



Improving Effective Prenatal Care at the Maternal and Child Health Clinic of AIC Kijabe Hospital



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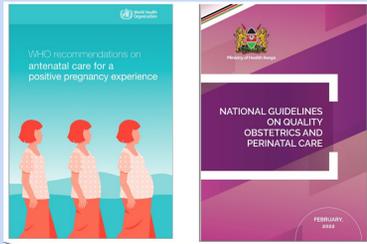
Background

National Problem: Kenya

- 12th highest maternal mortality rate in the world; 90% of maternal deaths are due to suboptimal care^{1,2}
- 58th highest infant mortality rate in the world; 95% of neonatal deaths are from preventable causes^{3,4}
- Prenatal care plays a key role in reducing maternal and infant mortality rates
- One prenatal visit in East Africa reduces the neonatal mortality risk by 42%⁵
- World Health Organization recommends 8 prenatal visits before delivery; only 58% of Kenyan women complete at least 4 prenatal visits; inadequate prenatal care is a national issue^{6,7}

Local Problem: Maternal and Child Health (MCH) Clinic of AIC Kijabe Hospital

- Baseline chart audit (N = 53) revealed significant gaps in prenatal care for all patients; focused chart audit (N = 21) of new obstetric (NOB) patients showed:
 - 14% (n = 3) had a surgical history documented
 - 5% (n = 1) had a mental health history documented
 - 0% (n = 0) were screened for substance use
 - 0% (n = 0) were screened for symptoms of tuberculosis
 - 38% (n = 8) had allergies documented
 - 14% (n = 3) had current medications documented
 - 29% (n = 6) were screened for gestational diabetes
 - 33% (n = 7) were given a tetanus vaccine if indicated



Available Knowledge

- Best practice standards come from the World Health Organization and the Kenya Ministry of Health
- 1st prenatal visit should include a complete history and physical exam, blood pressure and weight measurements, prenatal labs, an ultrasound, iron and folic acid supplementation, prenatal education, and risk stratification^{6,8}
- Pregnancy risk calculators help to identify high-risk pregnancies and improve maternal and neonatal outcomes⁹⁻¹⁴

Aim

This quality improvement initiative aimed to increase effective prenatal care for all NOB patients at the MCH clinic of AIC Kijabe Hospital to 75% within 8 weeks (15 April to 7 June, 2024).

Methods

Context:

- AIC Kijabe Hospital: located in rural Kenya, yet a major referral hospital with 2,400 annual births
- MCH Clinic: 7 exam rooms staffed by 4 nurses, 3 clinical officers, 1 intern, and 1 consultant family medicine doctor
- Patient Volume: about 250 patients weekly, including pregnant women, postpartum women, infants and children under age 5; 10% are NOB patients
- Patient Demographics: Primarily Kenyan women, ages 19-45, most self-pay, most married

Plan-Do-Study-Act (PDSA) Process:

- 4 cycles lasting 2 weeks each
- Each PDSA cycle preceded by a new test of change (TOC)

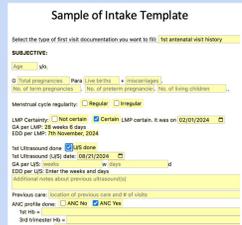
2 Core Interventions:

NOB Standard of Care

- Based on 32 best practice standards
- Standards derived from the World Health Organization and the Kenya Ministry of Health
- Standards embedded into an intake template using a program called Text Blaze

NOB Risk Assessment

- Alberta Antenatal Risk Assessment¹⁵
- Screens pregnant women for 46 risk factors across 4 categories
- Categories include prepregnancy history, past obstetric history, problems in current pregnancy, and other risk factors

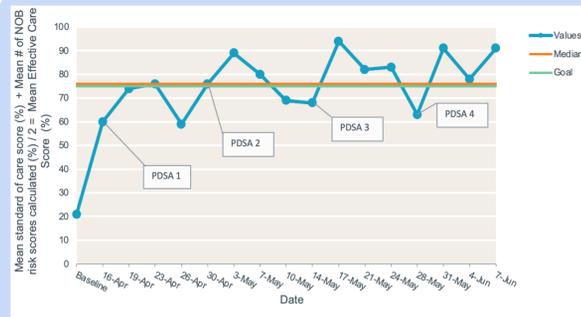


Tests of Change Table

Core Intervention	PDSA 1	PDSA 2	PDSA 3	PDSA 4
NOB Standard of Care	Implement NOB intake template	Modify template, expand plan	Train providers to calculate prepregnancy BMI	Initiate team huddles 3 times per week
NOB Risk Assessment	Implement pregnancy risk calculator	Clarify definitions, offer completion incentive	Provide case study practice, post top 10 reference list	Provide daily report on team progress

Results

AIM Run Chart: Effective Care for NOB patients (N = 153)



Effective care for NOB patients increased to 77% overall, with the mean exceeding the goal.

Although no shifts or trends were observed, effective care did quadruple from a baseline of 21% to 84% by PDSA 4.

NOB Standard of Care Score

Best Practice Standard	Baseline (%) (N = 21)	Project Total (%) (N = 153)
Medical history documented	43	98
Gynecologic history documented	29	96
Surgical history documented	14	97
Mental health history documented	5	92
Screening for substance use documented	0	99
Screening for TB symptoms documented	0	99
Allergies documented	38	96
Current medications documented	14	79
Urinalysis done	38	87
Tetanus vaccine given	33	68

This is a sample of 10 of the 32 best practice standards that were used to calculate the mean standard of care score. The results circled in red highlight some of the most significant improvements.

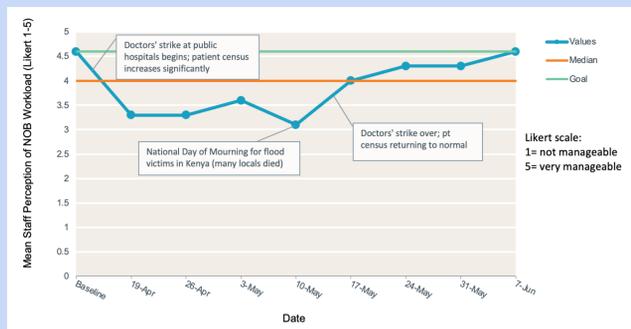
Results from 4 PDSA Cycles for 2 Core Interventions

Core Intervention	TOC #1	PDSA 1 (%)	TOC #2	PDSA 2 (%)	TOC #3	PDSA 3 (%)	TOC #4	PDSA 4 (%)
NOB Standard of Care: Process	Implement NOB intake template	75	Modify template and expand plan	90	Train providers to calculate pre-pregnancy BMI	89	Initiate team huddles 3 times per week	93
NOB Standard of Care: Outcome		75		85		85		88
NOB Risk Assessment: Process	Implement pregnancy risk calculator	57	Clarify definitions and offer completion reward	71	Case study practice and top 10 reference list	78	Provide daily report on team progress	80
NOB Risk Assessment: Outcome		17		37		43		35

Results circled in purple indicate when a TOC had the most impact on the process or outcome measures.

The final PDSA cycle results are highlighted in red.

Balancing Measure Run Chart: Staff Perception of their Workload (N = 56)



Unforeseen obstacles did impact the staff perception of their workload when caring for NOB patients, which decreased initially, before returning to baseline by week 8.

Performance Measures

Measure	Operational Definition	Baseline	Goal
AIM	Mean standard of care score (%) + Mean # of NOB risk scores calculated (%) / 2 = Mean Effective Care Score (%)	21	75
NOB Standard of Care: Process Measure	# of intake templates used / # of NOB patients seen	0	75
NOB Standard of Care: Outcome Measure	Mean standard of care score for NOB patients (%)	42	80
NOB Risk Assessment: Process Measure	# of risk scores calculated / # of NOB patients seen	0	75
NOB Risk Assessment: Outcome Measure	# of high and moderate-risk patients identified / # of risk scores calculated ^a	—	26
Balancing Measure	Mean staff perception of NOB workload score (Likert scale) ^b	4.6	≥ 4.6

^a No baseline data are available for the outcome measure of the NOB risk assessment, as this scoring system was not being used yet.

^b Likert scale: 1 = strongly disagree that workload is manageable to 5 = strongly agree that workload is manageable.

Interpretation

More High-Risk Pregnancies Identified:

- An earlier study in Kenya identified 26% of pregnancies as high-risk at the NOB visit.⁹ This project identified 33% of pregnancies as high or moderate-risk at the NOB visit. The higher proportion is likely due to the more comprehensive risk assessment tool that was used here, the inclusion of moderate-risk pregnancies, and the fact that 29% of NOB participants were ages 35 and above.

Benefits of Standardization:

- Standardization of care improves outcomes and efficiency.¹⁶ It was especially effective at this site, as new staff rotated into the clinic daily. The tools utilized ensured that all NOB patients received the same standard of care. However, the need to continually orient new staff is also a challenge to sustainability, so a sustainability plan was shared with the hospital leadership.

Overcoming Obstacles:

- Several unanticipated hurdles impacted this project, including a nationwide doctors' strike, nationwide flooding, and rotating staff. Despite these challenges, significant gains in prenatal care were still achieved. As seen during the Covid pandemic, quality improvement can occur even in the face of obstacles.¹⁷

Limitations:

- The NOB Standard of Care was based on best practice standards, but it is not a validated tool.
- A validated pregnancy risk calculator from Canada was used, but there is a need to develop a pregnancy risk calculator for Kenya.
- Staff encountered some technical issues while using the Text Blaze template and the electronic health record simultaneously.

Conclusions

Summary: Increased effective prenatal care from 21% at baseline to 84% by PDSA 4

Sustainability: Low-cost, high-impact tools used; sustainability plan shared with hospital leadership

Spread: Opportunities to standardize care within other departments of AIC Kijabe Hospital

Spread: Potential to benefit other Maternal and Child Health clinics and save lives globally

References & Tools

Use this QR code here to access references, tools, demographic data, additional run charts, and detailed summary tables for this quality improvement initiative.



Source of funding: None.

Acknowledgements

I would like to express my sincere gratitude to:

- Dr. Sharanna Johnson, Frontier Nursing University faculty advisor
- Dr. Kaya Belknap, AIC Kijabe Hospital site sponsor
- Dr. Shannon Mirich, AIC Kijabe Hospital site mentor
- Dr. Watson Maina, designer extraordinaire of the Text Blaze template
- All the MCH staff, who implemented this quality improvement initiative