Role of WHO in Improving Global Surgery:

Strengthening emergency & essential surgical care and anesthesia as a component of universal health coverage

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Role of WHO in Improving Global Surgery:
Strengthening EESC & Anesthesia as a component of UHC

Program established
Ensure Safety & Efficacy of Clinical Procedures in
Anaesthesia, Surgery, Orthopaedic, Obstetric

Norms & Standards
Policies evidence-based
Ministries of Health
Convene Global stakeholders expertise
**Role of WHO in Improving Global Surgery: Strengthening EESC & Anesthesia as a component of UHC**

**Cancer**
- 7.6 million deaths (around 13% of all deaths) in 2008

**Diabetic Complications:**
- About 347 million people worldwide have diabetes

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**Cancer**
- 7.6 million deaths (around 13% of all deaths) in 2008

**Disasters: Natural; Conflict**
- Elderly population (greatest number of fatal falls)

**Injuries, violence, disasters**
- Road traffic injuries kill 1.3 million/year
- 424,000/year die from falls
- Elderly population (greatest number of fatal falls)

**Disasters: Natural; Conflict**
- Elderly population (greatest number of fatal falls)

**Maternal & Child Health**
- 800 women/day die due to preventable causes related to pregnancy & childbirth, mostly in low resource settings

**Infecions**
- Such as HIV, Buruli ulcer and filariasis

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**Maternal & Child Health**
- 800 women/day die due to preventable causes related to pregnancy & childbirth, mostly in low resource settings

**Disasters: Natural; Conflict**
- Failure in health services and health systems

**Access to Surgical & Anaesthesia Services**
Challenges: Infrastructure & Equipment

- **Infrastructure**
  - Water/Electricity
  - oxygen
  - sterilization

- **Basic Emergency Equipment**
  - non-functioning/inventory
  - maintenance

- **Access & Use**
  - Equipment & procedures mismatch
  - Training & skills
Challenges: Health Workforce

- Today: shortage of 7.2 million
- 2035: shortage 12.9 million

Sub Saharan Africa caries **24%** of the global burden of disease, but has as little as **3%** of the world’s health workers

- Specialists
- Skilled Health Providers

World Health Assembly Resolution, World Health Report
- Rapid scale up of health workforce

• Anaesthesia technology is advancing to enable complex surgical procedures

BUT .......has this advanced in parallel in the LMICs ??

• Training programs imbalanced:

  Surgery versus Anaesthesia

  - Role of Anaesthesia extends beyond Operating Room
  - Workforce trained in basic anesthetic techniques at PHC level can also resuscitate/stabilize critically ill and trauma patients

Priority Actions to increase the political priority of Emergency & Essential Surgery (EES)

1. Organizational

- Coordinate EES stakeholders into a unified effort.
- Create opportunities for surgeons /anesthetists to gain expertise in policy & global public health: during/after residency

2. Symbolic

- Reframe EES as an essential component of Primary Health Care (PHC) (publications, policy, media)
- Capture attention & resources: media campaigns using high-profile EES issues: maternal health, injuries etc.

3. Economic
• Promote national health insurance schemes and novel mechanisms of sustainable funding.

4. Research
• Advocate for increased resources for research relevant to EES
• Expand collaborative research partnerships.

5. Political
• Apply the sum product of the above actions to influence policymakers to promote the EES agenda.
Collaborations & Partnerships

WHO Global Initiative for Emergency & Essential Surgical Care (GIEESC)

Collaborations for access to timely & safe surgical emergencies, trauma, obstetrics, anaesthesia services

Multidisciplinary stakeholders
Health authorities, academia, professionals, societies, international organizations, NGOs

1700 members 129 countries
A Unified Coordinated Effort

WHO GIEESC Biennial Global Meetings

• 2005 WHO Headquarters, Geneva, Switzerland

• 2007 Tanzania Ministry of Health

• 2009 Mongolia Ministry of Health

• 2011 USA Academic institutions

• 2013 Trinidad & Tobago Ministry of Health
WHO Standards for Improving Surgical Care Systems

- Policy-makers
- Managers
- Health providers
- Pre-service training
- In-service training

www.who.int/surgery
Tools Meeting Local Needs

- Mongolian
- Korean
- Dari
- Farsi
- Vietnamese
- French
WHO Emergency & Trauma Care (ETC)
Training Course Modules for Frontline Health Providers
Injuries in women, children, elderly

1. Principles & Techniques of Trauma Care
2. Basic Surgical Skills
3. System Specific Trauma
4. Practical Anesthesia
5. Surgical Care System (Disaster Management)

• Facilitators Guide
• Time-Table
• Practical sessions:
  Role play, case scenario
WHO Tools: Quality & Safety

Access to Timely and Safe Surgical Care

Best Practice Protocols
Clinical Procedures Safety

Posters for Implementation at point of care

- Emergency room
- O.R
- ICU
- Wards
- Obstetrics
- Disaster situation
National Policy & Plans

- Planning Tool Guide National/District Health Plan
- Primary Surgical Care Package

### PRIMARY SURGICAL CARE PACKAGE (PSCP)

Details of the procedures explained in the WHO manual *Surgical Care at the District Hospital (SCDH)*.

Procedures Requiring Advanced Training Skills can be integrated into the PSCP to meet country needs.

<table>
<thead>
<tr>
<th>Procedures</th>
<th>SCDH Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resuscitation (airway, bleeding, CPR)</td>
<td>13-1</td>
</tr>
<tr>
<td>Peripheral venous cut down</td>
<td>13-14</td>
</tr>
<tr>
<td>Cricothyroidotomy/tracheostomy</td>
<td>PTCHM-5, 16-10</td>
</tr>
<tr>
<td>Chest tube insertion and needle decompression</td>
<td>16-8</td>
</tr>
<tr>
<td>Suturing (including episiotomy), laceration and wound management</td>
<td>Chapter 4, Chapter 5</td>
</tr>
<tr>
<td>Incision and drainage of abscesses</td>
<td>5-19</td>
</tr>
<tr>
<td>Burn management</td>
<td>5-13</td>
</tr>
<tr>
<td>Removal of foreign body</td>
<td>5-16</td>
</tr>
<tr>
<td>Suprapubic puncture/cystostomy</td>
<td>9-4</td>
</tr>
<tr>
<td>Fracture immobilization</td>
<td>17-6, 18-1</td>
</tr>
<tr>
<td>Dilatation and curettage for retained products of conception</td>
<td>12-18</td>
</tr>
<tr>
<td>Local anesthesia</td>
<td>14-21</td>
</tr>
<tr>
<td>Ketamine anesthesia</td>
<td>14-25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedures Requiring Advanced Training Skills</th>
<th>SCDH Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cesarean section</td>
<td>11-13</td>
</tr>
<tr>
<td>Uterine rupture/ectopic pregnancy</td>
<td>12-19, 12-21</td>
</tr>
<tr>
<td>Skin grafting and contracture release</td>
<td>5-3</td>
</tr>
<tr>
<td>Biopsies and needle aspiration</td>
<td>5-30</td>
</tr>
<tr>
<td>Hernia repair</td>
<td>8-1</td>
</tr>
<tr>
<td>Hydrocelectomy</td>
<td>9-11</td>
</tr>
<tr>
<td>Laparotomy for acute abdomen</td>
<td>Chapter 6, Chapter 7</td>
</tr>
<tr>
<td>Fractures reduction</td>
<td>17-6</td>
</tr>
<tr>
<td>Curettage for chronic osteomyelitis</td>
<td>19-6</td>
</tr>
<tr>
<td>Amputation</td>
<td>18-31</td>
</tr>
<tr>
<td>Male circumcision</td>
<td>9-8</td>
</tr>
<tr>
<td>Club foot repair</td>
<td>19-3</td>
</tr>
<tr>
<td>General anesthesia (inhalation)</td>
<td>14-1</td>
</tr>
<tr>
<td>Spinal anesthesia</td>
<td>14-23</td>
</tr>
</tbody>
</table>
WHO Tools: Team Work Approach

Surgical Safety Checklist

**Before induction of anaesthesia**
(with at least one person from each team)

- Has the patient confirmed his/her identity, site, procedure, and consent?
  - Yes
  - No
  - Not applicable

- Is the site marked?
  - Yes
  - No
  - Not applicable

- Is the anaesthesia machine and medication check complete?
  - Yes
  - No
  - Not applicable

- Is the pulse oximeter on the patient and functioning?
  - Yes
  - No

- Does the patient have a:
  - Known allergy?
    - Yes
    - No
  - Difficult airway or aspiration risk?
    - Yes
    - No
    - Yes, and equipment/assistance available
  - Risk of >500ml blood loss (7ml/kg in children)?
    - Yes
    - No
    - Yes, and two IVs/cenral access and fluids planned

**Before skin incision**

- Confirm all team members introduced themselves by
  - Name
  - Position

- Confirm the patient’s name and where the incision will be
  - Yes
  - No
  - Not applicable

- Has antibiotic prophylaxis been given in the last 60 minutes?
  - Yes
  - No
  - Not applicable

- Reported Critical Events
  - To Surgeon:
    - What are the critical or non-routine factors?
    - How long will the case take?
    - What is the anticipated blood loss?
  - To Anaesthetist:
    - Are there any patient-specific considerations?
  - To Nursing Team:
    - Has sterile technique been confirmed?
    - Are there equipment issues or anomalies?

- Is essential imaging displayed?
  - Yes
  - No
  - Not applicable

Post-operative Care & Pain Relief

**Postoperative care**

**Post operative note and orders**
The patient should be discharged to the ward with comprehensive orders for the following:
- Vital signs
- Pain control
- Rate and type of intravenous fluid
- Urine and gastrointestinal fluid output
- Other medications
- Laboratory investigations

The patient’s progress should be monitored and should include at least:
- A comment on medical and nursing observations
- A specific comment on the wound or operation site
- Any complications
- Any changes made in treatment

**Aftercare: Prevention of complications**

- Encourage early mobilization:
  - Deep breathing and coughing
  - Active daily exercise
  - Joint range of motion
  - Muscular strengthening
  - Make walking aids such as canes, crutches and walkers available and provide instructions for their use

- Ensure adequate nutrition
- Prevent skin breakdown and pressure sores:
  - Turn the patient frequently
  - Keep urine and faeces off skin
- Provide adequate pain control

**Discharge note**

On discharging the patient from the ward, record in the notes:
- Diagnosis on admission and discharge
- Summary of course in hospital
- Instructions about further management, including drugs prescribed

Ensure that a copy of this information is given to the patient, together with details of any follow-up appointment
WHO Tools: Equipment Inventory

**WHO Generic Essential Emergency Equipment List**

*Guide to Infrastructure and Supplies at Various Levels of Health Care Facilities*

**Emergency and Essential Surgical Care (EESC)**

Compiled from the WHO Manual Surgical Care at the District Hospital 2003

- **Essential Emergency Equipment List**
- **Anaesthetic Infrastructure Supplies**

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<table>
<thead>
<tr>
<th>Procedures</th>
<th>Level 1: Small Hospital / Health Centre</th>
<th>Level 2: District / Provincial Hospital</th>
<th>Level 3: Referral Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal delivery</td>
<td>Rural hospital or health centre with a small number of beds and a sparsely equipped operating room (OR) for minor procedures</td>
<td>District or provincial hospital with 100–300 beds and adequately equipped major and minor operating theatres</td>
<td>A referral hospital of 300–1000 or more beds with basic intensive care facilities</td>
</tr>
<tr>
<td>Uterine evacuation</td>
<td>Provides emergency measures in the treatment of 90–95% of trauma and obstetrics cases (excluding Cesarean section)</td>
<td>Short term treatment of 95–99% of the major life-threatening conditions</td>
<td>Treatment aims are the same as for Level 2, with the addition of:</td>
</tr>
<tr>
<td>Circumcision</td>
<td>Referral of other patients (e.g., obstructed labour, bowel obstruction) for further management at a higher level</td>
<td></td>
<td>Ventilation in OR and ICU</td>
</tr>
<tr>
<td>Hydrocele reduction, incision and drainage</td>
<td></td>
<td></td>
<td>Prolonged endotracheal intubation</td>
</tr>
<tr>
<td>Wound suturing</td>
<td></td>
<td></td>
<td>Thoracic trauma care</td>
</tr>
<tr>
<td>Control of hemorrhage with pressure dressings</td>
<td></td>
<td></td>
<td>Hemodynamic and inotropic treatment</td>
</tr>
<tr>
<td>Debridement and dressing of wounds</td>
<td></td>
<td></td>
<td>Basic ICU patient management and monitoring for up to 1 week; all types of cases, but with limited or no provision for:</td>
</tr>
<tr>
<td>Temporary reduction of fractures</td>
<td></td>
<td></td>
<td>o Multi-organ system failure</td>
</tr>
<tr>
<td>Cleaning or stabilization of open and closed fractures</td>
<td></td>
<td></td>
<td>o Hemodialysis</td>
</tr>
<tr>
<td>Chest drainage (possibly)</td>
<td></td>
<td></td>
<td>o Complex neurological and cardiac surgery</td>
</tr>
<tr>
<td><strong>Personnel</strong></td>
<td><strong>Personnel</strong></td>
<td><strong>Personnel</strong></td>
<td><strong>Personnel</strong></td>
</tr>
<tr>
<td>Paramedical staff without formal anesthesia training</td>
<td>One (two) trained anesthetists</td>
<td>Clinical officers and specialists in anesthesia and surgery</td>
<td></td>
</tr>
<tr>
<td>Nurse-midwife</td>
<td>District medical officers, senior clinical officers, nurses, midwives</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Visiting specialists or resident surgeon and/or obstetrician/eye specialist</td>
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</tbody>
</table>

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**Drugs**

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Level 1: Small Hospital / Health Centre</th>
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<th>Level 3: Referral Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketamine 50 mg/mL injection, 10 mL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lidocaine 1% or 2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diazepam 5 mg/mL injection, 2 mL injection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Epinephrine [adrenaline]) 1 mg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Atropine 0.6 mg/mL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Same as Level 1, but also:</td>
<td></td>
<td>Same as Level 2 with the following additions:</td>
</tr>
<tr>
<td>Thiopental 500 mg/1mg powder</td>
<td></td>
<td></td>
<td>Facial and intracranial surgery</td>
</tr>
<tr>
<td>Suxamethonium bromide 500 mg powder</td>
<td></td>
<td></td>
<td>Bowel surgery</td>
</tr>
<tr>
<td>Atropine 0.5 mg injection</td>
<td></td>
<td></td>
<td>Pediatric and neonatal surgery</td>
</tr>
<tr>
<td>Epinephrine (adrenaline) 1 mg injection</td>
<td></td>
<td></td>
<td>Thoracic surgery</td>
</tr>
<tr>
<td>Diazepam 10 mg injection</td>
<td></td>
<td></td>
<td>Major eye surgery</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Major gynecological surgery, e.g., vesico-vaginal repair</td>
</tr>
</tbody>
</table>

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WHO/HPW/CRF 2003 formatted 2012
WHO Tools Quality & Safety

- Safe Surgery & Anaesthesia
- Obstetric Safety
- Monitoring & Evaluation
### Before Surgery

1. Tell them about your previous surgeries, anaesthesia and medications, including herbal remedies
2. Tell them if you are pregnant or breast-feeding
3. Tell them about your health conditions (allergies, diabetes, breathing problems, high blood pressure, anxiety, etc.)
4. Ask about the expected length of your hospital stay
5. Ask for personal hygiene instructions
6. Ask them how your pain will be treated
7. Ask about fluid or food restrictions
8. Ask what you should avoid doing before surgery
9. Make sure that the correct site of your surgery is clearly marked on your body

### After Surgery

1. Tell them about any bleeding, difficulty breathing, pain, fever, dizziness, vomiting or unexpected reactions
2. Ask them how you can minimize infections
3. Ask them when you can eat food and drink fluids
4. Ask when you can resume normal activity (e.g. walking, bathing, lifting heavy objects, driving, sexual activity, etc.)
5. Ask what, if anything, you should avoid doing after surgery
6. Ask about the removal of stitches and plasters
7. Ask about any potential side effects of prescribed medications
8. Ask when you should come back for a check-up

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**Patient’s Communication Tool for Surgical Safety**

*If you or your child will shortly undergo a surgical procedure, communicate the following to your health-care provider* (you may wish to involve a family member or friend)
WHO Global Database for Evidence Based Planning

WHO EESCS Situation Analysis Tool
108 data points

WHO Global Database for Evidence Based Planning

Argentine Barbados
Dominica
Ecuador
Grenada
Guyana
Saint Lucia
Trinidad & Tobago

Kyrgyzstan
Tajikistan

EURO

Afghanistan
Egypt
Oman
Pakistan

AMRO

Burundi
Cameroon
Côte d'Ivoire
Ethiopia
Gambia
Ghana
Kenya
Liberia

AFRO

Malawi
Mali
Mozambique

SEARO

Bangladesh
Bhutan
Democratic People's Republic of Korea
India
Indonesia
Maldives
Nepal
Sri Lanka

WPRO

China
Mongolia
Papua New Guinea
Philippines
Solomon Island
Viet Nam

WHO-­‐MOH
Assessment of Oxygen in 12 African countries

Table 2. Number and percentage [n, (%)] of health facilities that reported at least one of the items below was either always, sometimes, or not fully functioning and available for use at the time of inquiry.

<table>
<thead>
<tr>
<th></th>
<th>Electricity</th>
<th>Generator</th>
<th>Any oxygen source</th>
<th>Oxygen Cylinder</th>
<th>Oxygen Concentrator</th>
<th>Face mask and tubing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always available</td>
<td>81 (35.1)</td>
<td>127 (56.7)</td>
<td>99 (43.8)</td>
<td>66 (29.1)</td>
<td>55 (24.6)</td>
<td>75 (34.3)</td>
</tr>
<tr>
<td>Sometimes available</td>
<td>112 (48.5)</td>
<td>59 (26.3)</td>
<td>71 (31.4)</td>
<td>55 (22.9)</td>
<td>64 (28.6)</td>
<td>79 (37.6)</td>
</tr>
<tr>
<td>Not available</td>
<td>38 (16.5)</td>
<td>38 (17.0)</td>
<td>56 (24.8)</td>
<td>109 (48.0)</td>
<td>105 (46.9)</td>
<td>65 (31.0)</td>
</tr>
</tbody>
</table>
Anesthesia Capacity in 22 Low & Middle Income Countries

Anesthesia Equipment (n=590)

Caesarean delivery Availability in 26 Low & Middle Income Countries

Attention in Public Health Agenda

Surgical Care Addressing Millennium Development Goals

132 facilities in 8 countries (Sri Lanka, Mongolia, Tanzania, Afghanistan, Sierra Leone, Liberia, Gambia, Sao Tomè and Principe)

Role of WHO in Improving Global Surgery: Strengthening EESC & Anesthesia as a component of UHC

Recognition to support Anesthesia & Surgical Care in the Global Health Agenda

- WHO EESC program created 2004 and 2005 WHO GIEESC
- Disease Control Priorities World Bank Book
  2nd Edition 2006: one chapter
  3rd Edition 2015: several chapters
- Academia Global Health Programs
  Surgery
- Lancet Commission

Global Surgery 2014
Recognition to support EESC at the Global Public Health Agenda

- **The World Health Report**  
  Surgery 2008

- **WHA resolutions before 2014**  
  Several specific surgical conditions
World Health Assembly Event
21 May 2014, Palais Des Nations, Geneva, Switzerland

Improving Safe Emergency and Essential Surgical Care and Anaesthesia

Organized by Zambia, Nigeria, United States of America, Rwanda, Kenya, Senegal, Australia

International College of Surgeons
International Federation of Surgical Colleges
International Society of Orthopaedic Surgery and Traumatology
World Federation of Societies of Anaesthesiologists

In cooperation with WHO Emergency and Essential Surgical Care Programme
WHO Department of Service Delivery and Safety
Strengthening emergency and essential surgical care and anaesthesia as a component of universal health coverage

Report by the Secretariat

GLOBAL BURDEN OF SURGICAL CONDITIONS

1. Every year, over 234 million surgical procedures are performed globally for a wide range of conditions involving patients of all age categories and in every WHO Member State. The many conditions requiring surgical care — including obstructed labour, congenital anomalies, diabetes, cancer, cardiovascular disease, hernias, cataracts and injuries from road accidents, burns and falls — are common and affect all socioeconomic and ethnic groups.

2. Surgically treatable diseases account for 15 cases of disability worldwide. Conservative estimates find that 14% of the world's burden of disease stems from conditions that could be treated successfully through surgery, with low- and middle-income countries the most affected. As a result of such conditions going untreated, rates of maternal mortality are high, minor surgical pathologies become lethal, and treatable injuries progress to death. In fact, surgery is a potential avenue at some point for virtually every disease included in the Global Burden of Disease Study 2010.

3. The conditions for which surgery is one of the primary clinical solutions are expected to become increasingly common in the coming years, with increases of over 45% anticipated for common conditions such as heart disease, cancer, diabetes and injuries from road accidents by 2030.

4. Services for these conditions, including surgical care, are often provided through independent disease-specific initiatives rather than through a more sustainable integrated approach. The integrated delivery of surgical care is an important and growing need for the treatment of various health conditions across the life-course. The strain placed on health systems by the delivery of surgical care for the existing burden of surgical conditions is further intensified by communities’ acute needs in the wake of disasters and emergencies.

THE IMPORTANCE AND COST EFFECTIVENESS OF SURGERY

5. The world health report 2008 notes that surgical care is an integral component of the continuum of primary care yet, it is estimated that more than 2000 million people in the world lack access to...
Coordinated Unified Support

- WHO Executive Board Meeting January 2015
  WHO HQ, Geneva, Switzerland
  10. Health systems
    10.1 Strengthening emergency and essential surgical care and anaesthesia as a component of universal health coverage
  Document EB136/27

- World Health Assembly Resolution May 2015
  Palais des Nations, Geneva, Switzerland
Role of WHO in Improving Global Surgery:

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THANK YOU

www.who.int/surgery
cherianm@who.int
SYMPOSIUM
SURGERY IN LOW RESOURCE SETTINGS
NOVEMBER 14TH–16TH 2014

WHAT IS YOUR ROLE?

LAB111 Amsterdam - www.surgicalneed.nl