Case Study for the 2016 Salzburg Seminar:
“The invisible (and untested) changes”

Introduction:
In the Jinja district of Uganda, ten QI teams started in late 2015 to improve antenatal care in an equal number of outpatient antenatal care services in one regional hospital, one district hospital, three health centers IV and five health centers III. These facilities were chosen randomly and proportionally to the type of facilities in the entire Jinja district. During the initial 6 months of improvement work, these ten facilities started activities aimed at improving screening for preeclampsia among pregnant women who came for an antenatal care visit. Their plan was to work on improving diagnosis, referral and management of preeclampsia for the first six months of QI work; in the following six months they would add a new set of activities aimed at improving screening for malaria; and in the last six months they would work on improving screening for anemia in pregnancy. This case study describes the results obtained during the first six months of work on testing changes to improve preeclampsia screening.

The improvement indicators for the three areas of improvement—preeclampsia, malaria and anemia were:

**Preeclampsia:**
- Percentage of mothers whose blood pressure (BP) was assessed during antenatal care session
- Percentage of mothers with a BP higher than 140/90 assessed for protein in urine
- Rate of preeclampsia cases diagnosed among all antenatal care visits
- Percentage of cases of severe preeclampsia received at regional Hospital and treated as per guidelines
- Preeclampsia case-fatality rate at referral hospital

**Malaria:**
- Percentage of mothers in ANC with fever or history of fever who were tested for malaria
- Rate of malaria cases diagnosed and treated among all ANC visits

**Anemia:**
- Percentage of mothers at 1st antenatal care visit who whose hemoglobin was assessed for anemia
- Percentage of mothers who received correct dose of iron/folic acid at ANC visit
- Percentage of mothers whose hemoglobin was below 10.5 g/dl and received treatment as per guidelines

Background:
The Jinja District is one of the 56 districts in Uganda, it has 514,000 inhabitants and its health services include 54 government, 15 NGO or Private Not-for-Profit and 5 private facilities. Preeclampsia is the 2nd leading cause of maternal mortality in Uganda. Its Maternal Mortality Ratio (MMR) is at 360/100,000 LB, one of the highest in Africa\(^1\), and it has not been reduced significantly during the last ten years. Malaria is the leading cause of morbidity and mortality in Uganda especially in children under five years.

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The Uganda Ministry of Health has issued Clinical Guidelines, following WHO recommendations, for screening for the main conditions including preeclampsia, malaria and anemia during antenatal care, diagnosing and treating cases.

URC conducted an initial baseline in the ten participating facilities during August 2015 reviewing data from the antenatal care registers for the period March to July 2015. The baseline assessment showed the following:

- Mothers whose blood pressure (BP) was assessed during antenatal care session: 35-65%
- Mothers with a BP higher than 140/90 assessed for protein in urine: 0%
- Cases of preeclampsia diagnosed per 1,000 antenatal care visits: 0-1 per 1,000 ANC visits
- Cases of severe preeclampsia received at regional Hospital and treated as per guidelines: 0-10%
- Preeclampsia case-fatality rate at Regional hospital: 25%
- Percentage of mothers in ANC with fever or history of fever who were tested for malaria: 0%
- Rate of malaria cases diagnosed and treated among all ANC visits: 1-3 per 1,000 ANC visits
- Mothers at 1st antenatal care visit who whose hemoglobin was assessed for anemia: 0%
- Mothers who received correct dose of iron/folic acid: 20-40%
- Mothers whose hemoglobin was below 10.5 g/dl and received treatment as per guidelines: 0-5%

The URC/ASSIST team leading this effort coordinated the improvement activities closely with the Jinja District officials who actively supported it from the beginning. In fact, two district staff members became coaches visiting facility-based QI teams together with URC/ASSIST coaches. The District Director sent a message to each facility indicating their QI team should report monthly on the quality indicators for antenatal care.

**Testing Changes:**
During the initial six months the QI teams concentrated on improving screening for preeclampsia among all women who came for antenatal care. A first visit by three QI coaches to form QI teams and to discuss the results of the baseline assessment, in each facility, took place in August 2015, after the baseline assessment, and a 2nd coaching visit to review documentation of antenatal care registers around October.

The first Learning Session took place in December 2015, with active participation of all the facility-based QI teams. The District Director and District officials also participated, supporting the work of QI teams. During this event each QI team formalized its Improvement Aim, in the direction of improving screening for preeclampsia.
The proposed changes basically pointed to increase blood pressure taking and to introduce testing mothers who had blood pressure values higher then 140/90 for protein in urine using dipsticks. Two categories of changes were the most frequent:

a) Increasing the availability of basic supplies: some facilities procured sphygmomanometers and all many of them procured dipsticks through sharing among facilities or getting these from a few laboratories who had them. A couple of facilities tested cutting the dipsticks longitudinally in two, thus duplicating the number of dipsticks available. Another item that was found lacking was recipients to collect urine samples to be tested for protein. This problem was solved by testing using recipients to collect sputum samples -that were in no short supply.

b) Changes to the organization of processes: basically these meant assigning the responsibility of taking blood pressure to all antenatal care mothers to one specific midwife in the health center, in the case of blood pressure taking; and moving the task of testing for protein in urine from the health center laboratory to the midwives who provided antenatal care directly. This last change involved several tries since iterative modifications needed to be introduced in order to make the change work better; for example training the midwives, creating a place where women could produce a urine sample, a table where to conduct the dipstick test, a place to dispose of used materials.

Results as shown in time series charts:

The following charts show the results obtained on improving screening for preeclampsia:
Improving antenatal care, Jinja Collaborative: Screening for preeclampsia at the ANC session

Pregnant women with a BP higher than 140/90 who were assessed for protein in urine, Jinja district, Uganda. March 2015-Feb 2016

Improving antenatal care, Jinja Collaborative: Diagnosing preeclampsia at the ANC session

Preeclampsia cases diagnosed among all ANC visits, Jinja district, Uganda. March 2015-Feb 2016
When the teams saw the above graphs they were very happy since they had been able to improve the preeclampsia indicators. They concluded that the changes they had tested to improve screening for preeclampsia were successful.

Interestingly, QI teams had also been measuring all the other indicators (screening for malaria and anemia during antenatal care) even though no formal changes were tested for these processes yet during the period August 2015-February 2016. The following charts show the performance of these indicators, in the absence of tested changes:
Percentage cases of malaria diagnosed and treated among all ANC visits. Jinja district, Uganda 2016

Percentage of mothers at 1st ANC visit whose hemoglobin was assessed by Laboratory. Jinja district, Uganda 2016
Questions to be asked to case participants:
- What were the changes these team tested to improve screening for preeclampsia during antenatal care?
- What happened as result of implementing these changes?
- What happened to the indicators for improving screening for malaria and anemia?
- What changes were tested for achieving these improvements?
- Why do you think indicators for malaria and anemia processes showed improvement?