Development of an Electronic Dashboard to highlight pregnant women at risk of adverse health outcomes due to COVID-19 in Kampala, Uganda

Joseph Ouma[1], Lauren Hookham[1,3], Lorna Aol Akera[1], Gordon Rukundo[1], Mary Kyohere[1], Philippa Musoke[1], Kirsty Le Doare[1,2,3]

1.Makerere University Johns Hopkins Research Collaboration, 2.MRC/UVRI and LSHTM Uganda Research Unit, Entebbe, Uganda. 3.St. George's, University of London, London, United Kingdom

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Background

Following **SARS-COV-2** outbreak, governments worldwide introduced restrictions on movement and gatherings to contain the spread of the pandemic.

Government of Uganda instituted very stringent measures including travel restrictions, affecting access to healthcare services for pregnant and lactating women.

The Incidence and Risk factors for COVID-19 among pregnant and lactating women and their infants in Uganda (IROC) project aimed to develop a visualization dashboard using routine data for pregnant women seeking antenatal and delivery services at Kawempe National Referral Hospital (KNRH), Kampala Uganda.

Approach and Methods

Statistical modelling of Electronic Medical Records (EMR) data within the ICODA workbench, a Trusted Research Environment, to identify the risk factors for adverse pregnancy and infant outcomes.

The identified factors were then presented for discussion and input of Ministry of Health Uganda staff, Hospital Management at KNRH, Nurses and Midwives providing MNCH services at the hospital.

The meeting also sought user input on the layout of the dashboard to ease use and acceptability once fully developed.

Setting and Data

Kawempe National Referral Hospital (KNRH), provides MNCH services to **>30,000 women** annually

UgandaEMR, an electronic medical records system is used to capture patient level service delivery data based on MoH HMIS tools

Microsoft Power BI Desktop 2.102.845.0 and UgandaEMR system version 3.3.2 were integrated using SQL connector. Anonymised data from the different tables in the UgandaEMR database were extracted using SQL queries.

Data Analysis Expressions were written in Power BI to compute and present summaries on the dashboard. Interfaces developed include Antenatal, Maternity and Postnatal with dynamic filters for days, weeks, months, and years as may be desired.

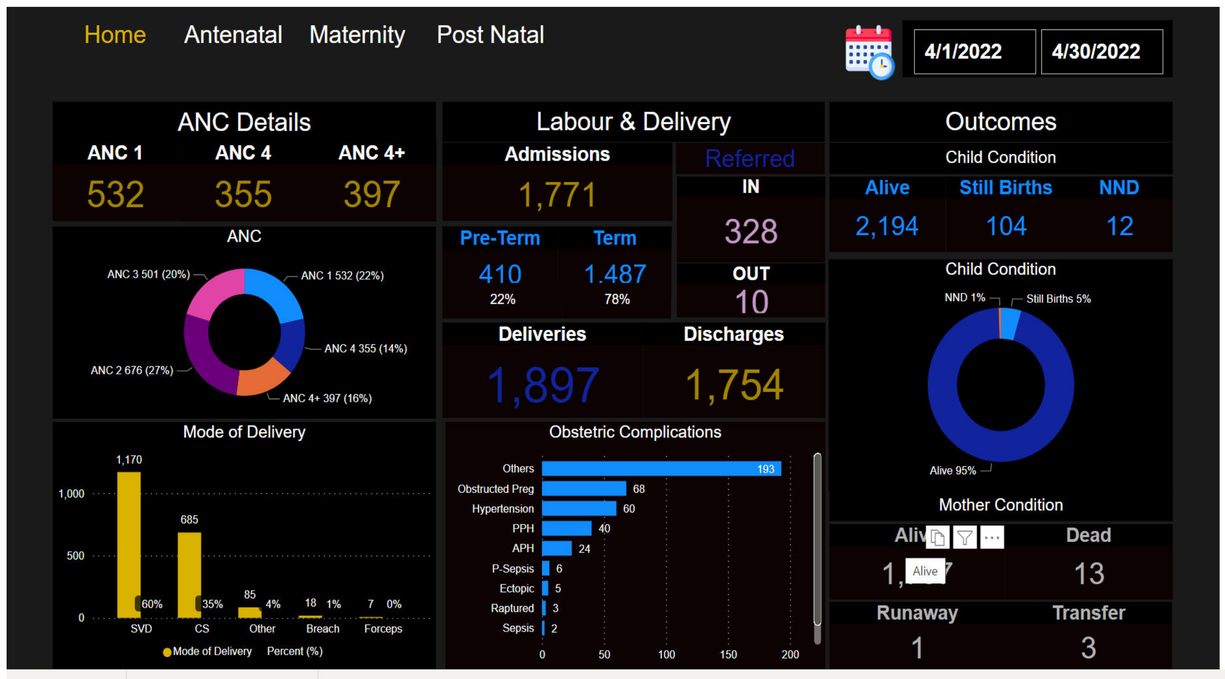

Figure 1. Summary page of Dashboard

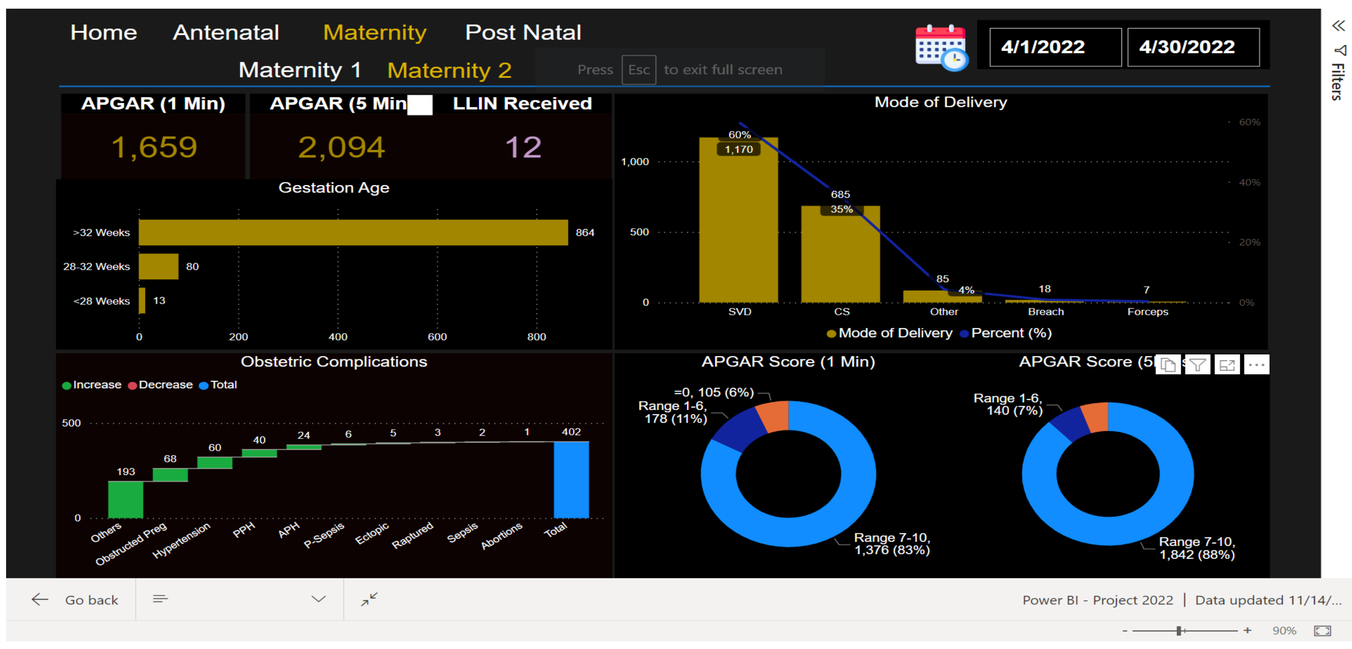

Figure 2. Summary of delivery outcomes

Lessons Learnt

- Engagement meetings are important prior to the development of the dashboard as it allows for dialogue and inclusion of perspectives from all stakeholders
- Discussion and interpretation of results with hospital team
- It is also critical to pre-code key data elements in routine service delivery database systems to ease analysis and use of the data.
- Continual monitoring of healthcare worker use and attitudes is key to successful implementation
- Quality data including completeness of paper registers are key to the information presented on the dashboard

Challenges

- Quality of routine service delivery data, containing text data.
- Stock out of paper tools - improvising unstructured tools reduces data quality
- Lack of coordination of the Multiple partners in the hospital with varying interests requires careful management
- Limited data use skills amongst healthcare workers requires intensive and ongoing training

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Conclusion

- User input informed the development of a Dashboard relevant to their work.
- Key to Incorporate a risk factor model to the real time routine Electronic Medical Record (EMR) data.