

Lessons from the Field: Deploying Emerging Technologies for NCD Screening and Management



About PATH

A global nonprofit improving public health



70+ countries
where PATH is improving health



7 million lives saved
through PATH-pioneered malaria control



900 million people
reached with fortified rice



7 billion
vaccine vial monitors

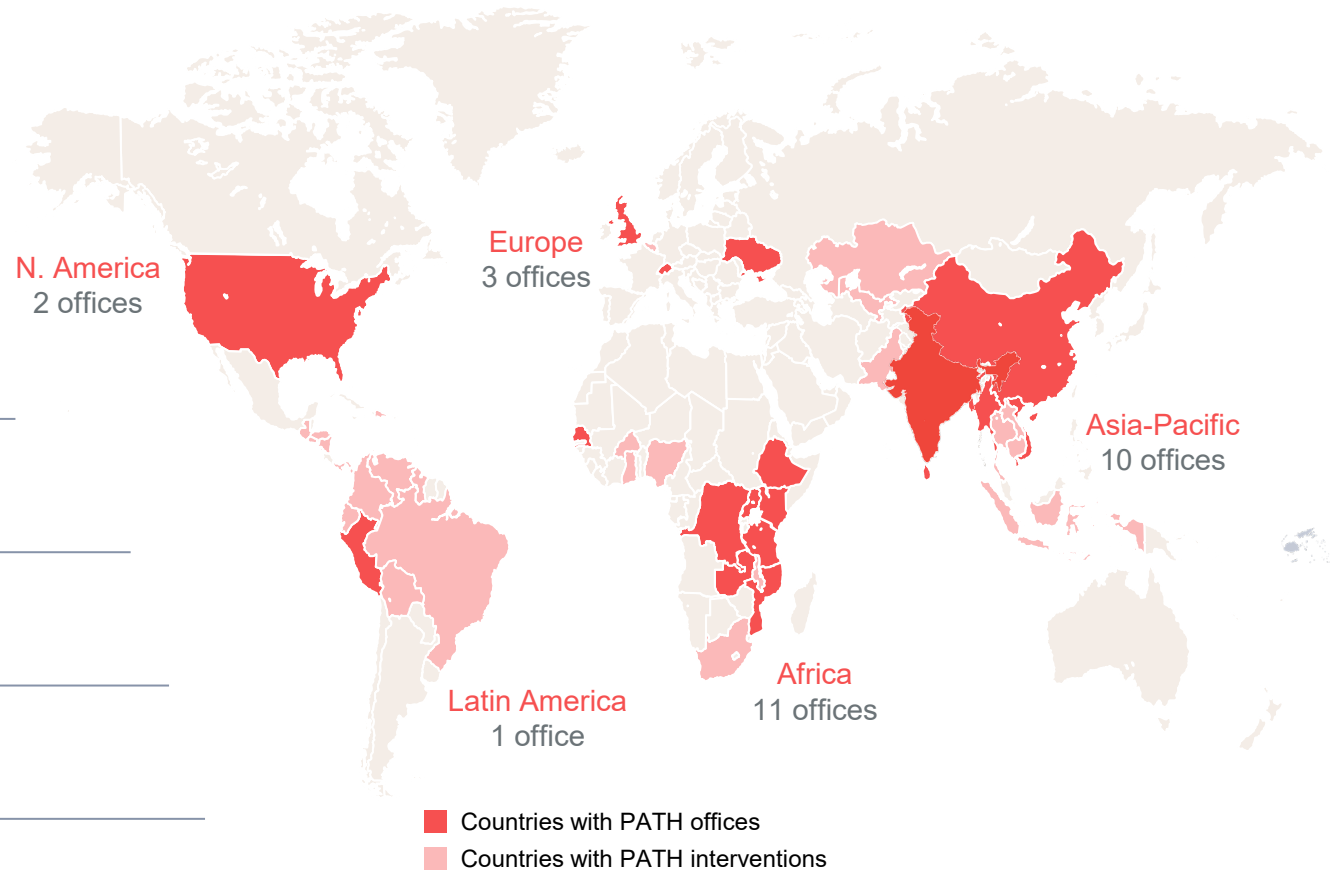


3200 professionals
globally



World's first freeze-preventive cold box
Received WHO PQ (field trials in Nepal)

27 offices in 24 countries



NCDs & Technologies: The Why & How



Burden of NCDs in Asia Pacific

NCDs are responsible for 7 of the top 10 leading causes of mortality and account for 28 premature deaths every minute globally

43M

Deaths attributed to NCDs in 2021. Of these **18M** occurred in the ages of 30-70 [1]

\$47 trillion

the global cost of lost productivity from the four major NCDs** plus mental health conditions, between 2011 and 2030 [2]

** Cardiovascular diseases, cancer, diabetes, chronic respiratory diseases

¹ WHO, 2024. *Noncommunicable Diseases*
² WHO. 2022. *Invisible Numbers: The True Extent of Noncommunicable Diseases and What to Do about Them*. Geneva.

Challenges in NCD Care



Significant Differences in Clinical and Care Pathways



Inadequacy of infrastructure



High cost



Economic Costs to Countries



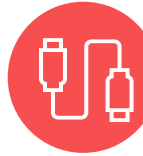
Insufficient Quality of Care



Scarcity of trained human resources



Limited access to specialist care



Limited Access to Digital Health Technologies



Poor adherence to medication



Lack of integration of health services

A strengthened, technology-enabled, and comprehensive primary health care system

- Provides cost-effective quality of care in resource-limited settings
- Achieves universal health coverage (UHC) and Sustainable Development Goals
- Medical devices and innovative health technologies is critical in the fight against NCDs - Global Action Plan for the Prevention and Control of NCDs (2013–2020, extended until 2030)



Areas of Health Technology Interventions for better NCD Care



Screening and early detection

Rapid point-of-care tests and digital health tools often enabled by AI –

- Improves access to early detection, and
- Allows timely interventions for better health management



EHR and health information exchange platforms

Streamlines patient data storage

Improves data management

Ensures accessibility and easily transferability of patient records

Assists health-care providers in enhancing overall quality of care



Wearable devices and remote monitoring

Enable patients to **track health indicators** and **share real-time data** with their health-care providers

Instant biofeedback, especially with NCDs, through continuous monitoring



Innovative technologies for health workforce training

Technology innovations drive change in the PHC system's workforce.

Digital tools will reengineer the health systems

Huge potential for enhancing the capacity of the health workforce



Telemedicine

Malaysia's **MYSejahtera** – initially a COVID-19 contact tracing app – has integrated teleconsultation services

India's **eSanjeevani** is enabling digital health equity and achieving UHC

Social media platforms are used in many countries for appointment scheduling, teleconsultations, and e-prescriptions

Scaling Technology Innovations: PATH South Asia Experience



Impact Lab: 'Go-to-Platform' for Scaling-up Innovations

Impact lab ecosystem comprises:

- Public sector
- Regulatory bodies
- Innovators/Researchers
- Incubators/Accelerators
- Industry

Impact lab supports:

- Validation
- Usability, Feasibility, Acceptability Evaluation
- Deployment
- Evidence generation
- Market access and Scale-up of health technology innovations
- Conduct knowledge convenings, workshops and roundtables

100+
Domain experts & mentors

40+
Innovative products

10
Knowledge platforms delivered

800+
Pipeline of Innovations

PATH
10A0+1120

Programmatic Areas:

Primary Healthcare - NCDs



AI enabled Stethoscope



Smart Spirometer

Maternal, Newborn and Child Health



Smart fetal monitoring

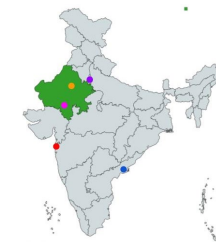


Non-invasive Hb testing

Infectious Diseases

Immunization & Cold Chain Devices

Climate X Health



Community Health Integrated Platform

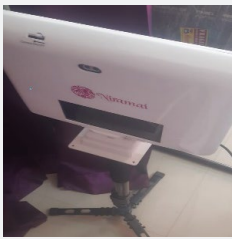


Medical grade portable refrigerators

PATH Supported Deployments for NCD Screening and Management at Primary Health Care

By uniting global stakeholders including governments, health agencies, donors, and private sector entities, PATH provides a vital platform for advancing impactful solutions and driving positive change in public healthcare systems worldwide.

Connecting innovations to impact



Mythri Lite (Niramai Health Analytix) - Non-invasive Breast cancer screening



Alveoair (Alveofit)* - AI based Spirometer



qXR (Qure.ai) - AI based CAD for Chest X-ray



AiSteth (Ai Health Highway) - AI based Stethoscope



SAVE (Briota Technologies)* - PFT in a Box – Spirometer with Teleconsultation



Smartscope (Periwinkle Technologies) - Cervical screening



AH-MX (Acare Technology) – Handheld Pulse Oximeter



EzeCheck (EzeRx Health Tech)* - Non-invasive point-of-care Hb testing



Swoop (Hyperfine, Inc)* - Portable ultra-low field MRI for brain imaging




*Assessments supported by PATH

Case Study: Cervical health screening by SMART Scope (Periwinkle)

AI-supported comprehensive single visit solution for cervical health screening

Naked eye, VIA-based cervical cancer screening faces challenges such as skill-dependent accuracy, low confidence, lack of remote review options, and logistical issues with acetic acid preparation

SMART Scope

-  Provides consistent images with uniform illumination without the need for electricity, space, other infrastructure.
-  Telehealth software that facilitates secure digital records with review and consultation remoted.
-  An AI to analyze the images to provide a risk stratification.

CLINICAL RESULTS

- **Sensitivity:** ~90%
- **Specificity:** ~80%

ADVANTAGES

- Easy screening of cervical abnormalities
- Advance technology for point-of-care technology
- Better quality of care
- Instant visual report for patient counselling
- Single visit test



- The device is deployed across 12 healthcare facilities in Satara, Maharashtra, India – 1 District Hospital, 1 Regional Hospital, 11 PHCs.
- It is also used for routine cervical health screening at facility level & at women health camps.

ADB & PATH: Technology for NCDs and Mental Health

TA by PATH intends to bridge the gaps in primary health care access with technologies to enhance screening, diagnosis, self-care, and management of NCDs and mental health conditions for communities in primary healthcare settings.

Landscaping of **technology-based solutions for screening, diagnosis, and management of NCDs** relevant the Asia Pacific region. Published as **ADB's knowledge brief.**

Developed a **searchable directory of relevant applicable technologies** based on the landscaping exercise.

Innovation Challenge to identify two innovative, scalable technologies that enhance person-centered, high-quality care for NCDs and mental health

Feasibility assessment of NCD technology

Conference and Creation of Knowledge Products



NO. 301
MAY 2024

ADB BRIEFS

KEY POINTS

- Major non-communicable diseases, including mental health conditions, contribute to 70% of deaths globally every year. 60% of deaths in Southeast Asia, and 80% of deaths in the Western Pacific, thereby causing a high burden to the health systems and societal welfare.
- Strengthening primary health care with quality and affordable medicines and health technologies is crucial for achieving universal health coverage and Sustainable Development Goals.
- Integration of digital technology can also promote networks between primary care and specialist health-care providers.
- Technology-driven initiatives at primary care level include disease screening and early detection, telemedicine, wearable devices for remote monitoring, electronic health records and health information exchange platforms, and technologies for health workforce training.
- The repository of health technologies is intended as a guide for developing member countries in Asia and the Pacific to identify potential solutions that can bridge gaps in the continuum of care for non-communicable diseases and mental health management at the primary care level.

Integrated Primary Care Technologies for Noncommunicable Diseases and Mental Health in Asia and the Pacific

Yasuyuki S., Yimengpanwan Jee Kanyan Farn, Michelle Apolito, Patrick O'Connell, Human and Social Development Office, Asian Development Bank

Rishika Raju, Divya Vaidh Mahesh, Rashana Parthi, Smiti Mahapatra, India Country Office, PATH

INTRODUCTION

The Global Health Estimates 2019 of the World Health Organization (WHO) indicate that noncommunicable diseases (NCDs), including mental health conditions, contribute about 60% to the overall disease burden, measured using the disability-adjusted life year. The global total of deaths from the four major NCDs—cardiovascular diseases, cancer, diabetes, and chronic respiratory disease—is estimated to be 52.5 million between 2019 and 2030, and increases to 64.7 million with the addition of mental health conditions. NCDs, including mental health conditions, account for 70% of the world's disease burden of deaths in Southeast Asia, and 80% in the Western Pacific.

The burden from NCDs and mental health is rising rapidly in the Asia and Pacific region. A strengthened, technology-enabled, and comprehensive primary health care (PHC) system is a cornerstone in providing cost-effective quality of care in resource-limited settings and in achieving universal health coverage (UHC) and Sustainable Development Goals.

Notes to the publication: 1) WHO's World Health Statistics Quarterly; 2) WHO, 2020, *World Health Statistics Quarterly*; 3) WHO, 2020, *World Health Statistics Quarterly*.

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ADB

PATH
1010-1111-1111

CANCERS

Level of Care: All | Country of Origin: All

Category: All | Principle: All | Disease Type: All

Total Technologies	Breast Cancer	Cervical Cancer	Oral Cancer
17	4	11	2

Technology/Device	Company/Name	Technology Link	Disease Type	Description
AVI Malign Analyzer	ICMR	🔗	Cervical Cancer	A device for visualizing the pre-cancerous and cancer lesions of cervix, oral and anal cancer.
Cervicam C20	TelCervico	🔗	Cervical Cancer	A TeleCervicography system for cervical cancer screening.
SmartScope	Perinella Technologies	🔗	Cervical Cancer	AI based product for cervical health testing.
Dr. Onoscope	Dr. Onoscope	🔗	Oral Cancer	App based detection of oral cancer.
Dr. Onoscan viba	Dr. Onoscan	🔗	Cervical Cancer	Cervical cancer screening device.
POCCAT	Calla Health Foundation	🔗	Cervical Cancer	Colposcope for Use in Resource Limited Settings.
MyNet Telepathy	Nizam	🔗	Breast Cancer	Developer of AI based early-stage breast cancer screening device.
BIOSNPA multi cancer detection test	Yipio Bio	🔗	Cervical Cancer	Developer of diagnostic tests for the detection of cancer.
Cervicam	Silence	🔗	Cervical Cancer	Developer of screening device for the detection of cancer - cervical.
OralScan	Silence	🔗	Oral Cancer	Developer of screening device for the detection of cancer - oral.

Technologies' offering Primary & Tertiary Care

Primary	Tertiary
12	5

Technologies' working on Particular Principles

Cervical cancer screening	5
Oral cancer screening device	2
Breast cancer detection	1
Breast cancer screening	1
Cervical cancer detection	1
Disposable path only platforms; screen	1
DiSCA Multi-Platform Detection kit for Cervix	1
Hand-held case-inactive device for cervix	1
Molecular diagnosis of cancer DNA tests	1
Oral cancer screening device	1
Screening cervical health check-up	1
Uses hand to determine tumor	1



MENTAL HEALTH



'Technologies Beyond Borders' Innovation Challenge to Scout New Technologies



NON-COMMUNICABLE DISEASES

SAVE™ from Briota

Point of care solution for Chronic Respiratory Diseases such as COPD, Post TB Asthma and ILD at primary health care.

FINALISTS

- ▶ NeoDocs
- ▶ Qure.ai
- ▶ Neopenda
- ▶ AiSteth
- ▶ BrainCapture
- ▶ Scanbo
- ▶ Population NCD AiHealth
- ▶ Alveofit

Feasibility Assessment

To evaluate the **usability**, **acceptability**, and **feasibility** of SAVE™ platform from an **end-user and programmatic perspective**.

The evaluation consisted of two broad activities:

1. **Simulated use and interviews with health care workers** in the different levels of healthcare facilities and in the different administrative zones of Bangladesh - to obtain feedback on the use experience and potential acceptability.
2. **Stakeholder interviews** with technical and programmatic stakeholders - to explore the potential feasibility and fit in the public health program in Bangladesh

Lessons from the Field



Product Readiness to Deployment Readiness

Healthcare Worker Assessment for Technology Operation



Self-Testing Capability



Minimum Digital Literacy Level



Trainings & Refreshers



Consumables and Reagents (Sole/Open Source)



End User & Patient Experience



Software Licensing Costs and Parameters



App Updates (Frequency and Cost)



Biosafety & Biowaste Management



Programmatic Fitment



Data Storage & Sharing



Data Reporting for Public Health Action



Repairs/Replacement Including Batteries



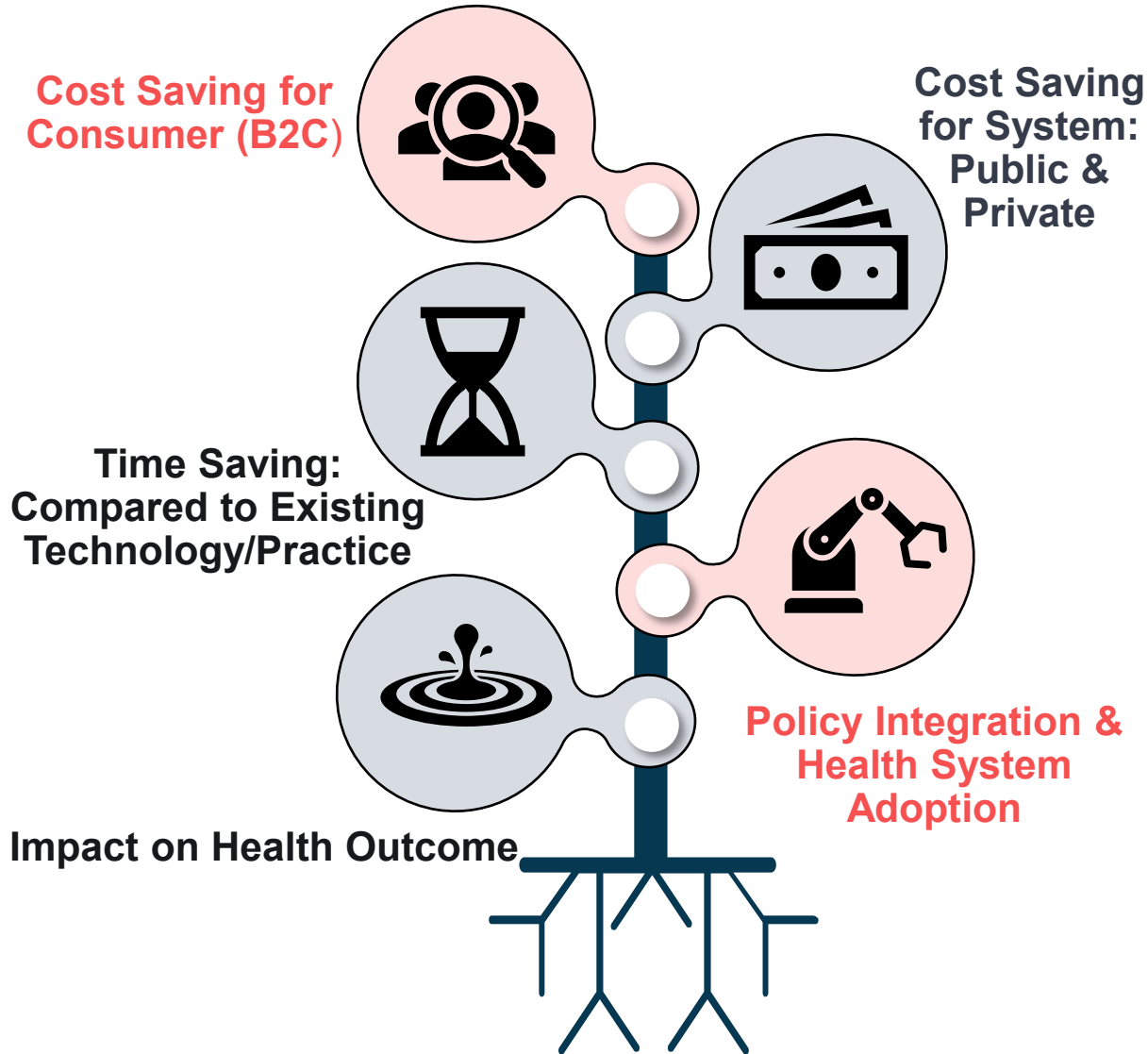
Service Network



Risk Management



Deployment Readiness to Health Systems Adoption



Additionally, Innovative Technologies for NCDs should:



Justify Efficiency & Efficacy v/s Competing Priorities



Allow Provisions for Preventive Programs



Manage Referrals & Treatment



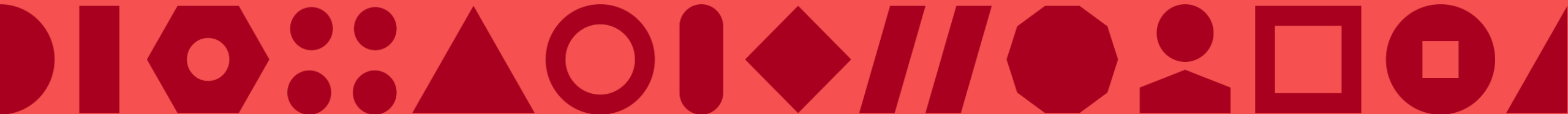
Fill Governance and Accountability Gaps

Thank You

Visit @



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