

PRELIMINARY RESULTS OF A PROGRAM
TO REDUCE UNNECESSARY C/SECTIONS
BY INCREASING
THE USE OF VACUUM EXTRACTION

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Background: why vacuum extraction?



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New and underutilized technologies to reduce maternal mortality: call to action from a Bellagio workshop

REPRODUCTIVE HEALTH AND RIGHTS

New and underused technologies to reduce maternal mortality

*Vivien Davis Tsu**

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Background

S88

V.D. Tsu, B. Shane / *International Journal of Gynecology and Obstetrics* 85 Suppl. 1 (2004) S83–S93

must be promoted, along with operations research on their cost-effectiveness for home use during the third trimester of pregnancy.

3.5. Obstructed labor

Key technologies to prevent and treat obstructed labor:

- Simplified cesarean section techniques
- Partograph
- Vacuum delivery equipment
- Symphysiotomy
- Tocolytics
- Misoprostol for labor induction

more use that is widespread. A supply of partographs must be available to all who assist at labors, especially in rural areas.

3.5.3. Vacuum delivery equipment

Vacuum extraction delivery equipment and training must be made available and accessible, especially to midwives. Manufacturers should provide equipment that is more durable.

3.5.4. Symphysiotomy

In addition to compiling existing evidence on symphysiotomy, researchers should conduct long-term follow-up studies, studies to evaluate the technique as performed by providers at different

Background

Table 3 Top 20 (highest scoring) research priority questions to improve maternal and/or perinatal health outcomes between 2015 and 2025

Research question	NRPS	Theme
Evaluate the effectiveness of interventions (e.g. counselling or incentives, or home visits) to increase post-abortion contraception uptake and continuance, and reduce repeat abortion	100	Abortion
Evaluate the effectiveness and costs of strategies to improve the quality and utilization of maternity services (e.g. maternity waiting homes, improved communication via mobile phones, community awareness strategies) to improve early detection and management of antenatal and intrapartum complications	95	Health systems
Develop and evaluate strategies for locally appropriate transport, communication and referral systems for obstetric and newborn emergencies	94	Health systems
Evaluate the effectiveness and cost of strategies to prevent, detect and treat causes of anaemia in pregnancy (e.g. malaria, occult bleeding disorders, nutritional deficiencies)	93	Antenatal care
Evaluate the effectiveness and cost of training frontline healthcare workers, including nurses, midwives and community health workers, to detect and treat neonatal sepsis (or to provide pre-referral treatment only)	90	Neonatal care
Develop and evaluate community-based awareness programs to reduce unwanted pregnancies and encourage women to seek help early	89	Abortion
Evaluate the effectiveness and cost of training interventions for skilled birth attendants to gain and maintain competence in the management of obstructed labour, and assisted delivery techniques	88	Labour and delivery
Evaluate the effectiveness and cost of training skilled birth attendants in intrapartum fetal monitoring and neonatal resuscitation for reducing stillbirths and deaths/disability due to perinatal asphyxia	88	Neonatal care
Evaluate the effectiveness and cost of a package of interventions for the prevention, early detection and treatment of puerperal sepsis (e.g. sterile birth kits, access to antibiotics, automated thermometers)	88	Other (puerperal sepsis)
Evaluate the effectiveness and cost of a package of mobile service interventions delivered at community level, including	87	Health systems

training in management of obstructed labour and assisted delivery techniques

**nr 10
out of 190**

Background

Table 2. Defining “Signal Functions” of Basic and Comprehensive Emergency Obstetric and Newborn Care (EmONC)

Level of Care	Signal EmONC Functions
Health Centers	Basic Emergency Obstetric and Newborn Care (BEmONC) <ol style="list-style-type: none">1. Antibiotics2. Anticonvulsants3. Uterotonics4. Manual removal of the placenta5. Assisted vaginal delivery6. Removal of retained products7. Newborn resuscitation
Referral Facilities (Hospitals)	Comprehensive Emergency Obstetric and Newborn Care (CEmONC) Basic EmONC plus: <ol style="list-style-type: none">1. Cesarean sections2. Blood transfusion
Note: Previously, BEmONC was defined as six signal functions—newborn resuscitation has been added.	

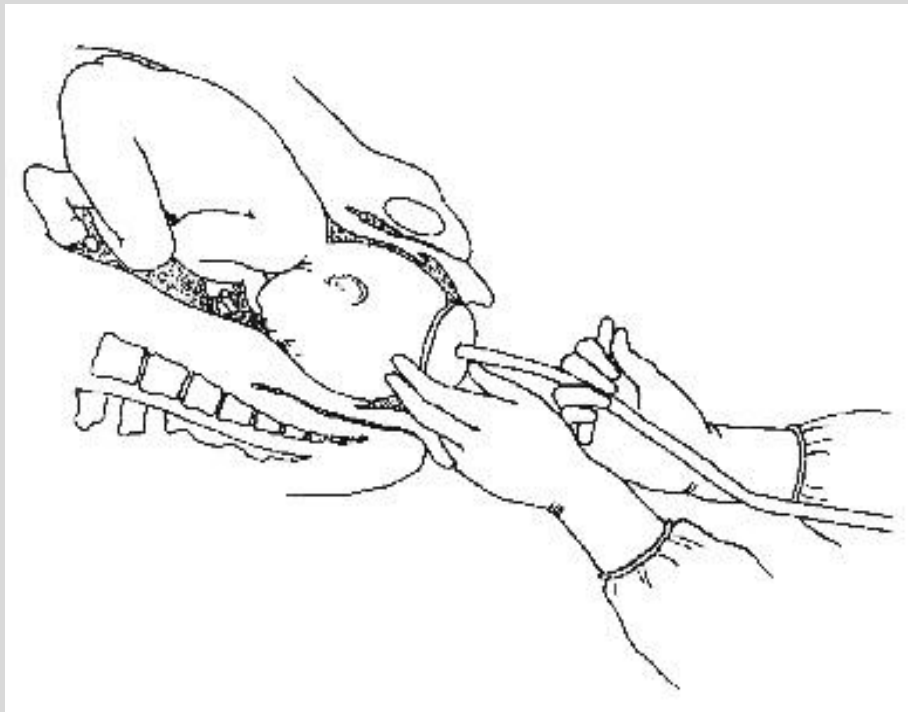
BENEFITS OF VACUUM EXTRACTION

- **Reduced need for surgical intervention**
 - less complications (PPH, infection, anaesthesia)
 - faster maternal recovery
 - net saving of resources
- **A shorter decision to delivery interval**
 - improved neonatal and maternal outcome
- **No uterine scar**
 - less risk of future uterine rupture
 - less risk of placenta previa, accreta, increta

Objectives

Implementation of what we already know works:

vacuum extraction



Where to start?

Mulago National Referral Hospital



33.345 deliveries in 2012

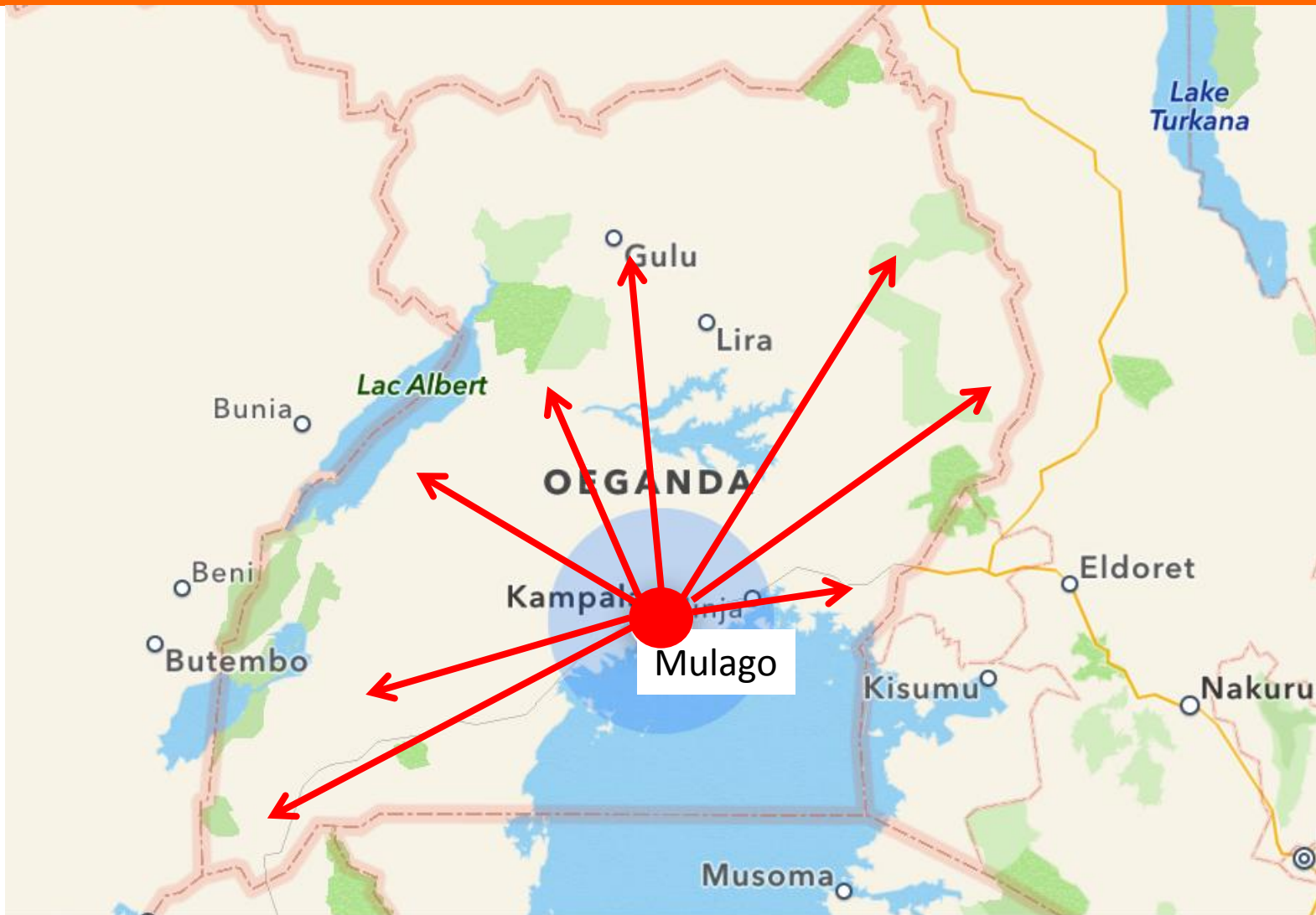
- complicated referrals
- vacuum extraction rate: 0.5 %

Every year:

- 10-20 gynaecologists
- interns
- midwives

Many of them serve “up country” after leaving Mulago Hospital.

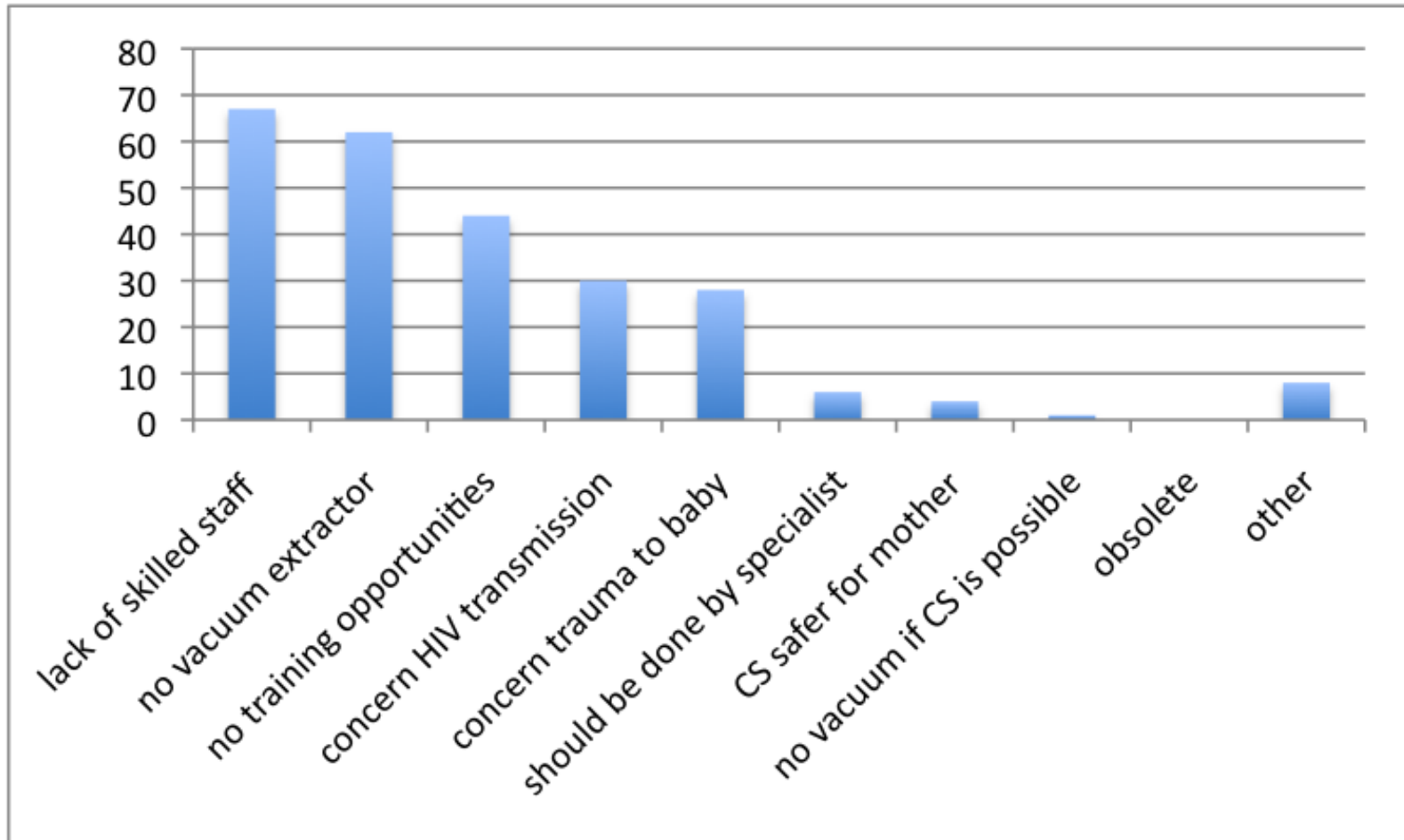
Where to start?



Using the existing medical education system

Method: limiting factors

Limiting factors according to Mulago Hospital staff



n=103

more than 1 answer possible

Trauma to the baby?

	vacuum n=59,354	CS during labour n=84,417	OR (95% CI)
subdural/cerebral hemorrhage	8.0	7.4	0.9 (0.6-1.4)
intraventricular hemorrhage	1.5	2.5	1.6 (0.8-3.6)
subarachnoid hemorrhage	2.2	1.2	0.5 (0.2-1.2)
convulsions	11.7	21.3	1.8 (1.4-2.4)
CNS depression	9.2	9.6	1.1 (0.7-1.5)
feeding difficulty	72.1	117.2	1.6 (1.4-1.8)
mechanical ventilation	39.1	103.2	2.6 (2.3-3.0)
death before discharge	3.0	8.0	

Incidence is expressed as number of cases per 10.000 infants

Authors conclusion: A substantial proportion of morbidity may be due to abnormal labour rather than to the procedure

Ref: Towner D, Castro MA, Eby-Wilkens E, Gilbert WH. Effect of mode of delivery in nulliparous women on neonatal intracranial injury. N Eng J Med 1999;341:1709.

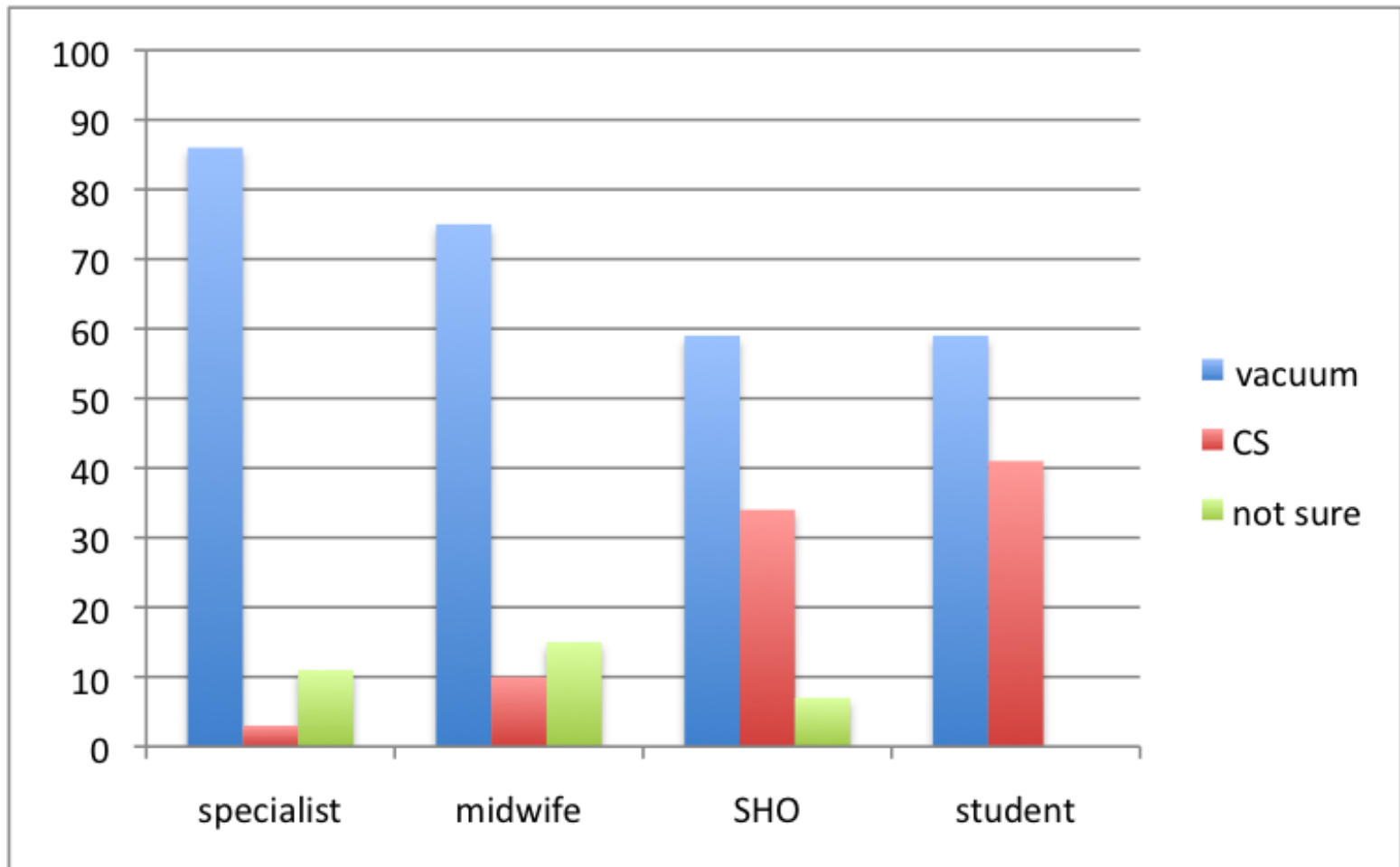
HIV transmission?

HIV transmission by mode of delivery	
elective CS (809)	8.2%
non elective CS (895)	16.8%
spont. vaginal (4971)	16.4%
instrumental (520)	18.3%
C-section in 2 nd stage?	

- Meta analysis 1999, 70% not on HAART
- ?Effect of delay in second stage on MTCT
- RCOG guideline: “Bloodborne infections of the mother are not contraindication for instrumental delivery.”
- Cochrane: softcup to prevent scalp laceration

Method: finding out opinion of staff

If you had prolonged second stage yourself...



Methods: providing equipment



supply chain



Methods: training



MULAGO HOSPITAL GUIDELINE FOR VACUUM EXTRACTION

Indications

- Delay in the second stage of labour
- Need to shorten the second stage of labour for maternal medical condition
- Maternal exhaustion
- Fetal distress in the second stage of labour

Absolute contraindications

- Breech, face or brow presentation, transverse lie
- Incompletely dilated cervix in a nulliparous patient
- Unengaged fetal head: 2/5th or more palpable per abdomen
- Gestation < 34 weeks
- Cephalo-pelvic disproportion

Relative contraindications

- Incompletely dilated cervix in a multiparous patient
- HIV positive patients
- Moulding grade 3 (irreducible overlapping skull bones)

Note: This is a guideline. The health provider has to decide if a vacuum extraction is indicated or not in every specific case. See the full guideline for background information.

Abdominal palpation for descent of the fetal head



5/5th palpable per abdomen



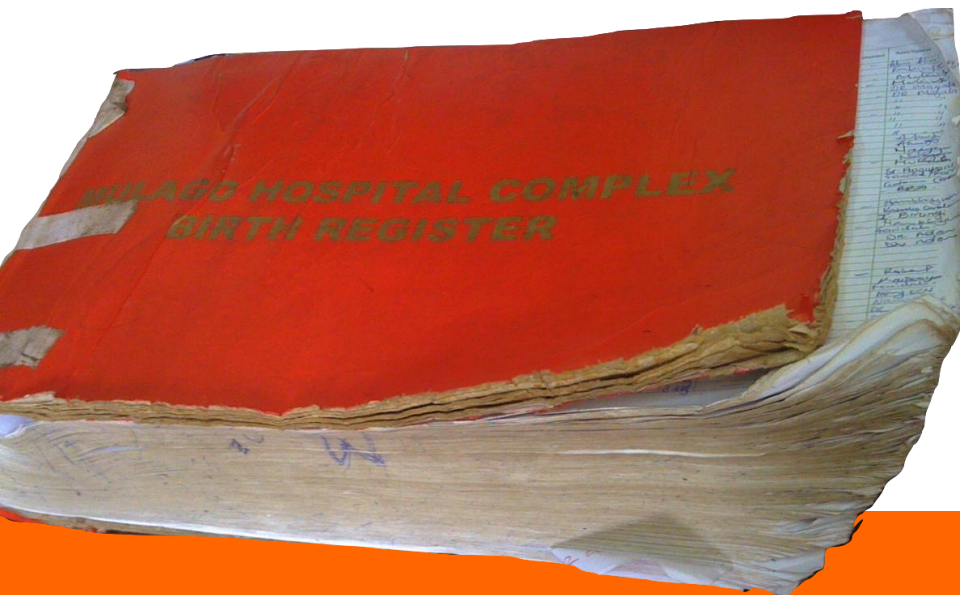
2/5th palpable per abdomen

- skills training
- clinical guideline



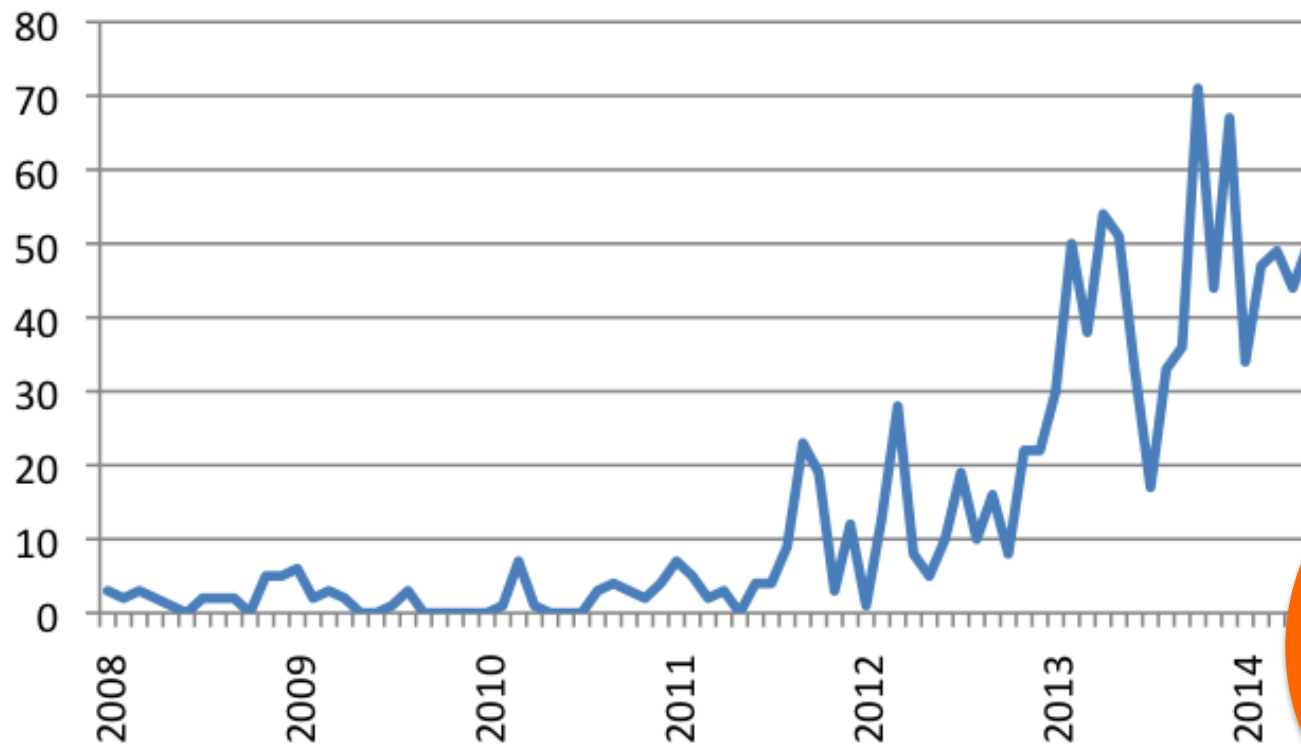
Methods: data collection

- Rates of vacuum extraction, FSB, MSB, END and MD before and after implementation
- Maternal and perinatal outcomes in a cohort of vacuum extraction and failed vacuum extraction cases during 6 months (n=342)



Results

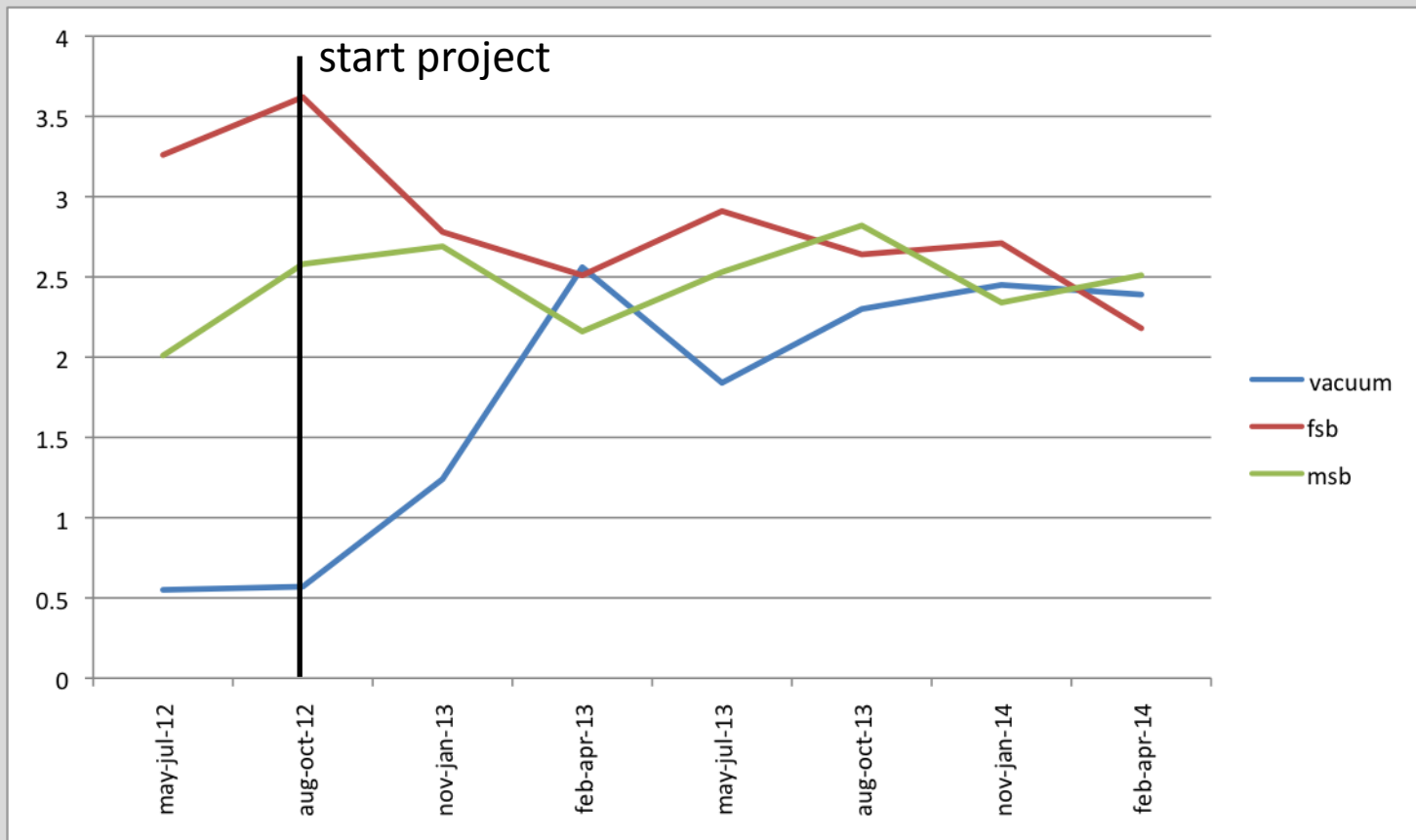
vacuum extractions per month



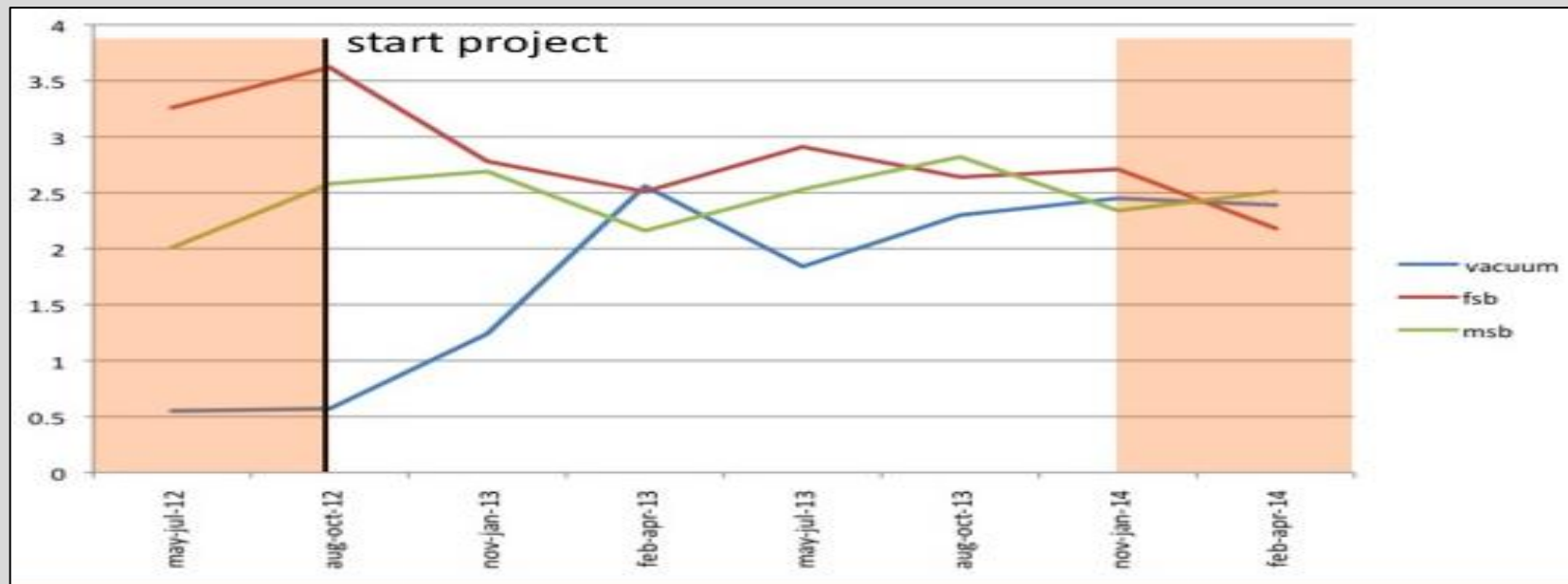
> 1000
vacuums
done

Results

Vacuum extraction, FSB and MSB rates per 3 months



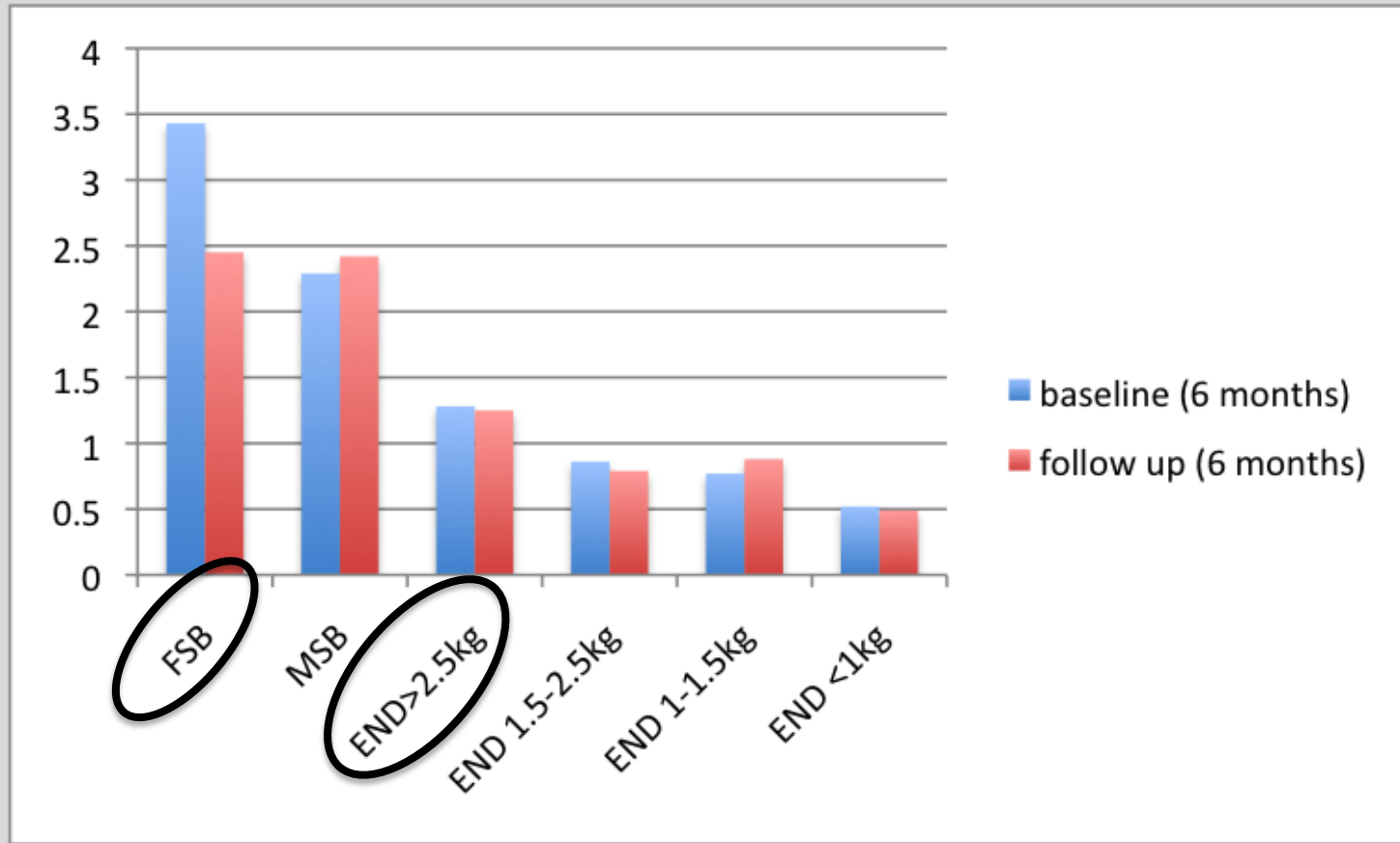
Results



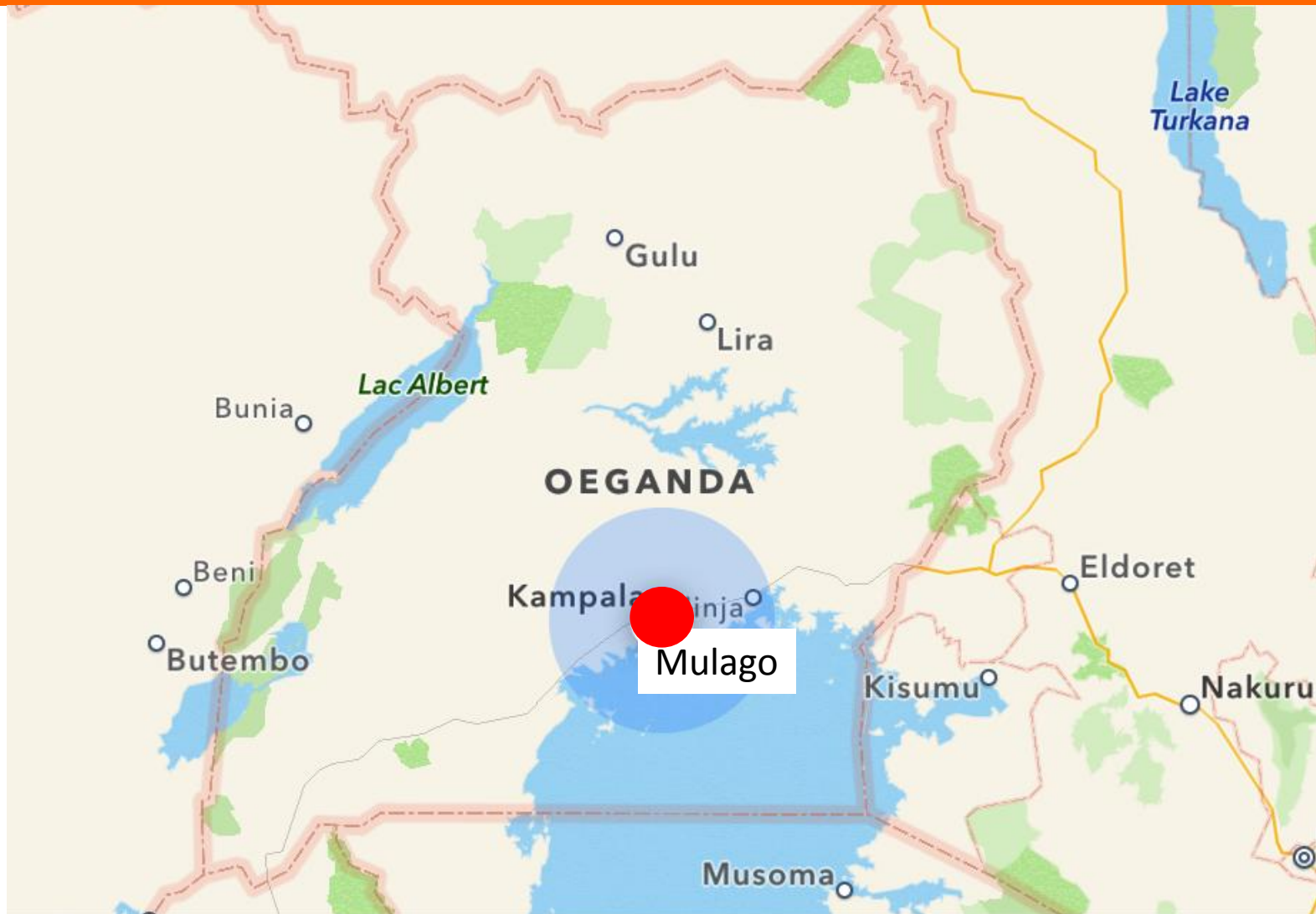
	baseline	follow up	difference	p
total deliveries	12.143	11.770		
vacuum extraction	68 (0.56%)	285 (2.42%)	4.3 x	<0.0001
perinatal death	1112 (9.12%)	975 (8.28%)	- 9.2%	0.0178
FSB	417 (3.43%)	288 (2.45%)	- 28.6%	<0.0001

Results

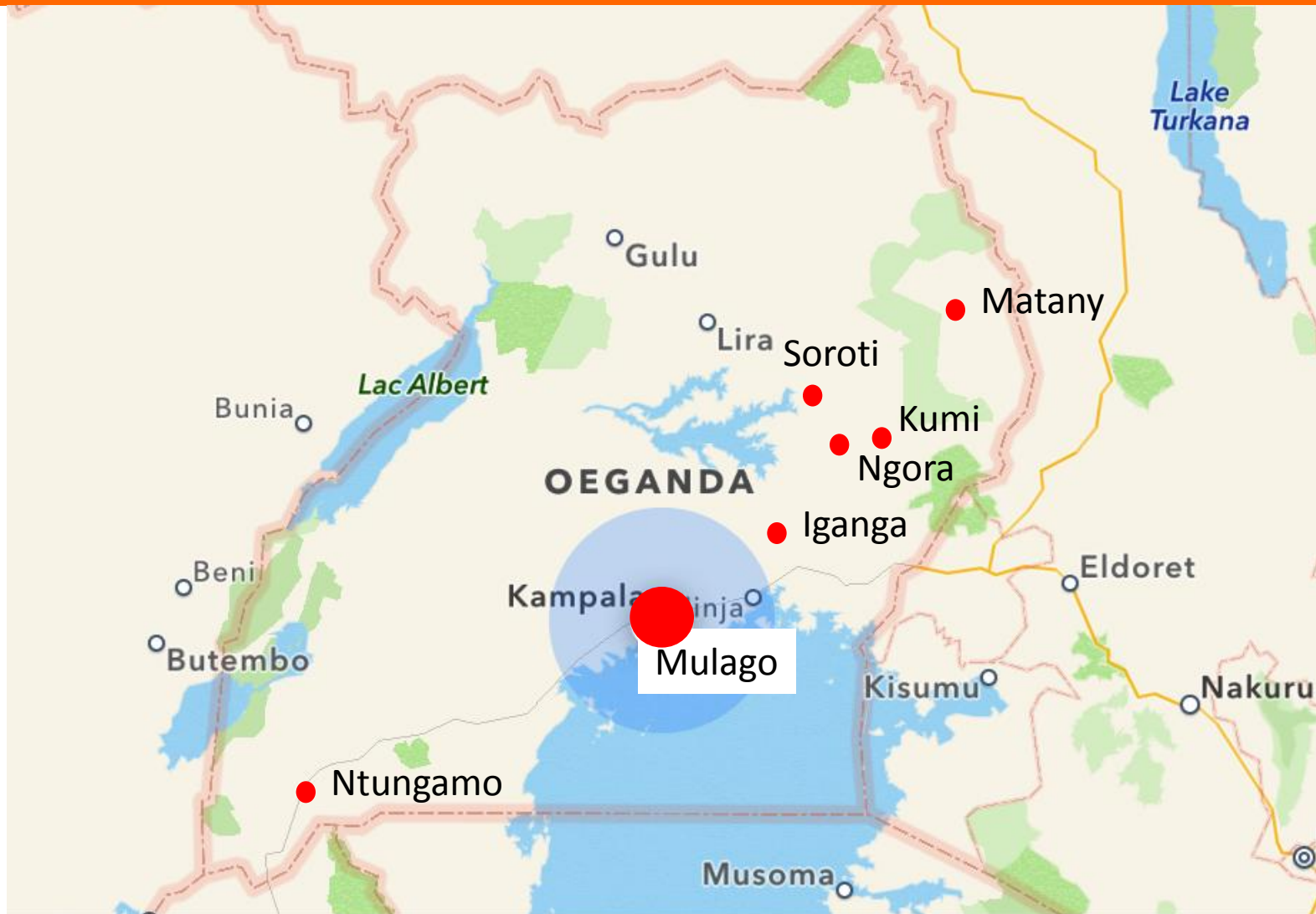
Perinatal death rate: baseline and follow up



Results: where did new specialists go?



Results: where did new specialists go?



Conclusions

Implementation was successful

After implementation in Mulago Hospital perinatal outcomes improved

Mulago Hospital can play an important role in implementing vacuum extraction throughout the country

Conclusions

Vacuum extraction is one of the known interventions that can improve maternal and neonatal outcomes

Thank you for your attention



For enquiries about the project or skills training on vacuum extraction: bnolens@yahoo.com



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