

*A Rapid Evidence Brief of the “African Centre”*

# Task Shifting of Caesarean Section to Clinical Officers: what are the policy considerations for Uganda

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This rapid review of research evidence was prepared by **Obuku E, Kisiwe Y, Mwandri M & Kaye D.**

## Key messages

→ Uganda’s **unfinished business on the MDGs** includes:

- High **maternal mortality** of =320/100,000 (*~15 women die of childbirth related complications daily*)

→ Although the number of Medical Doctors is growing (approx. **6,000 by 2016**):

- **Only 1,000** are in public hospitals
  - Yet **2,600 Clinical Officers** are available in public hospitals

→ The research evidence identified that training Clinical Officers in caesarean section compared to Medical Doctors has the following **favourable outcomes**:

- ✓ **No difference in deaths of mothers**
- ✓ **No difference of deaths of newborns**
- ✓ **Less costs involved and shorter duration of training**

\*\*\**The unfavourable outcomes were:*

- **More frequent & severe wound infection**
- **Longer time taken for wound healing**

## Who requested this rapid review?

This document was prepared in response to a specific question from stakeholders in the health sector in ECSA region.

## ! This rapid review includes:

- **Key findings** from research
- **Considerations about the relevance** of this research for health system decisions in concerning taskshifting of Caesarean Section to Clinical Officers in the ECSA region

## X Not included:

- Detailed descriptions
- Recommendations

## What is rapid evidence review?

“African Centre” rapid evidence review address the needs of policymakers and managers for research evidence that has been appraised and contextualised in a matter of hours or days or weeks, if it is going to be of value to them. We provided evidence to questions about arrangements for organising, financing and governing health systems, and strategies for implementing changes.

## What is UsEvidence?

**UsEvidence** – A project of the Africa Centre for Systematic Reviews and Knowledge Translation (Africa Centre) which builds on Supporting the Use of Research Evidence (SURE) for policy in African health systems/Evidence-Informed Policy Network (**EVIPNet**) in Africa and the Regional East African Community Health (**REACH**) Policy Initiative (see back page). UsEvidence is funded by the IDRC Canada.

<http://chs.mak.ac.ug/afcen>

## Glossary

of terms used in this report:

[www.evipnet.org/sure/rr/glossary](http://www.evipnet.org/sure/rr/glossary)

# Background

**Inequity in accessing skilled birth attendance** is more manifest in sub-Saharan Africa than the high-income countries and in rural than urban areas. Although, maternal mortality worldwide dropped by about 44%, between 1990 and 2015, sub-Saharan Africa did not record as much progress. A woman in sub-Saharan Africa has a significantly higher lifetime risk of maternal death with bleeding after childbirth, high blood pressure in pregnancy, infection, unsafe abortion and complications of childbirth as leading causes of death (table 1).

**Table 1: Burden of maternal health in sub-Saharan Africa**

Region	Maternal death	Risk of maternal death
Developed world	12	1 in 4900
Developing countries	239	1 in 180
Uganda	320	1 in 54

\*Sources: WHO Report: Maternal Mortality Factsheet updated Nov. 2016 (per 100,000); lifetime risk; World Health Survey 2015.

**On the other hand there is a growing global shortage of health workers that will hit critical levels by 2030.** The 2013 WHO report, "A universal truth: No health without a workforce" estimated the health workforce shortfall at 7.2 million in 2013 and 12.9 million in 2035. Recent projections by WHO puts this figure higher, at an 18 million deficit by 2030. In Uganda, clinical officers are more available compared to doctors with 92% of established positions filled (table 2). Uganda's unfinished MDG business entails the goals not achieved by the 2015 deadline including reducing the maternal mortality ratio by three quarters.

Medical doctors perform caesarean section and in their absence, pregnant mothers miss out on this critical intervention. Absence of facilities for caesarean section including a health workforce trained to perform this intervention is associated with more maternal and neonatal morbidity and higher individual medical costs for transport and treatment of complications of obstructed labour.

## How this Response was prepared

After clarifying the question being asked, we searched for systematic reviews, local or national evidence, and other relevant research. The methods used by the SURE Rapid Response Service to find, select and assess research evidence are described here:

[www.evipnet.org/sure/rr/methods](http://www.evipnet.org/sure/rr/methods)

## What the quality of evidence (GRADE) means

The quality of the evidence is a judgement about the extent to which we can be confident that the findings of the research are correct. These judgements are made using the GRADE framework, and are provided for each outcome. The judgements are based on the type of study design (randomised trials versus observational studies), the risk of bias, the consistency of the results across studies, and the precision of the overall findings across studies. For each outcome, the quality of the evidence is rated as high, moderate, low or very low using the definitions below.

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**High:** We are confident that the true effect lies close to what was found in the research.

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**Moderate:** The true effect is likely to be close to what was found, but there is a possibility that it is substantially different.

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**Low:** The true effect may be substantially different from what was found.

⊕○○○

**Very low:** We are very uncertain about the effect.

**For more information about GRADE:**

[www.evipnet.org/sure](http://www.evipnet.org/sure)

**Table 2: Health worker enrolment gaps in the public sector hospitals in Uganda**

<b>Cadre</b>	<b>% filled</b>	<b>% gap</b>	<b>Number</b>
Doctor	49%	– 51%	1,047
Clinical Officer	92%	– 8%	2,598
Midwife	75%	– 25%	8,815

*\*Source: Annual Health Sector Performance Report 2015/2016, Uganda Ministry of Health*

**One of the many options is to provide for task shifting from higher trained to lower cadres staff.** Some member states in the ECSA health community (Kenya, Malawi, Zambia, Tanzania, DRC) have implemented task shifting of caesarean section by Clinical Officers with varying results. ECSA member states that are yet to implement this strategy (Uganda, Lesotho, Swaziland) have expressed key policy concerns. This paper highlights these concerns and provides evidence on effectiveness of this intervention and assesses some implementation considerations.

# What is the research evidence on task shifting caesarean section to clinical officers?

We found one systematic review of 6 observational studies (non randomised) and one cost effectiveness analysis comparing health outcomes of caesarean section of clinical officers to medical officers or obstetricians in sub-Saharan countries in Africa.

## 1. The evidence identified that clinical officers were no different from doctors in conducting caesarean section; in terms of maternal or child deaths

These include maternal and child/perinatal deaths. The six studies included 16,018 women and the overall maternal mortality rate in these studies was high, at 1.2%.

### Casarean sections performed by clinical officers were associated with a higher incidence of wound infection & poor wound healing

**Patients or population:** Pregnant mothers

**Settings:** Rural/remote areas in Low Income Countries of Burkina Faso, DRC, Malawi, Mozambique and Tanzania

**Intervention:** Training clinical officers to perform caesarean section surgery (upgrading)

**Comparison:** Medical doctor (Medical Officers or Specialist Obstetricians)

Outcome	Result	Number of studies (Women or children)	Quality of the evidence (GRADE) <sup>§</sup>
<b>Maternal death</b>	<b>No difference</b> (increased, not statistically significant) Odds Ratio=1.46 (0.78 to 2.75, p=0.24) <i>Clinical officers: 47 deaths of 10,077 c/sections</i> <i>Medical Doctors: 53 deaths of 5,941 c/sections</i>	6 (16,018)	⊕○○○ Very Low
<b>Child/perinatal death</b>	<b>No difference</b> (increased, not statistically significant) Odds Ratio=1.31 (0.87 to 1.95, p=0.19). <i>Clinical officers: 1,146 deaths of 9,767 c/sections</i> <i>Medical Doctors: 530 deaths of 5,898 c/sections</i>	5 (15,665)	⊕○○○ Very Low
<b>Wound infection</b>	<b>Worse</b> (increased, statistically significant) Odds Ratio=1.58 (1.01 to 2.47, p=0.05). <i>Clinical officers: 151 infected of 2,608 c/sections</i> <i>Medical Doctors: 29 infected of 1,828 c/sections</i>	2 (4,436)	⊕○○○ Very Low
<b>Wound healing</b>	<b>Worse</b> (statistically significant) Odds Ratio=1.89 (1.21 to 2.95, p<0.01) <i>Clinical officers: 85 wounds of 3,566 c/sections</i> <i>Medical Doctors: 32 wounds of 2,941 c/sections</i>	3 (6,507)	⊕○○○ Very Low

GRADE Working Group grades of evidence (see details: <http://www.gradeworkinggroup.org/intro.ht>)  
<sup>§</sup>Outcomes downgraded due to high risk of bias and important heterogeneity (inconsistency).

## 2. The evidence on cost-effectiveness of clinical officers conducting caesarean section is weak (from only 1 study in Burkina Faso)

Newborn case fatality rates (per thousand) were lowest among obstetricians compared to general practitioners and clinical officers, at 99, 125 and 198, respectively when 2,305 caesarean section operations were conducted over a year.

**Casarean section performed by clinical officers were associated with lower costs and higher occurrence of deaths**

**Patients or population:** Pregnant mothers

**Settings:** 22 public hospitals (district, regional and national) in Burkina Faso, West Africa

**Intervention:** Training clinical officers to perform caesarean section surgery (upgrading)

**Comparison:** Medical doctors (Medical Officers or Specialist Obstetricians)

Outcome	Result	Number of studies (Women)	Quality of the evidence (GRADE) <sup>§</sup>
<b>Cost of training &amp; deployment</b>	<b>Important difference</b> (no statistical test results). <i>Clinical officers: \$1,480</i> <i>General practitioners: \$ 5,747</i> <i>Obstetrician: \$ 8,231</i>	1 (2,305)	⊕○○○ Very Low
<b>Cost per Caesarean Section</b>	<b>Important difference</b> (no statistical test results). <i>Clinical officers: \$193</i> <i>General practitioners: \$ 207</i> <i>Obstetrician: \$513</i>	1 (2,305)	⊕○○○ Very Low
<b>ICER<sup>ψ</sup></b>	<b>Important difference</b> (no statistical test results). <i>General Practitioner vs. Clinical Officer: \$ 200</i> <i>Obstetrician vs. Clinical Officer: \$ 3,235</i> <i>Obstetrician vs. General Practitioner: \$11,757</i>	1 (2,305)	⊕○○○ Very Low

GRADE Working Group grades of evidence (see details: <http://www.gradeworkinggroup.org/intro.ht>)

<sup>§</sup>Outcomes downgraded due to serious high risk of bias.

<sup>ψ</sup>ICER – Incremental Cost Effectiveness Ratio means the cost of avoiding one additional newborn death when 1000 caesarean deliveries are performed by an obstetrician instead of a general practitioner or clinical officer; or by a general practitioner instead of a clinical officer.

<sup>φ</sup> Costs were estimated and converted in 2006 international United States dollars

## Relevance of the research to the question being asked

### → Findings

### ▷ Interpretation\*

#### APPLICABILITY

→ **Studies on task shifting caesarean section surgery from Doctors to Clinical Officers were predominantly from low income countries in Africa. Studies had weak designs & had low participant numbers. They were reported between 1987 and 2009.**

→ **Noteworthy, studies compared training more experienced Clinical Officers to professionally “young” Medical Doctors/General Practitioners who start their careers in the rural setting**

▷ *Although some of the older data (1987) may be outdated, this still remains relevant to Uganda’s setting given the similarities in the contexts including health systems challenges, population structure and social determinants of health with sub-Saharan countries.*

▷ *More experienced General Practitioners are likely to be more effective than Clinical Officers in performing caesarean section. Considerations to institute incentives to attract/retain General Practitioners in rural areas to develop this experience, for example automatic promotions or access to scholarships (career paths).*

▷ *Uganda trains over 500 General Practitioners annually and yet there is a deficit of –53% doctors (yet 6,000 doctors are registered, some underemployed) in public health facilities. Recruiting General Practitioners to fill up the gaps in rural areas is an option to upgrading Clinical Officers*

#### EQUITY

→ **The evidence addresses inequity distribution of clinicians with much fewer in rural/remote areas.**

▷ *Clinical Officers could bridge the gap in rural and remote areas in Uganda. Studies in Australia showed health worker maldistribution affects population health outcomes, with **poorer outcomes in rural/remote areas.***

▷ *Clinical Officers could bridge the gap in **Northern and Eastern Uganda**. The 2016 World Bank Uganda Poverty Report indicates **increasing poverty** in North and Eastern Uganda. There are much fewer Obstetricians and General Practitioners in rural, war torn and hard to reach areas in the Northern and Eastern Uganda.*

#### COST CONSIDERATIONS

→ **Costs (monetary) of training clinical officers were much lower than Obstetricians, General Practitioners.**

▷ *Although costs for training Clinical Officers were lower, clinical outcomes were unfavourable. This affected the cost-effectiveness of Clinical Officers. Burkina Faso GDP in 2006 was \$423 thus cost-effectiveness threshold was at ICER of \$1,269 (x 3 GDP). Ugandas GDP in 2006 was \$335.*

▷ *Time and cost of training & upgrading clinical officers to a level where they can safely perform c/section (3 initial years & 2 upgrading years), may not be much different from training a competent medical officer/doctor.*

#### MONITORING & EVALUATION

→ **Evidence suggests that clinical officers posted worse clinical outcomes in terms of wound infection and wound healing.**

▷ *Quality control: It would be important to consider a mechanism of technical supportive supervision and onsite mentorship by Obstetricians and Senior General Practitioners . It is likely that wound infection and poor wound healing by Clinical Officers would reduce over time with increased experience, skills and confidence over time.*

▷ *The legal framework in Uganda requires review to accommodate surgery by Clinical Officers.*

\*Judgements made by the authors of this response based on the findings of the research and consultation with others (see acknowledgements). For additional details about how these judgements were made see: [www.evipnet.org/sure](http://www.evipnet.org/sure)

## Country experiences: Clinical Officers for obstetric surgery

→ Country	▷ Experiences*
→ <b>TANZANIA</b>	<p>▷ Tanzania has a population of 49.3 million and one Medical Doctor serves over 32,000 patients.</p> <p>▷ Tanzania started training Assistant Medical Officers to do cesarean sections and other emergency surgery in 1963. Clinical Officers train for 3 years whilst 2 more years are required to become an Assistant Medical Officer. By 2009 there were at least 1,300 surgically trained assistant medical officers and mostly assigned to district hospitals.</p> <p>▷ More recently, the enrollment of medical officers is over 1500 annually and some of the clinical officer cadres are being phased out. The initial reasons for promoting clinical officers to perform surgeries no longer holds.</p>
→ <b>ZAMBIA</b>	<p>▷ Zambia has about 2,000 doctors and a population of 15 million; hence 1 Medical Doctor serves 7,500 patients.</p> <p>▷ Clinical Officers in Zambia are called Associate Clinicians with basic competencies to perform minor surgeries and are generally trained for 3 to 4 years post secondary education, since 1936. The Advanced Associate Clinicians are trained for another 3 years and perform major surgeries such as Caeserean Sections. They are deployed at Level 1 Referral District Hospitals, in all the 10 provinces of Zambia with more than 95% retention of more than 3 years at one hospital.</p>
→ <b>MALAWI</b>	<p>▷ Malawi has population of 18 million, with a doctor/patient ratio of 1:60,000. Medical training started in 1991, and by 2008 there were only 266 Medical Doctors of whom 85 were specialists. The college output was 50 doctors annually. On the other hand, there were 584 medical assistants and 515 clinical officers.</p> <p>▷ Since 1976 clinical officers were recognized and trained for 3 years plus 1 year of internship. Clinical Officers are further trained for 18 motnhs in surgical skills and placed at the central hospitals where they help reduce the workload.</p>

\*Country experiences from literature and as shared through engagements with key informants and presentations in group meetings

## Brief description of the intervention under review

Clinical Officers already in practice were trained and upgraded to perform obstetric surgery/caesarean section. The training duration ranged from 2 to 4 years as basic training for Clinical Officers. After which the Clinical Officers are selected to undergo upgrading by skilling them in obstetric surgery/caesarean section for a period of up to 2 years. This includes a period of internship before deployment to the health units for practice.

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#### What is ECSA Health Community (East, Central and Southern Africa)

ECSA is an intergovernmental organization formed in 1974. It is a permanent mechanism to foster and strengthen regional cooperation and capacity to address the health needs of member states. There are nine Member States: Kenya, Lesotho, Malawi, Mauritius, Swaziland, Uganda, Tanzania, Zambia & Zimbabwe. This rapid evidence brief was inspired by a meeting of ECSA member states in November 2016 in Dar es salaam Tanzania, to discuss task–shifting progress and initiatives in some member states with a view of sharing experiences and lessons learned.

#### The following people contributed to this brief:

1. Prof. Dan K. KAYE, Professor of Medicine, Department of Obstetrics and Gynaecology, Makerere University College of Health Sciences, P.O Box 7072, Kampala, Uganda.
2. Dr. Yasinta KISISIWE, Health Communication Specialist, Ministry of Health and Social Welfare, 6 Samora Av., P.O.BOX 9083-11478, Dar es Salaam, Tanzania.
3. Dr. Michael MWANDRI, General Surgeon, University of Botswana, 4775 Notwane Rd., Gaborone, Botswana; and PhD Research Fellow, University of Kwazulu Natal, South Africa.

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**For more information contact:** Dr. Ekwaro A OBUKU, African Centre for Systematic Reviews and Knowledge Translation, College of Health Sciences, Makerere University, P.O Box 7072, Kampala, Uganda. Email: [afcen.makchs@gmail.com](mailto:afcen.makchs@gmail.com) Tel: +2567526375928