Technology Forecasting in Health sector for Global South

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Global South …. Moving Ahead

- The Global South is undergoing a dual demographic and health transition: while many countries still face youth bulges and unmet care needs, they are also grappling with rising non-communicable diseases (NCDs), aging populations, and fragmented health systems.

Demographic Landscape

- **Youth Dominance: Many Global South nations—especially in Africa and South Asia—have populations where over 50% are under 25. This presents both a demographic dividend and a challengefor employment and health access**

- **Fertility Decline: Fertility rates are falling unevenly. While Latin America and parts of Southeast Asia approach replacement levels, sub-Saharan Africa still sees high fertility, straining maternal and child health systems**

- **Urbanization Surge: Rapid urban growth is creating megacities with overstretched health infrastructure, especially in India, Nigeria, and Brazil**

- **Migration & Care Gaps: Internal and external migration is reshaping family structures and care dynamics, often leaving elderly and children with limited suppor**

Health Transition Trends : Current

- **Double Burden of Disease: Many countries face both infectious diseases (e.g., malaria, TB) and rising NCDs (e.g., diabetes, hypertension)**
- **Health System Fragmentation: Public-private divides, uneven digital adoption, and workforce shortages hinder universal health coverage.**
- **Maternal & Child Health Gaps: Despite progress, maternal mortality remains high in parts of Africa and South Asia due to limited access to skilled care.**
- **Mental Health Neglect: Mental health services are underfunded and stigmatized, especially for youth and displaced populations.**

Forecasted Health Scenario(2025-2035)

- Health technology in the Global South is entering a transformative decade.
- With mobile-first infrastructure, AI-driven diagnostics, and decentralized care models, countries across Africa, South Asia, Southeast Asia, and Latin America are leapfrogging traditional systems.
- However, uneven digital access, regulatory gaps, and data governance challenges threaten to widen health inequities.
- Strategic foresight is essential to ensure inclusive, ethical, and scalable health innovation

Scenario & Wild Cards

- **Pandemic resurgence**: Preparedness technologies and decentralized trials.
- Climate Shifts and Health Issues
- **Quantum computing**: Potential disruption in drug discovery and bioinformatics.
- **Geo-political shifts**: Impact on supply chains, IP regimes, and global health equity.

TECHNOLOGY TRENDS

- **Emerging technologies**: AI in diagnostics, digital therapeutics, wearable biosensors, blockchain for health data, CRISPR and gene editing.
- Digital Health Platforms(SAKSHAM, SUGAM, ABHAA, etc)
- **Convergence**: Integration of biotech, nanotech, and digital platforms.
- **Maturity mapping**: TRL (Technology Readiness Level) assessments for pipeline innovations
- Block chain & Cyber security of Data(Patient Data Exchange)
- Telemedicine (PACS,etc)& AI based Diagnosis

Regulatory & Policy Signals

- **Global harmonization efforts**: ICH, WHO, FDA, EMA updates on digital health and AI.
- **Data governance**: HIPAA, GDPR, India's DPDP Act implications for health tech.
- **Reimbursement frameworks**: Shifts in payer models for digital therapeutics and remote monitoring.

Societal & Behavioral Shifts

- **Patient empowerment**: Rise of self-tracking, health apps, and participatory medicine.
- **Demographic transitions**: Aging populations, urbanization, and chronic disease prevalence.
- **Trust and ethics**: Public perception of AI, data sharing, and genetic interventions.

Environmental& Sustainability Drivers

- **Green health tech**: Eco-friendly medical devices, sustainable packaging, energy-efficient labs.
- **Climate-health nexus**: Technologies addressing vector-borne diseases, disaster response, and air quality monitoring.

Strategic Implications:

Policy Alignment: Nations to increasingly shape global health tech policy and spending, with growing emphasis on universal health coverage and digital equity.

Investment Focus: Infrastructure, interoperability, and AI regulation will be critical for scaling health tech.

Global Collaboration: Opportunities for cross-border innovation, especially in AI ethics, data standards, and pandemic preparedness

Large Scale Data Analysis and ML Models

Multicentric Clinical Trails

Regional Readiness Snap-shot

Region	Strengths	Gaps
South Asia	Mobile health innovation, donor support	Data protection, rural infrastructure
SE Asia	Startup ecosystem, digital payments	Cybersecurity, equity
Latin America	Policy maturity, hospital digitization	Interoperability, rural coverage
Africa	Smart clinics, multilingual AI	Infrastructure, workforce

Strategic Call to Action

- To achieve SDG 3 (Good Health and Well-being) and UHC goals, the Global South must proactively shape its health tech future—not just adopt it.
- Governments, donors, and innovators must co-create inclusive, resilient, and rights-based digital health ecosystems.
- **Youth-Centric Health Planning: Invest in preventive care, sexual health, and mental health services for young populations.**

Cont….

- **Integrated Health Systems: Strengthen primary care, digital records, and referral networks to reduce fragmentation**
- **Climate-Health Nexus: Prepare for climate-driven health risks—heat stress, vector-borne diseases, and food insecurity.**
- **Gender & Care Equity: Recognize and support unpaid care work, especially by women and ethnic minorities**

Strategic Overlay

Demographic Trends	Health Tech Levers	SDG Alignment
Youth bulge	Mobile apps, AI bots	SDG3 & $
Urbanisation	Smart systems, telehealth	SDG 11&3
Aging	Wearables & Home Care	SDG 3 & 10
Migration	Blockchain, multilingual AI	SDG 16&3
Climate Risk	Predictive analytics, solar tech	SDG13 &3

Health Tech Priorities summarized:

- Mobile health apps for youth wellness and reproductive health
- AI chatbots for triage and mental health support
- Gamified health education platforms
- Smart Hospitals
- AI Based Diagnosis & Monitoring: Dementia Screening
- Telemedicine for Poor and Rural areas
- Remote monitoring for Elderly
- Blockchain Based portable health records
- Multilingual AI tools for refugee health triage
- Satellite Health
- Solar powered Diagnostic devices
- Satellite linked Health Surveillance systems

Regulatory Alignment Map: WHO & ISO in the Global South

WHO Frameworks

- **WHO Global Benchmarking Tool (GBT)**: Assesses national regulatory authorities (NRAs) across maturity levels (1–4). Many Global South countries are targeting Level 3 (stable, well-functioning systems).
- **Good Regulatory Practices (GRP)** & **Good Reliance Practices (GRP)**: Promote streamlined, transparent, and collaborative regulation—especially for medical products and digital health tools.
- **Annex 13 Guidelines**: Provide a roadmap for implementing quality management systems in NRAs, including situational analysis, gap assessment, and activity planning.

ISO Standards

- **ISO 13485**: Widely adopted for medical device quality management. Countries like India, Brazil, and South Africa use it as a baseline for device approval.

- **ISO/IEC 27001**: Increasingly referenced for health data security and digital health platforms

- **ISO 14155**: Used for clinical trials involving medical devices, especially in Latin America and Southeast Asia

Policy Recommendations:

1.Build Ethical AI Frameworks
Align with WHO and ICH guidelines to ensure safety, transparency, and accountability in AI Deployment

2.Invest in Interoperability
Fund open-source platforms and APIs to connect fragmented public-private health systems

3.Support Local Innovation Ecosystems
Provide grants, regulatory sandboxes, and procurement pathways for health tech startups

4.Strengthen Digital Health Governance
Develop national strategies for cybersecurity, data privacy, and cross-border health data exchange

5.Promote South-South Collaboration
Facilitate knowledge sharing, pooled procurement, and joint R&D across Global South regions.

Your best quote that reflects your approach… “It’s one small step for man, one giant leap for mankind.”

- Neil Armstrong