
Title

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Improving pregnancy health and outcomes through provision of ultrasound during pregnancy: collaborative efforts between the South Africa MoH and WITS-VIDA

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Summary

The World Health Organization (WHO) recommends at least one ultrasound scan before 24 weeks of gestation (early ultrasound) to confirm fetal viability, identify the position of the gestational sac, determine gestational age, estimate the number of fetuses, and measure chorionicity and amnionicity in the case of a multiple pregnancy. Also, ultrasound assessment of the fetus in the first trimester is considered the most accurate method to establish or confirm gestational age. However, availability of ultrasound services at antenatal care clinics (ANC) remains a challenge especially in rural and township areas. Midwife obstetric units (MOU) are usually the only place that women can get an ultrasound scan in the public health sector.

These MOUs do not have enough capacity to render this essential service to all pregnant women resulting in many women failing to have a single ultrasound scan during pregnancy. Also, the CHAMPS findings showed that most newborn and under-5 deaths could have been prevented if mothers had better access to good quality ANC services including ultrasound scanning in early pregnancy. As such, Wits VIDA, CHAMPS site in South Africa, in collaboration with the ministry of health (MoH) saw a need to improve access to ultrasound services by providing an ultrasound machine and a sonographer at Chiawelo, Lillian Ngoyi, Mofolo, Itireleng and Zola Midwife Obstetric Units (MOUs).

“ *Potential life-threatening complications for both the mother and child such as fetal malpresentation, multiple gestations, ectopic pregnancy, and inappropriate positioning of the placenta may be identified earlier and managed with the use of ultrasound screening and referred for appropriate obstetric care.”*

Background and Context

The Sustainable Development Goals (SDG) and the United Nations' Global strategy for women's, children's, and adolescents' health (2016–2030) aim to reduce the global maternal mortality ratio to 70 deaths per 100 000 live births^{1,2}. Access to quality antenatal care is crucial to achieve this goal and improve the lives of both mothers and babies. Ultrasound scan has an important role to determine pregnancy location, gestational age, viability, and detection of early pregnancy complications. The latest Guidelines for Maternity Care in South Africa³ states that for early diagnosis of the complications of pregnancy, all pregnant women should have access to at least one ultrasound scan between 18–24 weeks of pregnancy. However, women in low resource settings like sub-Saharan Africa go through pregnancy without the benefit of a single ultrasound examination^{4,5}. Ultrasound services are accessible by 30% of pregnant women in urban sub-Saharan Africa and 6.9% in rural areas⁶. Potential life-threatening complications for both the mother and child such as fetal malpresentation, multiple gestations, ectopic pregnancy, and inappropriate positioning of the placenta may be identified earlier and managed with the use of ultrasound screening and referred for appropriate obstetric care^{7,8}.

South Africa's CHAMPS Pregnancy Surveillance program recruits women of childbearing age in the Soweto and Thembelihle catchment areas. Soweto is an urban township with a population size of approximately 1.3 million people, Thembelihle Local Municipality and its adjoining areas are informal urban settlements with a population of >20 000. There are two state hospitals and eight midwife obstetric Units that offer maternity services. In a year, Chris Hani Baragwanath Academic Hospital (CHBAH), a tertiary-level hospital, has about 6 000 deliveries, Bheki Mlangeni district level hospital (BMDH) delivered about 16 000 pregnancies, and the MOUs 8 000 deliveries. The team identifies pregnancies in six antenatal care clinics (ANCs) and five midwife obstetric units (MOUs). The ultrasound services are offered at MOUs upon referral from ANC clinics. The ultrasound scan services were available one day per week at each MOU by a rotating Sonographer hired by Department of Health, making it difficult to provide ultrasound scans to all pregnant women attending ANC.

01

Interventions

To address the ultrasound service interruption and improve the access of ultrasound services to all pregnant women attending ANC, CHAMPS Pregnancy Surveillance program, Pregnancy Exposure Registry (PER) program and Vaccines and Infectious Diseases Analytics Research Unit, University of the Witwatersrand (WITS-VIDA) took an initiative to engage the facility managers and re-establishing the ultrasound services. From June 2023, the ultrasound scan services were provided by the Sonographer employed by the Department of Health (DoH) from Monday to Friday. An additional Sonographer was employed by the CHAMPS/WITS-VIDA to render ultrasound services on Saturdays (Figure 1). As the DoH Sonographer resigned from the post, CHAMPS/WITS-VIDA offered Sonographer to MOUs from November 2023 working Mondays to Fridays. The services were further expanded by an additional Sonographer offering services on Saturdays only in February 2024 (Figure 1).



Figure 1: Sequence of events of the intervention process

The weekend services are meant to increase the number of women accessing ultrasound by including women who are unable to access these services during the week. Women are booked by nurses at the ANC clinics (Figure 2). Abnormal scans are referred for further management in a high level of care at either BMDH or CHBAH.

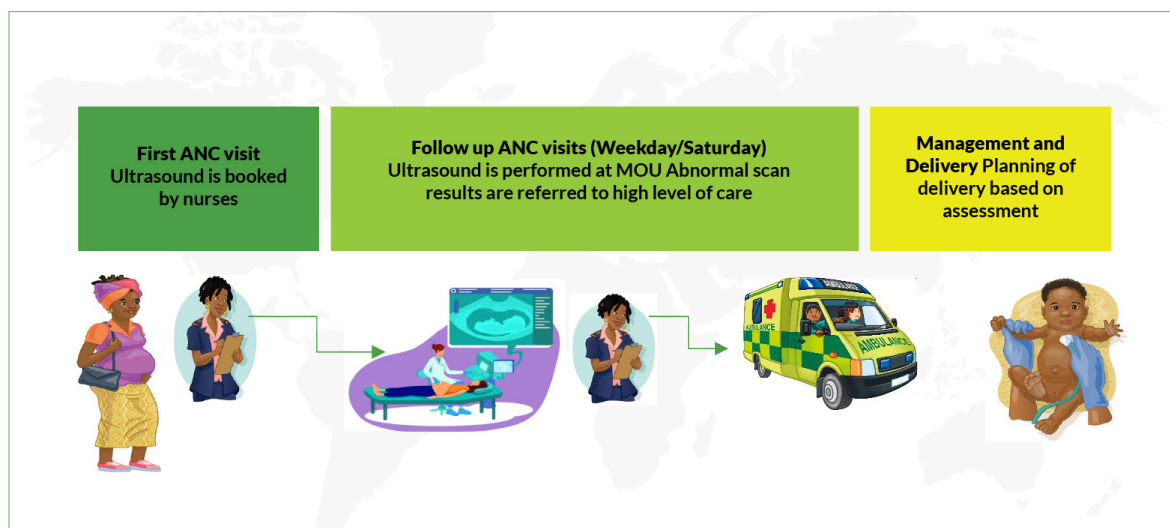


Figure 2: Ultrasound booking and referral process to higher care

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Impact of Interventions

The intervention instituted ensured that there is continuous access of ultrasound during the week and created a platform for women who are unavailable during the week to access ultrasound on Saturdays (Figure 3). A total of 696 pregnancies were scanned from June 2023 to April 2024. The proportion of women scanned from June to October 2023 were higher (35%, n=246) than when services were offered Mondays to Friday only from November 2023 to January 2024.(16%, n=182) (Figure 1). The gestation of pregnancies scanned were 1-3weeks (10%, n=71), 14-23 weeks (41%, n=283), and 28-40 weeks (49%, n=342). These data suggest that there is a need to increase ultrasound services earlier in pregnancy, as almost half of the participants get ultrasound services in the third trimester. Almost 70% (n=492) of women who had ultrasound scan done have recorded outcomes. A large proportion (68.4%, n=476) of women delivered live births while 2.3% (n=16) were still births and the remaining 29.3% (n=204) were still pregnant at the time of this report.



Figure 3: Provision of ultrasound scan services on weekdays and Saturdays

03

Lessons learned

- Ultrasound services provided over the weekend allows access for working pregnant women who are unable to access this service during the week.
- This service encourages partner support in pregnancy as partners have access to this service together, which is uncommon during the week for working couples.
- Out intervention showed effectiveness in increasing access to ultrasound and prompt intervention through early referral, lowering the risk of adverse outcomes for both the woman and the baby.
- Most nurses were keen to receive training on conducting ultrasound scans. If nurses can be trained to do basic ultrasound at primary level of care this will improve access of ultrasound at early pregnancy, and it will also relieve the burden from patient travelling to other facilities for basic ultrasound.



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You cannot prevent the birds of sorrow from flying over your head, but you can prevent them from building nests in your hair.”

— Old Chinese proverb



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The CHAMPS network uses innovative approaches to generate and share knowledge that improves understanding and prevention of child mortality.



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