# Diagnostic Gap and Digital Health Landscape Assessment for Uganda

November 5th 2020


# The assessment's objective was to prioritize diagnostic gaps in four focus countries and identify relevant digital health solutions that can address them

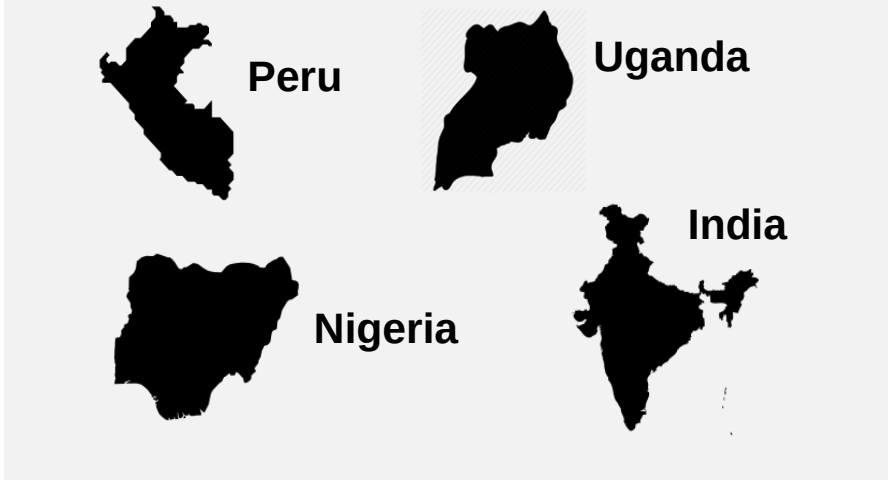
## Primary objective:

- Identify the key gaps that prevent patients from accessing a quality diagnosis and how digital health solutions may address those gaps

## Secondary objectives:

- Identify existing and promising digital health solutions in Peru, India, Nigeria and Uganda that are addressing some of these gaps.
- Identify the enablers and barriers to scale for digital health solutions

**Focus Countries:**



# In Uganda, the mixed methods research methodology included global and in-country expert opinion and desk research

## 10 Key Informant Interviews

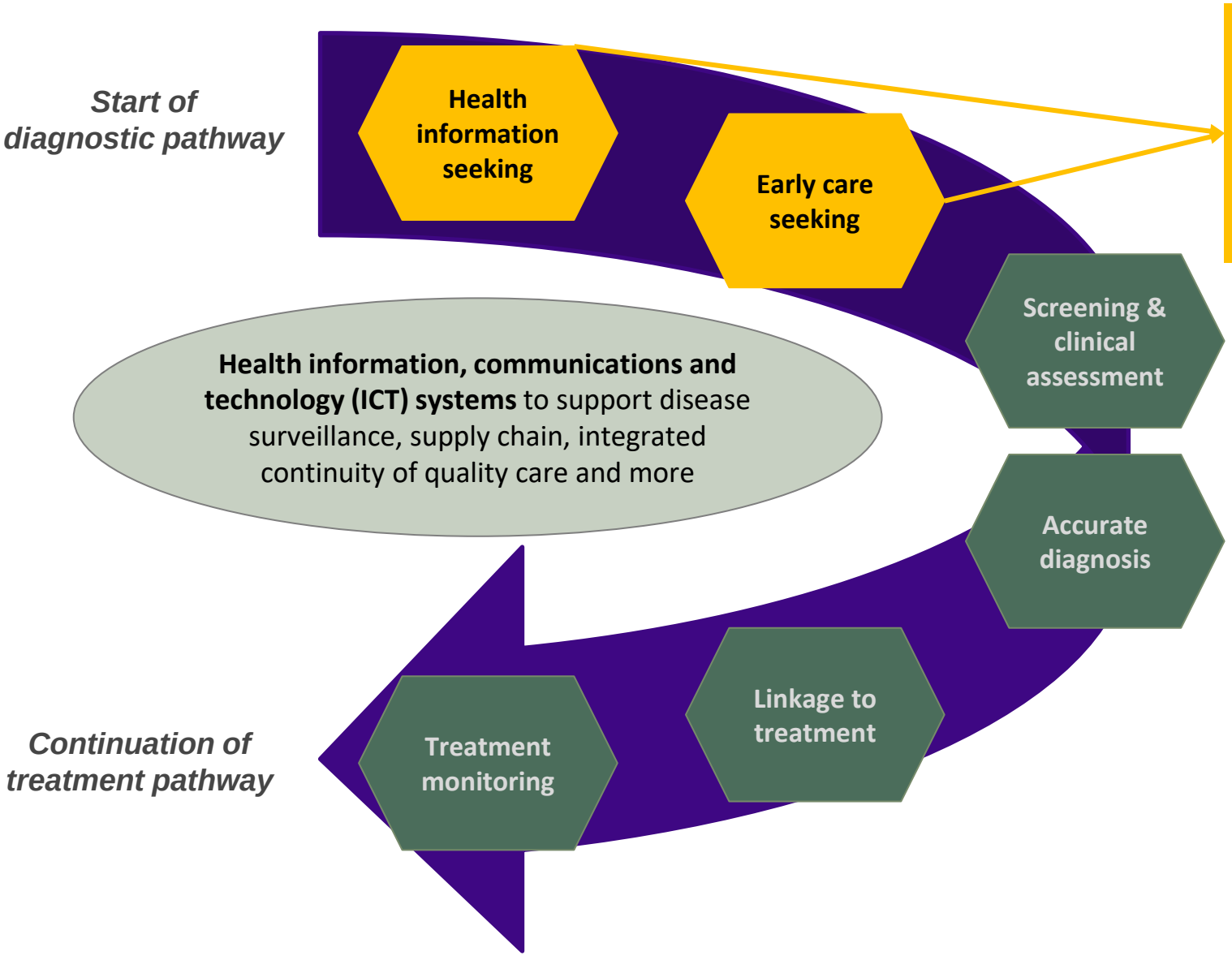
- Included global and in-country experts across Uganda, representing:
  - Patient advocacy groups
  - Government (Ministry of Health)
  - Implementing Partners
  - Public Health Experts
  - Funders
  - Digital Health Experts
  - Digital Solution Vendors

## Publication Desk Review

- Broad review of public health literature and digital health solution landscapes
- Included health system and policy review, disease burden assessment, further validation of findings from stakeholder interviews and country-specific digital health solution landscaping

*Research conducted between March to July 2020*

# The assessment aimed to take a patient-focused perspective, considering all diagnostic related steps in the patient pathway, in a disease agnostic manner



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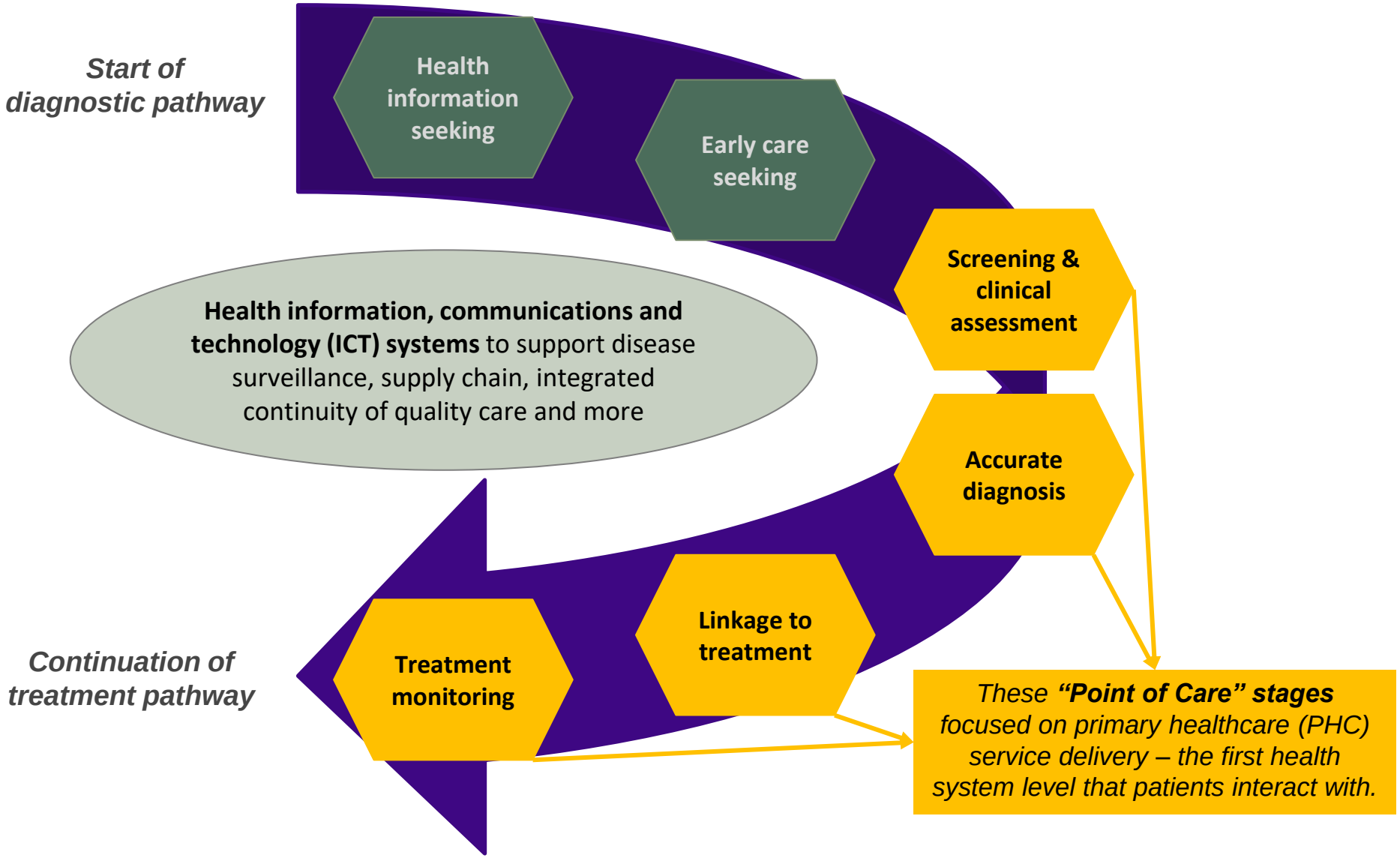

# Country-specific diagnostic gaps prioritization methodology

**The following factors were scored and weighted for each gap to determine the prioritization of the diagnostic gaps into High, Medium and Low priority gaps:**

**1. Potential of the gap causing direct and negative impact on patient health (45%)**

- The more likely the gap is to directly cause morbidity and mortality, the higher the priority

**2. Consistently prioritized by multiple stakeholders, especially patients (40%)**

- The more strongly the feedback was expressed by patients and/or unanimous from different stakeholders, the higher the priority

**3. Applicability of the gap to multiple stages in the patient pathway (15%)**

- The more likely the gap affects multiple stages of the patient pathway/health system , the higher the priority

# Uganda: Prioritized diagnostic gaps across the patient pathway

Pre-POC | POC

| PATHWAY STAGE | HEALTH INFORMATION SEEKING | EARLY CARE SEEKING | SCREENING & CLINICAL ASSESSMENT | ACCURATE DIAGNOSIS | LINKAGE TO TREATMENT | TREATMENT MONITORING |
|---|---|---|---|---|---|---|
| DIAGNOSTIC GAPS | Lack of access to accurate, timely and trusted information | Low perception of health service quality leads to reduced patient trust | Inadequate availability and capacity of HCWs, especially in rural areas | | | |
| | | | Insufficient supply of diagnostic commodities and equipment, especially in rural areas | | | |
| | Low awareness and education on diseases and major symptoms | Social factors, such as religious/cultural beliefs, stigma or gender bias | Poor physical infrastructure and power supply | | | |
| | | | Lack of interoperability between information management systems and/or applications | | | |
| | | High out of pocket costs for health services and transport | Health data not used for clinical and programmatic decision making | | | |
| | | | Poor quality diagnostics tests and/or equipment | | | |
| | | Difficult to navigate care seeking steps: when and where to seek initial care | Long waiting time for sample collection and test results, in rural areas | | | |
| | | | Underutilization of RDTs | | | |
| | | | Difficult to navigate care seeking steps: screening to treatment monitoring | | | |
| | | | Lack of comprehensive disease surveillance system | | | |

*Legend*

- High priority
- Medium priority
- Low priority

# A lack of interoperability between information management systems and/or devices is a critical barrier to connected diagnostics

**Absence of interoperability standards at a country level**

↓

**Continued fragmentation and non-standardization of technology solutions**

↓

**Inability to connect and integrate different software and hardware solutions**

↓

**Barrier to:**

- Connect standalone disease-specific LIMS and logistics IMS solutions
- Connect LIMS and EMR
- Cost-effective bundling of POC diagnostic devices and biometric monitors for broader diagnostic capabilities

# NCDs and AMR are largely unaddressed throughout the patient pathway

**NCDs: High health need, but neglected by MOH and donors**

- Gaps in Pre-POC stages have most consequence for the patients: NCDs are often asymptomatic in early stages and individuals do not seek care if they feel well, leading to late care seeking and severely worse health outcomes
- In the POC stages, overburdened HCWs don't have time, resources or mandate to address NCDs
- If hypertension and diabetes screening and diagnosis can be prioritized, cardiovascular disease burden will be reduced significantly

> ***"There has been less focus on NCDs. It has been difficult to get patients with NCDs coming together, like for diabetes or cancer. Movement creation has been difficult and hence [establishing a] voice to create action around this area has been difficult."***
> - Patient Advocate, Uganda

**Antimicrobial Resistance (AMR) and future outbreak preparedness: Increasing and unaddressed threat, neglected by MOH and donors**

- Pre-POC stages are fundamental gaps, given no or low awareness and information on AMR and its effects
- A lack of a functioning and integrated disease surveillance system needs to be addressed to manage AMR and outbreak threats

## The following priorities for the digital health agenda were identified to address the key diagnostic gaps:

1. Engage patients with health knowledge to empower them and drive demand for quality care

2. Empower HCWs in delivering more accurate and efficient diagnosis closer to the POC to build trust in the patient-provider relationship

3. Shift focus to disease prevention and screening to identify health risks, diagnose diseases and target individual and community-level intervention earlier

4. Enable connected diagnostic systems, better use of data for decision-making and personalization of healthcare through interoperability

5. Establish appropriate evaluation standards and stage gates for implementation of digital diagnostics in country

## Digital Health Priorities

## Digital Health Solution Types

1. **Engage patients with health knowledge to empower them and drive demand for quality care**

**Targeted client communication,** via IVR, SMS, social media or mobile app

**On-demand information services,** health info and service marketplaces

**Geo-mapping** of health facilities and services by mobile or web

2. **Empower HCWs in delivering more accurate and efficient diagnosis closer to the POC to build trust in the patient-provider relationship**

**HCW training job aids** with apps using text, images, audio, video

**HCW decision making support tools** for clinical decision, patient screening, risk assessment, workflow and supply chain support

**Smart portable devices, connected to apps.** Can use AI for risk assessment, triage and diagnosis.

3. **Shift focus to disease prevention and screening to identify health risks, diagnose diseases and target individual and community-level intervention earlier**

**Personal health tracking** - case finding & notification contact tracing with apps delivered on mobile or web-based devices

**Public health and disease surveillance systems**

**Bundled testing**

4. **Enable connected diagnostic systems, better use of data for decision-making and personalization of healthcare through interoperability**

**Data collection, storage, aggregation and visualization**

**Data exchange and interoperability** – Connectivity and data exchange across systems using hardware and software apps

5. **Establish appropriate evaluation standards and stage gates for implementation of digital diagnostics in country**

**Strengthen the evaluation, regulatory and implementation frameworks for digital diagnostic tools and platforms**

# Lower digital infrastructure and literacy and challenges in sustainable financing and MOH transition for longer-term implementation are key barriers to scale in Uganda

| Category | Enabler/Barrier to Scale | Peru | India | Nigeria | Uganda |
|---|---|---|---|---|---|
| *Technical* | **Mobile penetration** | | | | |
| *Technical* | **Smartphone penetration** | | | | |
| *Technical* | **Digital infrastructure** | | | | |
| *Technical* | **Digital literacy and capacity of HCWs and MOH** | | | | |
| *Technical* | **Digitally trained workforce** | | | | |
| *Technical* | **Digital system standards** | | | | |
| *Technical, Ecosystem* | **National patient identifier** | | | | |
| *Ecosystem* | **Enabling gov't policy** | | | | |
| *Financial* | **Sustainable financing** | | | | |
| *Operational, Financial* | **Appetite for failure / long-term commitment** | | | | |
| *Operational* | **Clinical and operational validation, realized value proposition** | *Enabler, dependent on solution.* | | | |
| *Operational* | **User-centric, modular design** | *Enabler, dependent on solution.* | | | |
| *Operational, Ecosystem* | **Fit into broader health system** | *Enabler, dependent on solution.* | | | |

*Legend*

**Enabler** | **Moderate Enabler** | **Barrier**



Sources: The Global Digital Health Index 2018; The Network Readiness Index 2019; The World Bank World Development Indicators Open Data (2017- 2018, depending on indicator); GSMA; Digital India: Technology to transform a connected nation 2019, McKinsey Global Institute; Stakeholder feedback

# The digital opportunity is about bringing screening and diagnostics closer to the patient, in their home, community or at PHC


> ***Integration of screening & diagnostic service delivery with digital systems is a huge gap and should be the next revolution in public health.***
>
> - Country Head, Implementing Partner, India

# Panel Discussion

## MODERATOR

**Prof. Joseph Ndung'u,**
Head, FIND Kenya

## PANELISTS INCLUDE

**Daniel Irongo,**
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