Diagnostic Gap and Digital Health Landscape Assessment for India

November 3rd 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:
- Peru
- Uganda
- India
- Nigeria
In India, the mixed methods research methodology included direct patient feedback, global and in-country expert opinion and desk research.

- **Objective:** Understand barriers for patients seeking health care and recommendations for improvements of health care services
- **Mode:** Deployed by mobile phone via interactive voice response
- **Geography & Timeline:** Administered at the national level, between April and May 2020

### 256 Patient Surveys

### 63 Key Informant Interviews

- Included global and in-country experts across India, 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.

Health information seeking

Early care seeking

Screening & clinical assessment

Accurate diagnosis

Linkage to treatment

Treatment monitoring

Health information, communications and technology (ICT) systems to support disease surveillance, supply chain, integrated continuity of quality care and more

Inclusion of these “Pre-Point of Care” stages allowed the assessment to take a broader approach in understanding issues patients face in seeking diagnosis.
The assessment aimed to take a patient-focused perspective, considering all diagnostic related steps in the patient pathway, in a disease agnostic manner.

Health information, communications and technology (ICT) systems to support disease surveillance, supply chain, integrated continuity of quality care and more

These “Point of Care” stages focused on primary healthcare (PHC) service delivery – the first health system level that patients interact with.
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
### India: Prioritized diagnostic gaps across the patient pathway

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

### Diagnostic Gaps

- **Legends**
  - High priority
  - Medium priority
  - Low priority
In India, patients indicated dependence on local informal providers for health information and care seeking, with a strong desire for better access to quality information.

Where do you normally obtain health care advice when you feel sick?

- Health facility or CHWs: 45%
- Local private and/or informal provider: 32%
- Friends/Family: 5%
- Media: 5%
- Other: 6%
- Traditional healer/Ayurvedic doctor: 7%

What additional information would have been valuable to you in making your last decision to seek healthcare?

- Cost: 6%
- Reputations and quality of service: 13%
- Other: 47%

What would happen if you don’t see a HCW?

- Where to get health advice/information: 47%
- Cost: 34%
- Reputations and quality of service: 13%

What improvements to health services or advice would be most important to you?

- Better access to quality information: 37%
- More convenient service: 21%
- Better quality care: 25%
- Greater variety of tests: 12%
- Knowing more about costs: 3%
- Consideration of my beliefs and practices: 2%
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

**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

*Health needs and donor funding are not completely aligned. Funding is directed more to communicable diseases and MNCH; now and in the next five to ten years, the priority health needs are in NCDs, AMR and the infectious portfolio in the post-COVID world.*

- Country Head, Implementing Partner, India
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
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Digital Health Priorities

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Digital Health Solution Types

- 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
- 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.
- 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
- Data collection, storage, aggregation and visualization
- Data exchange and interoperability – Connectivity and data exchange across systems using hardware and software apps
- Strengthen the evaluation, regulatory and implementation frameworks for digital diagnostic tools and platforms
India has an enabling technical environment but shares challenges in sustainable financing and MOH transition for longer-term implementation

<table>
<thead>
<tr>
<th>Category</th>
<th>Enabler/Barrier to Scale</th>
<th>Peru</th>
<th>India</th>
<th>Nigeria</th>
<th>Uganda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>Mobile penetration</td>
<td>Green</td>
<td>Green</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Technical</td>
<td>Smartphone penetration</td>
<td>Green</td>
<td>Green</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Technical</td>
<td>Digital infrastructure</td>
<td>Green</td>
<td>Green</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>Technical</td>
<td>Digital literacy and capacity of HCWs and MOH</td>
<td>Green</td>
<td>Green</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>Technical</td>
<td>Digitally trained workforce</td>
<td>Green</td>
<td>Green</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>Technical</td>
<td>Digital system standards</td>
<td>Red</td>
<td>Red</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>Technical, Ecosystem</td>
<td>National patient identifier</td>
<td>Green</td>
<td>Green</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>Enabling govt policy</td>
<td>Green</td>
<td>Green</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Financial</td>
<td>Sustainable financing</td>
<td>Green</td>
<td>Green</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Operational</td>
<td>Clinical and operational validation, realized value proposition</td>
<td>Enabler, dependent on solution.</td>
<td></td>
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<tr>
<td>Operational</td>
<td>User-centric, modular design</td>
<td>Enabler, dependent on solution.</td>
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</tr>
<tr>
<td>Operational, Ecosystem</td>
<td>Fit into broader health system</td>
<td>Enabler, dependent on solution.</td>
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</tr>
</tbody>
</table>

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
At the end of the day, it’s all about the value proposition, in the field and for each stakeholder.

- Digital Solution Vendor, India
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
Sanjay Sarin, Head of FIND India

PANELISTS

Dr Ramya Ananthakrishnan, Director, REACH (Resource Group for Education and Advocacy for Community Health)

Dr Indira Behara, Senior Director, Global Health Strategies

Suhel Bidani, Lead, Digital, Bill & Melinda Gates Foundation, India

Varun Jhaveri, Officer on Special Duty (OSD) to CEO, NHA and Ayushman Bharat, PMJAY, Government of India

Blessina Kumar, CEO, Global Coalition of TB Activists