Global Disparities in Trauma Care:
How You can Help

Michael Ganey, MD FACS
Pediatric Surgery Fellow
Montreal Children’s Hospital
McGill University
No Conflicts of Interest
Goals

- Differences in Trauma Care (Subsaharan Africa)
- How You Can Help (Examples)
Trauma differences
Subsaharan africa

- Data
- Barriers
  - Roads
  - EMS
  - Trauma Centres
  - Training
Human Development Index
Data
Subsaharan Africa

• Poor quality data; limited

• ~11% GBD is surgical

• 6-12% pediatric admissions are surgical
  • Of those, half are trauma

• After age 4, the #1 cause of disability and death

• 10% of people in Uganda will have an injury-related death
Rate of unintentional injuries per 100,000 children, by WHO region and country income level, World, 2004

<table>
<thead>
<tr>
<th>Africa</th>
<th>Americas</th>
<th>South-East Asia</th>
<th>Europe</th>
<th>Eastern Mediterranean</th>
<th>Western Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMIC</td>
<td>HIC</td>
<td>LMIC</td>
<td>HIC</td>
<td>LMIC</td>
<td>HIC</td>
</tr>
<tr>
<td>53.1</td>
<td>14.4</td>
<td>21.8</td>
<td>49.0</td>
<td>7.9</td>
<td>41.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25.4</td>
<td>45.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33.8</td>
</tr>
</tbody>
</table>

* These data refer to those under the age of 20 years.

HIC = High-income countries; LMIC = low-income and middle-income countries.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Under 1 year</th>
<th>1–4 years</th>
<th>5–9 years</th>
<th>10–14 years</th>
<th>15–19 years</th>
<th>Under 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Perinatal causes</td>
<td>Lower respiratory infections</td>
<td>Lower respiratory infections</td>
<td>Lower respiratory infections</td>
<td>Road traffic injuries</td>
<td>Perinatal causes</td>
</tr>
<tr>
<td>2</td>
<td>Diarrhoeal diseases</td>
<td>Diarrhoeal diseases</td>
<td>Road traffic injuries</td>
<td>Road traffic injuries</td>
<td>Self-inflicted injuries</td>
<td>Lower respiratory infections</td>
</tr>
<tr>
<td>3</td>
<td>Lower respiratory infections</td>
<td>Measles</td>
<td>Malaria</td>
<td>Drowning</td>
<td>Violence</td>
<td>Diarrhoeal diseases</td>
</tr>
<tr>
<td>4</td>
<td>Malaria</td>
<td>Malaria</td>
<td>Diarrhoeal diseases</td>
<td>Malaria</td>
<td>Lower respiratory infections</td>
<td>Malaria</td>
</tr>
<tr>
<td>5</td>
<td>Congenital anomalies</td>
<td>HIV/AIDS</td>
<td>Meningitis</td>
<td>Meningitis</td>
<td>Drowning</td>
<td>Measles</td>
</tr>
<tr>
<td>6</td>
<td>Pertussis</td>
<td>Congenital anomalies</td>
<td>Drowning</td>
<td>HIV/AIDS</td>
<td>Tuberculosis</td>
<td>Congenital anomalies</td>
</tr>
<tr>
<td>7</td>
<td>HIV/AIDS</td>
<td>Protein–energy malnutrition</td>
<td>Protein–energy malnutrition</td>
<td>Tuberculosis</td>
<td>Fire-related burns</td>
<td>HIV/AIDS</td>
</tr>
<tr>
<td>8</td>
<td>Tetanus</td>
<td>Drowning</td>
<td>Measles</td>
<td>Diarrhoeal diseases</td>
<td>HIV/AIDS</td>
<td>Road traffic injuries</td>
</tr>
<tr>
<td>9</td>
<td>Meningitis</td>
<td>Road traffic injuries</td>
<td>Tuberculosis</td>
<td>Protein–energy malnutrition</td>
<td>Leukaemia</td>
<td>Pertussis</td>
</tr>
<tr>
<td>10</td>
<td>Measles</td>
<td>Meningitis</td>
<td>HIV/AIDS</td>
<td>Self-inflicted injuries</td>
<td>Meningitis</td>
<td>Meningitis</td>
</tr>
<tr>
<td>11</td>
<td>Protein–energy malnutrition</td>
<td>Fire-related burns</td>
<td>Fire-related burns</td>
<td>Leukaemia</td>
<td>Maternal haemorrhage</td>
<td>Drowning</td>
</tr>
<tr>
<td>12</td>
<td>Syphilis</td>
<td>Pertussis</td>
<td>Falls</td>
<td>Fire-related burns</td>
<td>Falls</td>
<td>Protein–energy malnutrition</td>
</tr>
<tr>
<td>13</td>
<td>Endocrine disorders</td>
<td>Tuberculosis</td>
<td>Congenital anomalies</td>
<td>War</td>
<td>Poisonings</td>
<td>Tetanus</td>
</tr>
<tr>
<td>14</td>
<td>Tuberculosis</td>
<td>Upper respiratory infections</td>
<td>Epilepsy</td>
<td>Violence</td>
<td>Abortion</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>15</td>
<td>Upper respiratory infections</td>
<td>Syphilis</td>
<td>Leukaemia</td>
<td>Trypanosomiasis</td>
<td>Epilepsy</td>
<td>Fire-related burns</td>
</tr>
</tbody>
</table>

Distribution of global child injury deaths by cause, 0–17 years, World, 2004

- Road traffic injuries: 22.3%
- Drowning: 16.8%
- Fire-related burns: 9.1%
- Falls: 4.2%
- Poisoning: 3.9%
- Homicide: 5.8%
- Self-inflicted injuries: 4.4%
- War: 2.3%
- Other unintentional: 31.1%

*a “Other unintentional” includes categories such as smothering, asphyxiation, choking, animal and venomous bites, hypothermia and hyperthermia as well as natural disasters.

Surgical services for children in developing countries
S.W. Bickler¹ & H. Rode²

Abstract There is growing evidence that childhood surgical conditions, especially injuries, are common in developing countries and that poor care results in significant numbers of deaths and cases of disability. Unfortunately, however, surgical care is not considered an essential component of most child health programmes. Strategies for improving paediatric surgical care should be evidence-based and cost-effective and should aim to benefit the largest possible number of children. The most likely way of achieving policy change is to demonstrate that childhood surgical conditions are a significant public health problem. For paediatric purposes, special attention should also be given to defining a cost-effective package of surgical services, improving surgical care at the community level, and strengthening surgical education. Surgical care should be an essential component of child health programmes in developing countries.

Keywords Child health services; Surgery; Pediatrics; Wounds and injuries/epidemiology/surgery; Abnormalities/epidemiology/surgery; Osteomyelitis/epidemiology/surgery; Cost of illness; Disabled children; Health policy; Africa South of the Sahara (source: MeSH, NLM).

Mots clés Service santé infantile; Chirurgie; Pédiatrie; Plaies et traumatismes/épidémiologie/chirurgie; Malformations/épidémiologie/chirurgie; Ostéomyélite/épidémiologie/chirurgie; Coût maladie; Enfant handicapé; Politique sanitaire; Afrique subsaharienne (source: MeSH, INSERM).

Palabras clave Servicios de salud infantil; Cirugía; Pediatría; Heridas y lesiones/epidemiología/cirugía; Anomalías/epidemiología/cirugía; Osteomielitis/epidemiología/cirugía; Costo de la enfermedad; Niños incapacitados; Política de salud; África del Sur del Sahara (fuente: DeCS, BIREME).

Surgical services for children in developing countries

S.W. Bickler¹ & H. Rode²

• Burden of childhood surgical diseases
• Consequences of poor surgical care
• Challenges for pediatric surgery
• Improving pediatric surgery in developing countries
• Burden of childhood surgical diseases
  - Injuries
  - Congenital abnormalities
  - Surgical infections
Fig. 1. Paediatric surgical admissions to a government referral hospital in Gambia, January 1996 to May 1998 (n = 1726) (3)

- Injuries: 48%
- Congenital anomalies: 24%
- Surgical infections: 14%
- Gastrointestinal: 6%
- Neoplasms: 2%
- Urology: 2%
- Ear, nose and throat: 2%
- Neurological: 1%
- Miscellaneous: 1%
Public Health Reviews

Surgical services for children in developing countries
S.W. Bickler¹ & H. Rode²

• Burden of childhood surgical diseases
  ▪ Extent of the problem
Fig. 2. Estimated risk of requiring surgical care in a paediatric population living in Banjul, Gambia. Cumulative risk was estimated using age-specific incidences (20).
Surgical services for children in developing countries
S.W. Bickler¹ & H. Rode²

• Consequences of poor surgical care
  ▪ Death
  ▪ Disability
Public Health Reviews

Surgical services for children in developing countries
S.W. Bickler¹ & H. Rode²

- Challenges for pediatric surgery
  - Definition (industrialized vs. developing)
  - Health care policy
  - Delivery of surgical services
Public Health Reviews

Surgical services for children in developing countries
S.W. Bickler¹ & H. Rode²

- Improving pediatric surgery in developing countries
  - Demonstrating the need
  - Defining a cost-effective package
  - Improving PS care at the community level
  - Strengthening PS education
**Guide to Anaesthetic Infrastructure and Supplies at Various Levels Of Health Care Facilities**

*Emergency and Essential Surgical Procedures (Compiled from WHO manual Surgical Care at the District Hospital 2003)*

<table>
<thead>
<tr>
<th>Level 1</th>
<th>District/provincial hospital</th>
<th>Referral hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small hospital / health centre&lt;br&gt;• Rural hospital or health centre with a small number of beds and a sparsely-equipped operating room (OR) for minor procedures&lt;br&gt;• Provides emergency measures in the treatment of 90–95% of trauma and obstetrics cases (excluding cesarean section)&lt;br&gt;• Referral of other patients (for example, obstructed labour, bowel obstruction) for further management at a higher level</td>
<td>District/provincial hospital&lt;br&gt;• District or provincial hospital with 100–300 beds and adequately equipped major and minor operating theatres&lt;br&gt;• Short-term treatment of 95–99% of the major life threatening conditions</td>
<td>Referral hospital&lt;br&gt;• A referral hospital of 300–1000 or more beds with basic intensive care facilities. Treatment aims are the same as for Level 2, with the addition of:&lt;br&gt;• Ventilation in O.R and ICU&lt;br&gt;• Prolonged endotracheal intubation&lt;br&gt;• Thoracic trauma care&lt;br&gt;• Haemodynamic and inotropic treatment&lt;br&gt;• Basic ICU patient management and monitoring for up to 1 week: all types of cases, but with limited or no provision for:&lt;br&gt;• Multi-organ system failure&lt;br&gt;• Haemodialysis&lt;br&gt;• Complex neurological and cardiac surgery&lt;br&gt;• Prolonged respiratory failure&lt;br&gt;• Metabolic care or monitoring</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Personnel</th>
<th>Equipment: capital outlay</th>
<th>Equipment: capital outlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal delivery&lt;br&gt;Urine evacuation&lt;br&gt;Circumcision&lt;br&gt;Hydrocele reduction, incision and drainage&lt;br&gt;Wound suturing&lt;br&gt;Control of haemorrhage with pressure dressings&lt;br&gt;Debridement and dressing of wounds&lt;br&gt;Temporary reduction of fractures&lt;br&gt;Cleaning or stabilization of open and closed fractures&lt;br&gt;Chest drainage (possibly)</td>
<td>Normal delivery&lt;br&gt;Urine evacuation&lt;br&gt;Circumcision&lt;br&gt;Hydrocele reduction, incision and drainage&lt;br&gt;Wound suturing&lt;br&gt;Control of haemorrhage with pressure dressings&lt;br&gt;Debridement and dressing of wounds&lt;br&gt;Temporary reduction of fractures&lt;br&gt;Cleaning or stabilization of open and closed fractures&lt;br&gt;Chest drainage (possibly)</td>
<td>Lidocone 5% heavy spinal solution 2 ml&lt;br&gt;Bupivacaine 0.5% heavy or plain, 4 ml&lt;br&gt;Pethidine 50 mg injection&lt;br&gt;[Hydralazine 20 mg injection]&lt;br&gt;Thiopentone 2 mg injection&lt;br&gt;Dextrose 50% 20 ml injection&lt;br&gt;Aminophylline 250 mg injection&lt;br&gt;Ephedrine 30/50 mg ampicilates</td>
<td>for infusion&lt;br&gt;Adult and paediatric resuscitators&lt;br&gt;Foot sucker&lt;br&gt;[Oxygen concentrator]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Personnel</th>
<th>Equipment: disposable</th>
<th>Equipment: disposable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same as Level 1 with the following additions:&lt;br&gt;Caesarean section&lt;br&gt;Labarotory (usually not for bowel obstruction)&lt;br&gt;Ampullation&lt;br&gt;Uterine repair&lt;br&gt;Tubal ligation&lt;br&gt;Closed fracture treatment and application of plaster of Paris&lt;br&gt;Eye operations, including cataract extraction&lt;br&gt;Removal of foreign bodies: e.g. in the airway&lt;br&gt;Emergency ventilation and airway management for referred patients such as those with chest and head injuries</td>
<td>Paramedical staff without formal anaesthesia training&lt;br&gt;Nurse-midwife</td>
<td>IVI equipment&lt;br&gt;Suction catheters size 16 FG&lt;br&gt;Examination gloves</td>
<td>IVI equipment (minimum fluids normal saline, Ringer’s lactate and dextrose 5%)&lt;br&gt;Suction catheters size 16 FG&lt;br&gt;Examination gloves&lt;br&gt;Sterile gloves sizes 6–8&lt;br&gt;Nasogastric tubes sizes 10–16 FG&lt;br&gt;Oral airways sizes 000–4&lt;br&gt;Traeshul tubes sizes 3–8.5&lt;br&gt;Bone needles sizes 22 G and 25G</td>
</tr>
</tbody>
</table>
LETTER TO THE EDITOR

Emmanuel A. Ameh

Paediatric surgery in sub-Saharan Africa

Dear Sir,

It was interesting to read the timely article by Bickler et al. [1] on pediatric surgery in sub-Saharan Africa. Their effort in trying to bring to the fore the problems of pediatric surgery in this region is commendable.

Currently, pediatric surgery faces many challenges in Sub-Saharan Africa. First and foremost, governments and non-governmental organizations show a lack of interest towards pediatric-surgical care of the children living in this region. The authors point out that it is the responsibility of pediatric surgeons working in these areas to raise awareness by airing their views at relevant forums and by publishing their experiences in international journals. International organizations are unlikely to read the journals published locally in Africa, since many of these are not indexed and also have a limited circulation.

In Sub-Saharan Africa, the workload in pediatric surgery is even greater in rural areas [2]. As reported by Bicker et al. [1], this region has few trained pediatric surgeons, mainly at large centers. Currently, there are about 25 trained and practicing pediatric surgeons in Nigeria, serving a population of approx. 120 million, of which 40–60% are children and adolescents. Therefore, in many cases, surgical care for children is provided by general surgeons and less trained personnel, especially at primary and secondary health levels. Sometimes even the tertiary centers have no trained pediatric surgeons, and hospitals for children are rare. Hence, efforts are needed to intensify the training of pediatric surgeons. The West African College of Surgeons presently has a well-organized training programme in pediatric surgery, but the enrolment is very poor. Pediatric surgeons in this region, by themselves acting as role models and mentors, have the responsibility of encouraging younger doctors to train in pediatric surgery.

Another problem currently faced by pediatric surgeons working in these areas [3] is the lack of relevant facilities and supporting personnel, especially in neonatal surgery, thus making it quite a challenge to practice pediatric surgery. Lack of other pediatric subspecialties like plastic surgery, neurosurgery etc. means that a pediatric surgeon is left to handle all the problems on a regular basis, thereby increasing an already high workload.

Pediatric surgical research gets little or no funding from both governments and non-governmental organizations, due to a widely held belief that the majority of the childhood problems in this region are due to infectious diseases and malnutrition. It is high time these organizations realized that surgical problems contribute significantly to childhood morbidity and mortality. Collaboration needs to be encouraged amongst pediatric surgeons involved in important research, so that together we can raise awareness, find local solutions to local problems, and advance the surgical care of these children.

References
Health impact assessment and short-term medical missions: A methods study to evaluate quality of care

Jesse Maki, Munirih Qualls, Benjamin White, Sharon Kleefield and Robert Crane

Address: Harvard Medical School, Boston, USA and /Harvard Medical International, Harvard University, Boston, USA
Email: Jesse Maki - walterj@hms.harvard.edu; Munirih Qualls - munirihq@hms.harvard.edu; Benjamin White - benjaminw@hms.harvard.edu; Sharon Kleefield - sharon_kleefield@hms.harvard.edu; Robert Crane - rcrane@hms.harvard.edu

Published: 2 June 2008


Abstract

Background: Short-term medical missions (STMMs) are a well-established means of providing care to the developing world. Outlaying over 250 million dollars and thousands of overseas hours dedicated to STMMs, a lack of standardized evaluation is a severe patient safety quality concern, and mission evaluation is often a statement of principles and values. This study evaluated the association of STMM quality with the health impact of STMMs.

Methods: The study was conducted in 3 phases: 1) Baseline analysis to determine factors critical to the quality of STMMs, 2) Design of 2 surveys for mission personnel and patients to enable 360 degree evaluation based on factors from phase 1, and 3) Field testing of the surveys with 5 STMMs.

Results: An evaluation tool was created assessing 6 major and 26 minor factors identified as critical to STMM performance. 186 volunteer mission personnel and 86 patients completed the survey. Of the 2 major measures of quality, missions performed best in Education (63%) and Impact (62%). The 2 minor measures were Complexity (68%) and Preparedness (70%).

Conclusion: Our study provides a novel standardized tool for STMM evaluation. Use of the assessment instrument identified areas of strength and weakness of a particular mission, and delineated general trends in performance compared to other STMMs. We anticipate that the use of this tool will provide a means to evaluate, compare and share insight to improve patient care provided by missions, and stimulate collaboration and discussion among missions.

Background

In recent years, short-term medical missions (STMMs) have exploded in number and volume, providing essential health care to those in need. They appeal to physicians and other medical professionals due to their unique combination of philanthropy and direct approach to patient care. The rapid growth of STMMs has brought new challenges to the medical system, including the need for standardized evaluation of STMMs. This study aimed to develop a tool to evaluate the quality of STMMs and to identify areas for improvement.

Methods

The study was conducted in 3 phases: 1) Baseline analysis to determine factors critical to the quality of STMMs, 2) Design of 2 surveys for mission personnel and patients to enable 360 degree evaluation based on factors from phase 1, and 3) Field testing of the surveys with 5 STMMs.

Results

An evaluation tool was created assessing 6 major and 26 minor factors identified as critical to STMM performance. 186 volunteer mission personnel and 86 patients completed the survey. Of the 2 major measures of quality, missions performed best in Education (63%) and Impact (62%). The 2 minor measures were Complexity (68%) and Preparedness (70%).

Conclusion

Our study provides a novel standardized tool for STMM evaluation. Use of the assessment instrument identified areas of strength and weakness of a particular mission, and delineated general trends in performance compared to other STMMs. We anticipate that the use of this tool will provide a means to evaluate, compare and share insight to improve patient care provided by missions, and stimulate collaboration and discussion among missions.
An estimation of the global volume of surgery: a modelling strategy based on available data

Thomas G Weiser, Scott E Regenbogen, Katherine O Thompson, Alex B Haynes, Stuart R Lipsitz, William R Barry, Atul A Gawande

Summary
Background Little is known about the amount and availability of surgical care globally. We estimated the number of major operations undertaken worldwide, described their distribution, and assessed the importance of surgical care in global public-health policy.

Methods We gathered demographic, health, and economic data for 192 member states of WHO. Data for the rate of surgery were sought from several sources including governmental agencies, statistical and epidemiological organisations, published studies, and individuals involved in surgical policy initiatives. We also obtained per-head total expenditure on health from analyses done in 2004. Major surgery was defined as any intervention occurring in a hospital operating theatre involving the incision, excision, manipulation, or suturing of tissue, usually requiring regional or general anaesthesia or sedation. We created a model to estimate rates of major surgery for countries for which such data were unavailable, then used demographic information to calculate the total worldwide volume of surgery.

Findings We obtained surgical data for 56 (29%) of 192 WHO member states. We estimated that 234,2 (95% CI 187-2-281-2) million major surgical procedures are undertaken every year worldwide. Countries spending US$100 or less per head on health care have an estimated mean rate of major surgery of 295 (SE 53) procedures per 100,000 population per year, whereas those spending more than US$1000 have a mean rate of 11,110 (SE 1300; p<0.0001). Middle-expenditure ($401-1000) and high-expenditure ($>1000) countries, accounting for 30·2% of the world’s population, provided 73·6% (172·3 million) of operations worldwide in 2004, whereas poor-expenditure (≤$100) countries account for 34·8% of the global population yet undertook only 3·5% (8·1 million) of all surgical procedures in 2004.

Interpretation Worldwide volume of surgery is large. In view of the high death and complication rates of major surgical procedures, surgical safety should now be a substantial global public-health concern. The disproportionate scarcity of surgical access in low-income settings suggests a large unaddressed disease burden worldwide. Public-health efforts and surveillance in surgery should be established.

Funding WHO.
The burden of surgical conditions and access to surgical care in low- and middle-income countries

Doruk Ozgediz, Dean Jamison, Meena Cherian & Kelly McQueen

Population Health Metrics for Surgery: Effective Coverage of Surgical Services in Low-Income and Middle-Income Countries

Doruk Ozgediz · Renee Hsia · Thomas Weiser · Richard Gosselin · David Spiegel · Stephen Bickler · Peter Dunbar · Kelly McQueen

© Société Internationale de Chirurgie 2008
Partnerships for developing pediatric surgical care in low-income countries

Georges Azzie\textsuperscript{a,*}, Stephen Bickler\textsuperscript{b}, Diana Farmer\textsuperscript{c}, Spencer Beasley\textsuperscript{d}

\textsuperscript{a}Department of Surgery, University of Toronto, Hospital for Sick Children, Toronto, Ontario, Canada
\textsuperscript{b}Department of Surgery, University of California, San Diego, CA, USA
\textsuperscript{c}Department of Surgery, University of California, San Francisco, CA, USA
\textsuperscript{d}Department of Pediatric Surgery, University of Otago, Christchurch, New Zealand

Received 28 August 2008; accepted 29 August 2008
The Future of Simulation in Paediatric Surgery

Georges Azzie
Division of Paediatric Surgery,
Hospital for Sick Children,
Toronto, Canada

SickKids
Health action in crises

Trauma management and comprehensive emergency obstetric surgery training

Video about training sessions in life-saving procedures for health workers in Somalia

Authors:
WHO

Publication details
Publication date: 2010
Languages: English

Downloads
Stream video - duration 03:12 mins [wmv]

Overview

As a result of the ongoing fighting, Somali hospitals see large numbers of wounded and people affected by the conflict. Health workers face increased challenges ranging from hazardous working environments to a lack of qualified health personnel when delivering much needed care.

Newly graduated Somali medical students are the health service providers of tomorrow, but they often lack expertise and practice. To strengthen the ability of Somali health workers and medical students in responding to the challenges and needs, WHO conducts trainings in critical life-saving surgical techniques.

This video shows that with support from the Humanitarian Response Fund in 2010, WHO was able to provide health workers with training sessions in life-saving procedures including first aid, trauma management and emergency obstetric care.
Working together to unite the volunteer efforts of paediatric surgeons worldwide

Texts

Paediatric Surgery: A Comprehensive Text for Africa, Edited by Emmanuel Ameh, Stephen Bickler, Kokila Lakhoo, Ben Nwomeh, and Dan Poenaru. Published in 2010, this comprehensive online text covers classic pediatric surgical problems, but it is unique because the authorship is shared by surgeons in Africa who address problems unique to their continent and offer practical solutions that are available there. Though written for surgeons in Africa, it will prove useful to surgeons elsewhere who are practicing in resource-constrained environments. Published by Global HELP (global-help.org/people/people_pedsurgeryafrica.html)

Surgical Care for Children: A Guide for Primary Referral Hospitals, by Stephen Bickler and Emmanuel Ameh (to be published 2010). This text is intended to be used by doctors at the primary referral hospital, even if they do not have formal training in pediatric surgery, so that care can be quicker and more cost-effective.
• Global Health movement
  ▪ Infectious Disease
  ▪ Medicine
  ▪ Surgery
• Alliance for Surgery and Anesthesia Presence Today (ASAP Today)
  ▪ Formerly Global Burden of Surgical Disease Working Group

• Vanderbilt
  ▪ Institute for Global Health

• Harvard
  ▪ Partners in Health (PIH)
  ▪ Global Surgery Fellowship
Advocating for Surgery and Anesthesia Within Global Health

Upcoming Events

4th Annual ASAP Meeting
November 9–11, 2011
University of California, San Diego

Advisory Board

Press Releases

Watch the ASAP video!
COSECSA—
The College of Surgeons of East, Central & Southern Africa
WACS: The West African College of Surgeons
Goals

- Differences in Trauma Care (Subsaharan Africa)
- How You Can Help (Examples)
Surgical Training
Surgical Training In Kenya

Population: 35 million
Growth Rate: 4%
Rural:Urban Ratio: 6:1
Doctors: 5,000
Surgeons: 500
(1:70,000)
AT LEAST 20 SURGEONS
When A Black & White Striped Animal Isn’t A Zebra
Gerald Angira, MD
PG3 Surgical Residents
1 or 2 each Spring
13 in 8 years
75-100 major cases
40-50 endoscopy cases
$100,000 endowment
Faith-based/Expectations