td>7,501</td>
<td>15,415</td>
<td>18,750</td>
<td>13,121</td>
<td>6,855</td>
<td>25,342</td>
</tr>
<tr>
<td><strong>Total outpatients in one year</strong></td>
<td>519,000</td>
<td>700,000</td>
<td>1,100,000</td>
<td>666,000</td>
<td>649,000</td>
<td>600,000</td>
<td>365,000</td>
<td>904,000</td>
</tr>
<tr>
<td><strong>Operating Theatres</strong></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
Personnel

- No certified surgeons
- No certified anesthesiologists
- No certified obstetrician/gynecologists
- Less than half (3/8) have a certified doctor able to provide surgery
- Clinical officers are the primary providers of surgery (8/8)
- No certified doctors provide anesthesia
- Clinical officers are the sole providers of anesthesia (8/8)
Infrastructure

- Most do not have reliable water or electricity (6/8)
- Most do not have a post-op recovery room (6/8)

- All have an Emergency Department
- All have blood banking capacity
  - Inconsistent availability of blood
- All have a laboratory
### Supplies

<table>
<thead>
<tr>
<th>District Hospital</th>
<th>Gloves (sterile)</th>
<th>NG tubes</th>
<th>IV cannulas</th>
<th>Suture</th>
<th>Urinary catheters</th>
<th>Chest tubes</th>
<th>Cric/Tracheostomy set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salima</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Always</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Never</td>
<td>Never</td>
</tr>
<tr>
<td>Kasungu</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Never</td>
</tr>
<tr>
<td>Dedza</td>
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<td>Intermittant</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Intermittant</td>
<td>Never</td>
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<td>Always</td>
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<td>Mchinji</td>
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<td>Always</td>
</tr>
<tr>
<td>Nkhotakota</td>
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<td>Always</td>
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<td>Always</td>
<td>Intermittant</td>
<td>Never</td>
</tr>
</tbody>
</table>

- Single-use supplies pose the greatest challenge
Interventions

All Facilities perform:

- Hernia repair
- Hydrocelectomy
- Laparotomy
- Hysterectomy
- Cystotomy
- Incision & Drainage
- Suturing
- Debridement
- Cesarean section
- Dilatation & Curettage
- Tubal ligation
- Vasectomy
- Amputation
- Male circumcision
- Closed fracture management
- Open fracture management
- Joint dislocation
- Osteomyelitis management
- Resuscitation (central line, etc)
- Foreign body removal
- Spinal anesthesia
- Ketamine anesthesia
- General anesthesia

Only 3/8 perform:

- Appendectomy
- Bowel Resection
- Incarcerated hernia
- Tracheostomy
- Contracture release
- Skin Grafting
Logbook Analysis

- Range between 1000 and 2200 surgical cases in 2012 per district hospital
- Most common recorded procedures
  - 1. C-section
  - 2. D&C
  - 3. Tubal Ligation
  - 4. Fracture management
  - 5. General Surgery
    - I&O and Debridement
    - Hydrocele repair
    - Inguinal Hernia repair
    - Laparotomy for peritonitis
Conclusion: Focus on the District Hospital

- First line of defense for surgery
- Offset the burden of referral centers
- Similar logbook trends and numbers from 10 years ago
- Shift in development focus to horizontal approach
- Human resources and clinical officer skill is crucial
- Clinical officers form the backbone of surgery
- Training and collaboration with central hospitals is needed