Establishing Access to Obstetric Ultrasound Services in Remote Areas through a teleradiology platform for reporting.

Uzma F Qureishi Tanveer Khan, Nidhi Leekha, Sudhir Vinayak

Aga Khan University Hospital, Nairobi Kenya
What and Why?

- Access to obstetric ultrasound services is challenging in remote areas due to a shortage of trained sonographers and radiologists, leading to delays in diagnosis and increased maternal and fetal morbidity and mortality.

- WHO(1) and FIGO recommends at least 1 or 2 screening obstetric ultrasounds before 24 weeks.
Study Objective

- Our primary study objective was to evaluate the performance of the VISIQ ultrasound scanner and a teleradiology platform for transmitting ultrasound images from remote clinics to radiologists.

- The secondary objective included assessing implementation a communication protocol for quality control and enhancing education and teleradiology for more effective examinations by inexperienced users.\(^2\)
Methods
The study utilized Philips tablets, modems, computers, and a 5G network which connected all the equipment.

Most teleradiology solutions transfer lossy images; our challenge was to transfer lossless images which was achieved by modifying the teleradiology algorithm.
Results

- Reporting accuracy was 99.63% for scans performed by midwives, confirming that the training was adequate.
- Image data analysis also showed that no further imaging was necessary after radiologist review.
• Report validation took 15 minutes from time of scan completion. Study success was achieved with a 10-minute scan time and 35-minute maximum scan-to-report turnaround.

No problems arose with the equipment and no difference in transmission time, or image quality deterioration occurred.
## Discussion

### Study limitations:
- Small catchment area.
- Suboptimal website image quality.

### Despite limitations, sufficient sample size for the study.

### Technical setup:
- Midwives used high-resolution monitors for reporting images.
- Successful communication via cell phone with radiologists.
- Consistent availability of a stable cell phone signal.
- Distance from the primary hospital had no impact on transmission time or image quality.

### Patient outcomes:
- Final outcomes for 220 patients determined through post-delivery tracing.
- 51 patients could not be contacted for final outcomes.
What Next?  
What More?

- Our project shows that lossless image transfer is possible and scale up projects are underway currently
- Mimba Yangu project being conducted in collaboration with Ministry of Health Kenya. With this we are doing image transfer from 14 sites (as compared to the 3 sites)
- Possibility of discussion with Ministry of Health Kenya for National policy
Training midwives to perform obstetric ultrasound exams can help practically address the shortage of sonologists and sonographers in resource-limited countries.

Collaborating with radiologists and using modern technology like cell phones can be cost-effective and efficient. Future research should focus on scalability, sustainability, and long-term impact.