Concept Note

Title:

Leveraging Biotechnology and Digital Health Integration to Improve Maternal Health Access and Build Nigeria's National Genomic Data Infrastructure

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Lead Agency:

National Biotechnology Development Agency (NABDA)

Private Sector Technology Partner:

Forric Technologies Ltd

Digital Health Platform:

MeddyPal – Nigeria's Integrated Digital Health Access Platform

Date:

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1. Background and Rationale

Nigeria continues to face critical challenges in healthcare access, affordability, and health system efficiency. A significant proportion of the population lacks any form of health insurance, leaving millions vulnerable to catastrophic health costs—whether for emergencies, chronic disease management, or maternal and child health services. This gap limits access to preventive care and timely treatment, contributing to Nigeria's high maternal and general health morbidity and mortality rates.

In parallel, Nigeria also lacks a national genomics and health data repository—an essential tool for supporting biomedical research, population health management, and evidence-based policymaking.

This initiative proposes a **Public-Private Partnership (PPP)** model where **NABDA will provide national leadership, regulatory oversight, and research governance**, while **Forric Technologies Ltd**, through its **MeddyPal Digital Health Platform**, will deliver the **operational technology infrastructure, digital coordination, and logistics management** needed to implement a scalable and patient-centered solution.

The project will start by addressing **maternal health access challenges** while embedding a **genomics data collection framework** to support Nigeria's long-term public health research and planning objectives.

2. Strategic Objectives

1. **Expand access to affordable healthcare services**, with an initial focus on maternal health but scalable across broader population health needs.
2. **Establish a national digital workflow for genomics screening and data collection**, starting with pregnant women as the initial cohort.
3. **Support the development of Nigeria's National Genomic and Health Data Infrastructure**, enabling research, disease surveillance, and policy development.
4. **Leverage AI and data-driven tools to enhance public health decision-making**, predictive modeling, and service delivery optimization.

3. Program Components

A. Maternal Health Digital Service Layer (Powered by MeddyPal)

- **Insurance Comparison and Enrollment:**
  MeddyPal will offer a **digital health insurance marketplace**, allowing users—starting with expectant mothers but open to all Nigerians—to **compare available health insurance plans**, **enroll digitally**, and **track coverage benefits**.
- **Hospital and Provider Access:**
  Patients will be able to **browse a directory of hospitals and healthcare providers**, check insurance compatibility, and **book in-person or telehealth appointments**.
- **Lab and Pharmacy Integration:**
  Users will be able to **book health lab tests**, access **local and online pharmacy services**, and **track lab and medication orders** through a single digital interface.
- **Telehealth and Maternal Support:**
  MeddyPal will offer **virtual consultations with doctors and midwives**, supported by **maternal health education modules** covering nutrition, prenatal care, and delivery preparation.

B. Genomics Data Collection and Testing Coordination

- **Test Recommendation and Ordering:**
  Pregnant women enrolling through MeddyPal will be guided through **NABDA-approved genomics screening workflows**, supporting Nigeria's national data bank objectives.
- **Sample Collection Options:**
  - **Home Test Kits:** Ordered through MeddyPal, with **Forric Technologies coordinating delivery, collection logistics, and lab handoff**.
  - **Partner Labs and Health Centers:** Patients can choose to provide samples at **accredited partner labs or PHCs**, with **MeddyPal handling booking and digital sample registration**.

- **Chain-of-Custody Tracking:**
  MeddyPal will provide a **digital sample tracking system**, ensuring **transparent tracking of all samples from collection point to lab processing**, with status visibility for patients and authorized stakeholders.
- **Result Delivery and Platform Integration:**
  Partner labs will process genomic samples and **upload results securely into the MeddyPal platform**, where they will be linked to individual patient profiles for clinical use.
- **Research Data Infrastructure:**
  NABDA will govern the use of collected data for research and policy purposes, ensuring compliance with national data protection and bioethics standards.

C. Research, Data Governance, and AI Development (Led by NABDA)

NABDA will retain **full ownership and governance control** over all genomics and health data generated.

Forric Technologies will provide **technical system development and analytical support** for the **AI-powered health insights and decision-support tools** embedded within MeddyPal. All data-related activities, including any AI model development, will remain **within NABDA's data governance and ethical oversight framework**, ensuring alignment with Nigeria's data protection regulations and international research standards.

Any potential future use of data **outside the defined project scope** will require **separate NABDA approval and ethical clearance**.

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4. Roles and Responsibilities

Stakeholder	Key Responsibilities
NABDA	National leadership, regulatory oversight, lab certification, data governance, ethical review, donor engagement for genomics subsidies
Forric Technologies Ltd (MeddyPal)	Platform development, system management, logistics coordination for sample movement, patient engagement tools, insurance and provider integrations, AI and analytics tool development (under NABDA supervision)
Partner Labs and Health Centers	Sample collection, test processing, and results reporting
Donor/Development Partners	(Optional) Potential funding for genomics testing, maternal health insurance subsidies, and research infrastructure support

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5. Funding and Sustainability Model

Component	Funding Source
Genomic testing for maternal cohort	NABDA, FG budget allocations, donor agencies
Digital platform development and operations	Forric Technologies, under a **Technology Service and Support Agreement** with NABDA and/or Federal Ministry of Science, Technology and Innovation
Lab services	Partner labs (fee-for-service model, funded by insurance, patients, or subsidies)
Long-term platform maintenance and AI tools	Managed under Forric's ongoing technology support contracts with NABDA or relevant government entities

Further commercial models, including **performance-based service fees or usage-based licensing structures**, can be considered during the implementation phase to ensure long-term sustainability.

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6. Implementation Roadmap (First 12 Months)

Timeline	Milestone
Month 1-2	Finalize PPP Agreement, define technical architecture, establish governance frameworks
Month 3-4	Deploy MeddyPal's maternal health service layer, launch insurance comparison and enrollment
Month 5-6	Begin genomics testing workflow (home kits + partner lab coordination), roll out lab booking and telehealth modules
Month 7-9	Expand partner network (labs, pharmacies, hospitals), integrate logistics for sample management
Month 10-12	Launch AI-based maternal health risk dashboards, deliver first national-level reporting for policymakers

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7. Expected Outcomes

- Expanded access to affordable maternal healthcare services across target regions.
- Operational launch of Nigeria's **first digital genomics data collection and management system**.
- A growing, ethically governed genomics dataset to support national research and public health planning.
- AI-enhanced insights for **risk stratification**, **early warning systems**, and **maternal health policy formulation**.
- A **strong, scalable digital health infrastructure** that can later extend beyond maternal health to address broader population health needs.

Prepared by:
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