

## **First Look: Ultrasound Use to Improve Pregnancy Outcomes in Low Income Country Settings**

**Department:** Community Health Sciences

**Project Sponsors:** Research Triangle Institute, with funding from the Bill and Melinda Gates Foundation and GE Healthcare

**Duration:** Sep 2013 – Oct 2015

**Principal Investigator:** Dr. Sarah Saleem

**Co-Investigator:** Dr. Waseem Mirza, Dr. Omrana Pasha

### **Summary:**

Obstetric ultrasound screening can identify complications and determine gestational age but its impact on maternal and newborn mortality in low resource community settings has not been assessed. This trial will investigate if screening performed by community health care staff has an impact.

Obstetric ultrasound is part of current antenatal care in high-resource settings and used to identify complications of pregnancy as well as to establish accurate gestational age. Ultrasound is increasingly being disseminated in low-resource settings due lower costs and increased durability of the equipment but its impact on maternal and newborn mortality in these settings has not been assessed. The use of compact ultrasound by non-physician health care staff (e.g., midwives) for antenatal identification of high-risk pregnancies is a new intervention requiring authoritative investigation in many low-resource settings. The primary hypothesis to be assessed in this study is that antenatal ultrasound screening performed by non-physician health care staff will significantly reduce a composite outcome consisting of maternal mortality and near miss maternal mortality, stillbirth and neonatal mortality in low-resource settings. Underpinning this hypothesis are two assumptions. The first assumption is that antenatal detection of complicated pregnancies will lead to appropriate referral at the right time for complicated pregnancies to comprehensive emergency obstetric and neonatal care (EmONC) facilities. The second assumption is that ultrasound's introduction will increase antenatal attendance leading to greater rates of institutional delivery. To assess these underlying assumptions beyond the composite end point, this study will investigate the health system impact of compact ultrasound. Secondary outcomes include antenatal attendance rates, institutional delivery rates at basic EmONC facilities, referral rates to comprehensive EmONC facilities, cesarean section rates (both planned and emergent) and an assessment of non-physician health care provider ultrasound competence. The cost and benefit of these measures to the health system will be estimated.

### **Specific Aims:**

The specific aims include the following:

- To evaluate whether use of ultrasound in community health centers increases antenatal care attendance.
- To evaluate whether use of ultrasound in community health centers increases the utilization of delivery facilities for women with pregnancy complications.
- To evaluate whether ultrasound use in community health centers reduces a composite outcome of maternal mortality and near miss mortality, stillbirth, and neonatal mortality.