INNOVATION NODES: INSIGHT BRIEF No. 1

The business of bringing a biotechnology breakthrough to vulnerable women

Collaboration with Harvard CBE

Office of Innovation

unicef for every child

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SDG target 3.1 reduce global Maternal Mortality Rate to less than 70 by 2030.

THE CONTEXT

Too many mothers are dying as a result of complications during and following pregnancy and childbirth that mostly preventable or treatable. The major complications related to maternal deaths include severe bleeding, infections, high blood pressure during pregnancy (pre-eclampsia and eclampsia), and delivery complications.[3]

Antenatal care is an important opportunity to diagnose pregnancy-related complications during and following pregnancy and childbirth, but in many low-income countries, mothers and the community health workers who support them do not have access to affordable and timely diagnostics.

In 2014, UNICEF identified the potential of biotechnology to help address this challenge and partnered with the Rhodes University Biotechnology Innovation Centre (RUBIC) in South Africa to develop a Smart Pregnancy Test (SPT).

The SPT is highly accurate, low-cost, and resistant to temperature and humidity. It can deliver lab-quality results without the lab equipment, using samples such as urine.

UNICEF and RUBIC need a market assessment of the pregnancy diagnostic space to ensure women in low-income countries and all marginalized women will benefit from this innovation.

THE CHALLENGE

2.8 million **mothers and children die at childbirth due to preventable pregnancy complications every year.[1]**

95% **of these deaths occur in low- and lower-middle income countries.[2]**

Affordable and accurate biosensor pregnancy diagnostics can help reduce preventable maternal mortality.

METHOD

The Harvard CBE team undertook the following activities:

- Conducted high-level research to understand the global pregancy test market
- Assessed manufacturers and distributors with suitable infrastructure, geographical reach and technical capabilities in high-income countries (HICs) and low-income countries (LICs)
- Reviewed antenatal programs and the use of ‘smart’ health products in LICs
- Reviewed the marketing strategies and pricing structure of industry leaders to help position the SPT in different markets
- Synthesized the findings to develop a go-to-market model for the SPT.

FINDINGS

- **The global pregnancy test market** is estimated at USD 1.3 billion in 2022.[4] North America and Europe are the most established markets. Asia Pacific region is the fastest growing market.
- **Potential manufacturers** to produce the SPTs exist in both LICs and HICs.
- **Potential distribution partners**: pharmacies, hospitals and healthcare providers, and online (HICs) and community health workers and Ministries of Health (LICs).
- **Options to distribute SPTs** to low-income women in HICs: government and community organizations and dollar stores based on spatial inequalities.
- **Potential distribution barriers** include: lack of "foot soldiers," product awareness and reaching small rural communities, particularly women in emergency and crisis situations.
- **Potential marketing strategies** – product personalization, brand recognition, strategic market segmentation, and 360° marketing campaign.
- **Competitive analysis and market positioning -** the SPT holds a unique competitive advantage and market position in the pregnancy test market. It is a high-end product with anticipated low production cost, which holds promise of high growth and solid market share in the future.
- **Access and cost** – the aim is to make SPT affordable for women in low-income countries and all marginalized women. Strategies such as geographic licensing carve outs or cross-subsidization could achieve this.

IMPACT AND OPPORTUNITIES

✓ For children
The SPT can contribute to a healthy birth for mother and newborn, thereby closing the maternal health gap in sub-Saharan Africa and south Asia. Further, maternal mortality impacts school participation rates.

✓ For the international development community
Biotechnology is changing global health. The SPT strengthens the 'continuum of care' needed, before, during and after pregnancy and childbirth. The inter-connection between SDG Target 3.1, SDG 4 (Quality education) and 5 (Gender equality) means the SPT has potential transformative impact for children.

✓ For the private sector
Given the size of the pregnancy test market, the opportunity exists to implement business models that both do good and do good business throughout the biotech value chain from discovery, development, and commercialisation to market entry.

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Notes

1. UNICEF, 'Surviving birth: Every 11 seconds, a pregnant woman or newborn dies somewhere around the world', UNICEF, New York, 2019, <www.unicef.org/press-releases/surviving-birth-every-11-seconds-pregnant-woman-or-newborn-dies-somewhere-around>, accessed 10 January 2023.
2. Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. World Health Organization, Geneva, 2023, p.xiv.
3. Say, Lale, et al., 'Global Causes of Maternal Death: A WHO Systematic Analysis', *The Lancet Global Health*, vol. 2, no. 6, 2014, doi: 10.1016/s2214-109x(14)70227-x.
4. Market Data Forecast, 'Global Pregnancy Testing Market', January 2022, <www.marketdataforecast.com/market-reports/pregnancy-testing-market>, accessed 30 December 2022.

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