**Enhancing Machine Learning Algorithms for Prenatal Care through the Group Antenatal Care Model in Tanzania.**

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## Introduction

The rapid advancement of AI technology has increased an interest in developing machine learning (ML) algorithms to enhance clinical decision-making during antenatal care (ANC). Patient-centred platforms like group antenatal care (G-ANC) can provide homogeneous data that is ideal for ML applications. G-ANC is an innovative service delivery model where women with pregnancies of similar gestational age (GA) are brought together for ANC, incorporating information sharing, clinical consultation and peer support. A well-designed ML system can improve healthcare quality by reducing adverse events, supporting diagnostics and decision-making, improving documentation, and streamlining clinical workflows. This project aims to use the G-ANC model to collect information for designing and testing ML algorithms that can predict adverse pregnancy outcomes and enable early clinical decision making.

## Methods

Data collected during G-ANC meetings is recorded electronically in the unified community system (UCS), a government-led electronic medical records system with some predictive algorithms. Data is sourced from pregnant women of similar GA who are grouped in cohorts starting at 20 weeks of gestation. Women in the same cohorts have similar pregnancy features for easy monitoring of pregnancy events until delivery.

## Results

To date, the project has reached about 4,900 pregnant women attended through the G-ANC model. The project utilized over 100,000 data points recorded in the UCS to design and deploy ML algorithms capable of predicting hypertensive disorders during pregnancy.

## Conclusion

The G-ANC model provides an opportunity to collect homogeneous data from women of similar gestational age and other pregnancy features. This approach allows for improved information gathering, which enhances ML algorithms for predicting adverse maternal outcomes and supports early clinical decision-making during pregnancy.