The Surgical Training Program: Increasing access to essential surgical care in Sierra Leone by training Medical Doctors and Community Health Officers

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Surgical Workforce Crisis

World population

- Middle
- Poor
- Rich

234 million annual surgeries

Weiser 2008 - An estimation of the global volume of surgery a modelling strategy based on available data; The Lancet; June 25, 2008 DOI:10.1016/S0140-6736(08)60878-8
# The Surgical Workforce Crisis

<table>
<thead>
<tr>
<th>Role</th>
<th>Freetown</th>
<th>Provinces</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgeons</td>
<td>12</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Obstetrician/gynaecologist</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>MD practising surgery</td>
<td>1</td>
<td>3.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Surgical Technician</td>
<td>10</td>
<td>4</td>
<td>14</td>
</tr>
</tbody>
</table>

Kingham 2009 - Quantifying Surgical Capacity in Sierra Leone; Arch Surg. 2009;144(2):122-127
### Surgical Care is Cost Effective

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cost-effectiveness (DALY averted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid-impact package for NTDs</td>
<td>US$2–US$9</td>
</tr>
<tr>
<td>Measles vaccination</td>
<td>US$5</td>
</tr>
<tr>
<td>Basic surgical services</td>
<td>US$11 - S$33</td>
</tr>
<tr>
<td>Antiretroviral therapy for HIV</td>
<td>US$300 - US$500</td>
</tr>
</tbody>
</table>

Ozgediz 2008 - The “Other” Neglected Diseases in Global Public Health: Surgical Conditions in Sub-Saharan Africa; PLoS Medicine; June 2008; Volume 5 Issue 6 e121
Surgical Workforce Crisis – Sierra Leone

2012 Countrywide community survey (3645 respondents)
• 1352 (37%) reported having a surgical condition
• 575 (31%) households reported at least one household member dying in the previous year
• 237 (33%) deaths were associated with a surgical condition that might have benefited from surgical care

Conclusion:

*There is a large unmet need for surgical interventions*
Task-Shifting

• Delegation of certain medical responsibilities to less specialized health care workers

• Examples:
  • Ophthalmic nurses doing cataract operations
  • Anesthesia nurses providing general anesthesia

• WHO 2012 Recommendations (high level) associate clinicians:
  • Perform: Manual placenta removal, CS and vacuum extraction
Surgical Task-Shifting

• Shifting of tasks from surgeons to non-specialists
• Shifting tasks from doctors to non-doctors
  (Non Physician Clinicians – NPC)

• Basic surgical care, especially in rural area.
Surgical Task-Shifting
the experience from East-Africa

• Malawi, 90% of Caesarian sections done by NPC
• Tanzania 84% of Caesarian sections done by NPC
• Mozambique 92% of Caesarian sections done by NPC

• Retention is high

Pereira C et al. Meeting the need for emergency obstetric care in Mozambique: Work performance and histories of medical doctors and assistant medical officers trained for surgery. BJOG 114: 1530–1533
Surgical Task-Shifting
the experience from East-Africa

Systematic review with meta-analysis:
• 6 non-randomized controlled studies (16 018 ♀)
• NPCs vs MD - caesarean section.

Results:
• Maternal death: - no significant differences
• Perinatal death: - no significant differences

Wilson 2011 - A comparison of clinical officers with medical doctors on outcomes of caesarean section in the developing world meta-analysis of controlled studies; BMJ 2011;342:d2600
The Surgical Training Program

• Objective: To increase the surgical capacity in Sierra Leone

• By training Medical Doctors and Community Health Officers in basic life saving surgery and obstetrics
• By having a strong cooperation with the Ministry of Health and Sanitation
• By creating a strong network together with 8 other hospitals
• By using the example of surgical task-shifting from East-Africa
## Training Overview

<table>
<thead>
<tr>
<th>Practical training</th>
<th>Theoretical / Skills training</th>
<th>Houseman Ships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basics Masanga</td>
<td>Visiting consultant specialists in:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Surgery and orthopedics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Obstetrics and gynaecology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Radiology (Ultrasound)</td>
<td></td>
</tr>
<tr>
<td>Partner hospitals (2-3)</td>
<td>- Anesthesiology</td>
<td></td>
</tr>
<tr>
<td>Conaught and/or PCMH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exam</td>
<td></td>
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</tr>
</tbody>
</table>

### Training (2 years)

- Basics Masanga
- Partner hospitals (2-3)
- Conaught and/or PCMH

### Houseman Ships

- Conaught and/or PCMH
- Exam
Curriculum
Theoretical Training
Skills Training – Ultra Sound
Skills Training – Obstetrics
Practical training
Training Overview – Partner Hospitals

Hospitals are selected based upon:

- Surgical capacity
- Supervision
- The student record all procedures in a logbook
Teaching Facilities

Primary Training Center
1. Masanga Hospital

Partner Hospitals
2. Magbenteh, Makeni
3. Holy Spirit, Makeni
4. St John of God, Lunsar
5. Kamakwie Weslian Hospital
6. Lion Hearth Medical Center, Yele
7. Gundama Refferal Center, Bo
8. Serabu Catholic Hospital
9. Aberdeen Womens Center, Freetown

Housemanship Hospitals
10. Canaught University Hospital, Freetown
11. PCMH Maternity Hospital, Freetown
Training Overview – Exam

After the two years there is a examination consisting of:

• Logbook

• Written exam

• Oral exam – conducted by the chief surgeon and the chief obstetrician
Training Overview – Housemanship

To assess the students in the governmental hospitals in Freetown and give them the final preparation for the work in the district hospitals

Started in March 2013
Number of students in the program

- 2011:
  - First half: 2 students
  - Second half: 4 students

- 2012:
  - First half: 5 students
  - Second half: 6 students

- 2013:
  - First half: 10 students
  - Second half: 15 students

- 2014:
  - First half: 30 students

Legend:
- Green: Student
- Red: Housemanship
The Students

• 30 Community Health Officers
• 1 Medical Doctor

• 26 males
• 5 females
The Students
(as by 1st July 2014)

Selection of students (31)

- Still in training (16)
  - Still in Housemankships (8)
- Basic training 2 years (11)
  - Examination (11)
    - Housemankships (2)
      - Employed (2)
  - Dropout: Performance (3)
    - Own request (1)
      - MD started specialization
# Procedures – Students Role

(as by 1\textsuperscript{st} July 2014)

<table>
<thead>
<tr>
<th>Role</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observer</td>
<td>3085</td>
<td>20.7%</td>
</tr>
<tr>
<td>Assistant</td>
<td>6046</td>
<td>40.6%</td>
</tr>
<tr>
<td>Surgeon direct supervision</td>
<td>3022</td>
<td>20.3%</td>
</tr>
<tr>
<td>Surgeon indirect supervision</td>
<td>2749</td>
<td>18.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14902</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
## Top 10 procedures

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Inguinal hernia repair</td>
<td>3895</td>
<td>26.1%</td>
</tr>
<tr>
<td>2. Cesarean section</td>
<td>3144</td>
<td>21.1%</td>
</tr>
<tr>
<td>3. Explorative laparotomy</td>
<td>672</td>
<td>4.5%</td>
</tr>
<tr>
<td>4. Appendectomy</td>
<td>497</td>
<td>3.3%</td>
</tr>
<tr>
<td>5. Scrotal hydrocele</td>
<td>494</td>
<td>3.3%</td>
</tr>
<tr>
<td>6. Tubal ligation</td>
<td>489</td>
<td>3.3%</td>
</tr>
<tr>
<td>7. Hysterectomy</td>
<td>443</td>
<td>3.0%</td>
</tr>
<tr>
<td>8. Dilation and curettage</td>
<td>437</td>
<td>2.9%</td>
</tr>
<tr>
<td>9. Incision and drainage</td>
<td>431</td>
<td>2.9%</td>
</tr>
<tr>
<td>10. Obstetrics and gynecology other</td>
<td>400</td>
<td>2.7%</td>
</tr>
</tbody>
</table>
Ebola in Sierra Leone

First case in Sierra Leone in May 2014

Latest data:
• Sierra Leone: Cases 4862 / Deaths 1130
• Total: Cases 13,241 / Deaths 4950
Ebola in Sierra Leone

![Graph showing the increase in new Ebola cases over months. The graph begins with a few cases in the early months and sharply increases in the later months.]
Ebola in Sierra Leone

- Under registration
- Indirect mortality
- Weakening of the healthcare system
Surigcal procedures per student
Teaching Facilities

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Housemanship Hospitals
10. Caunaught University Hospital, Freetown
11. PCMH Maternity Hospital, Freetown
Ebola, Impact STP

• Evacuated expat doctor
• Stopped with sending trainers
• No start-up of new students
Joseph Heindilo Ngegba
† 22nd August 2014
Discussion

Strengths:
• Involvement with the Ministry of Health and Sanitation
• Close contact with the students
• Netwerk with partner hospitals

Challenges:
• Quality controll
• Legal framework

• Ebola is the biggest challenge
Conclusion

Short course training of MDs and CHO's are feasible in Sierra Leone and can contribute to address the unmet need for surgical and obstetrical care within a short timeframe. Good cooperation between MOHS and the NGO CapaCare towards common goals is essential.

The current Ebola outbreak has major negative impact on the Sierra Leonean health care system and the program. As soon as the Ebola epidemic is under control the program will continue to train health workers in basic life saving surgery and assist in rebuilding the Sierra Leonean healthcare system
More information:

www.CapaCare.org