



# Pathways to Scale Adoption of Digital Health in India

March 2023

A report by

**NAT+HEALTH**<sup>®</sup>  
Healthcare Federation of India

**ARTHUR+LITTLE**



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# FOREWORD

The future of healthcare around the world is being paved by digital health solutions. Several major healthcare innovations and trends are now being driven by digitalization – from online pharmacies, to telemonitoring, personalized medicine, chronic disease management, and a whole host of other use cases. Use of digital technologies thus creates opportunities for providers across the board to expand business and increase profitability while also improving the accessibility and affordability of healthcare delivery. However, Indian providers largely lack awareness about these benefits and perceive digitalization as an additional cost which can be postponed. It is now incumbent on regulatory authorities and leading providers to help smaller players understand the true picture and kick-start the en masse digitalization of the Indian healthcare ecosystem.

The COVID-19 pandemic catalyzed the technological progress of health systems globally. However, consistent systemic efforts are needed to ensure that this increase in digital health adoption levels is sustained into the future. As a large and growing healthcare market with a sizeable demand for digitalization and sufficient government backing in the form of the Ayushman Bharat Digital Mission, India is strategically positioned to leapfrog as a technologically enabled frontrunner.

In this regard, this report seeks to understand the current levels of digitalization and ABDM adoption across provider segments, draw key insights from successful global digital health roll-out programs, understand challenges to provider-side digitalization and ABDM integration, chart out possible future use cases to drive adoption, and recommend imperatives to accelerate the creation of a digitalized and ABDM-compliant provider ecosystem. This report is a sequel to the 2022 ADL-NATHEALTH publication, "India's fast-evolving healthcare industry on the cusp of a digital revolution driven by the Indian consumer: A Bold Vision for 1 Billion Digital Health users in India by 2030". While the 2022 report analyzed the demand side of digital health adoption and identified the key imperatives to drive digitalization among healthcare consumers, this report analyzes and makes recommendations for the adoption of digital health and ABDM integration by healthcare providers. The findings of this report are based on insights from extensive interviews and 2 comprehensive survey studies. More than 20 in-depth interviews were conducted with relevant government stakeholders and industry leaders including promoters/ CEOs/CIOs of reputed hospitals, diagnostic centers, home care and senior care providers, healthtech players, and institutional healthcare investment firms.

# FOREWORD

The first survey collected targeted data related to digital health and ABDM adoption levels in their organizations from over 30 promoters/CIOs of private healthcare providers. The second survey recorded data related to the general population's awareness and adoption of digital health, and ABDM-related initiatives from around 150 citizens from across tier-1, 2 and 3 cities in the country. Based on the interviews and the surveys, among other analyses and findings, the report has been able to develop a 'Digital Health Adoption Index' which maps out different healthcare provider segments with their current levels of digitalization.

These insights emerging from the surveys, interviews and the Digital Health Adoption Index can prove to be particularly useful for the entire ecosystem to gain a systemic view of the status on digital adoption and its evolution. The 10 imperatives identified in this report will create the impetus for Digital Health adoption and ABDM integration in India.

**BARNIK CHITRAN MAITRA**

Managing Partner, India & South Asia,  
Arthur D. Little

**DR. SHRAVAN SUBRAMANYAM**

President,  
NATHEALTH

# EXECUTIVE SUMMARY

Digitalization in healthcare is at an important juncture – a strong demand exists, a comprehensive roll-out plan has been launched, and adoption among public players is rising.

***“The consumers of the Indian health ecosystem are ready for large-scale digitalization”***

India could have 1 billion digital health users by 2030. A survey by Arthur D. Little (ADL) to identify the level of digital health acceptance among citizens recorded that 74% of the respondents were aware of digitalization of health services, 67% had used a digital health solution in the past 1 year, and 73% recognized that digital health records are/ will be useful to them and their family. The government has recognized the advantages of digitalization in healthcare. The Ayushman Bharat Digital Mission (ABDM) encapsulates this vision of a fully digital national healthcare ecosystem and provides the roadmap for its realization. It has seen a substantial uptake since its launch in September 2021, especially by public sector providers. More than 75% of the government health facilities in the country have already registered on ABDM’s Health Facility Registry (HFR).

***“The massive opportunity for digitalization and ABDM integration now lies with private healthcare providers”***

To better understand the extent of digitalization across different segments of health providers in the country, this report has developed a **‘Digital Health Adoption Index.’** While large private hospitals and diagnostic laboratory chains rank as the most digitally forward segments, scoring around 7 or 8 out of 10, other private providers have a Digital Health Adoption score of 5 or less (0 = no digital adoption and 10 = full digitalization). In an ADL survey of over 30 private healthcare providers, 93% of the respondents agreed that digitalization is beneficial for the healthcare ecosystem and 80% recorded using digital tools for the most common use case, i.e., to register customer data (demographic and clinical). However, only 7% of the providers have adopted digitalization across all operational use cases. Thus, even though preliminary acknowledgement of the benefits offered by digitalization is high, digital adoption remains nascent in private providers.

# EXECUTIVE SUMMARY

***“Despite the difference in digitalization levels, ABDM adoption remains limited across private providers of all segments and sizes, driven by different factors”***

The lack of awareness about the benefits of ABDM integration is a major deterrent across the board. Larger players are nervous about the implications of sharing internal digital systems and data, including the possibility of security breaches of confidential customer data. The resistance from smaller players originates in their outlook towards digitalization as an additional cost rather than a worthy investment. Some smaller players (Digital Health Adoption score of 3 or less) are resistant towards investing in digitalization to avoid regulatory scrutiny.

***“Strong business cases exist for digitalization and ABDM adoption across private provider segments”***

Broadly, digitalization using cloud-based solutions could add 3-6% to provider bottom-line with a payback period of less than 18-36 months. Benefits for players range from capturing cost efficiencies in procurement, clinical operations, reducing revenue leakages in pricing/discounting and increasing revenue realization by bundling more value-added services e.g., wellness programs to the overall offerings.

***“ABDM could emerge as a powerful catalyst of digital adoption for the full healthcare provider ecosystem”***

For players with a Digital Health Adoption score of 3 or less: ABDM-integrated solutions make digitalization feasible for these players. Providers using ABDM-compliant systems from the outset of digitalization, can capture more than 80% of the benefits of digitalization with a 60% reduction in Capex as compared to on-premise systems. Thus, there is no need to subsidize capital costs associated with digitalization. What is required, however, is a better awareness of the benefits of digital adoption and ABDM integration to business, and deployment of usage-linked incentives for all.

# EXECUTIVE SUMMARY

The push for deeper adoption by private players will require collective effort on part of the government, payors, and the full private providers. The report proposes 10 imperatives to drive digital health adoption and ABDM integration for the Indian provider industry:

- 1. Demonstrate data security and privacy safeguards for customer health records**, for larger provider segments, through technology demonstrations and regulatory interventions such as the Data Privacy Bill.
- 2. Engage with providers holistically** to emphasize the benefits of digitalization and ABDM adoption (including strong business rationale for adoption) and provide clarity on the roadmap for ABDM
- 3. Create initial champions and partners (ABDM evangelists)** from among leading private healthcare providers, including digital-forward players from the healthtech and out-of-home healthcare spaces.
- 4. Increase the ambit of ABDM** by creating clear certification requirements and roll-out timelines for healthtech, senior care, and home healthcare players.
- 5. Encourage/Incentivize the use of ABDM-compliant software** for all hospitals and diagnostic centers (including by linking them to NABH and NABL certification). This should be augmented by incentivizing more Digital Solution Companies (DSCs) to integrate into the ABDM ecosystem.
- 6. Increase insurance penetration and move towards payor-side consolidation** through a single-window Health Claims Exchange (HCX) platform and introduction of insurance for the missing middle.
- 7. Scale the ABDM tools/software provider ecosystem** by simplifying and demystifying compliance processes, by mandating DSCs to offer ABDM-compliant software to providers.

# EXECUTIVE SUMMARY

**8. Scale ABDM citizen adoption by** driving universal creation of ABHA ID and citizen awareness programs to ensure strong consumer pull for ABDM solutions.

**9. Institute training programs and provide content ecosystem for self-training of non-physician staff,** especially nurses who stand to gain most from the digitalization and integration with ABDM.

**10. Reward digitalization and ABDM adoption** through better reimbursements (higher rates and faster payments) for PMJAY, ESI, other social health insurance (CGHS, ECHS etc.) and PSU panel. Also design other ABDM usage-linked incentives including scaling up DHIS.

A comprehensive and concrete action plan based on these 10 imperatives will help increase digitalization among healthcare providers in the country and boost India to become a leading powerhouse for digital health in the world.

# **Current landscape of digital health and ABDM adoption in India**

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India has witnessed rapid digitalization across all sectors, including the healthcare industry. However, different healthcare stakeholders have had varying levels of digital adoption and usage. We analyzed the awareness and adoption of digital health and ABDM among consumers and identified the adoption of digitalization among providers. We further analyzed ABDM adoption across public and private healthcare providers and government incentives and actions to promote the adoption of ABDM.

## **AWARENESS AND ADOPTION LEVELS OF DIGITAL HEALTH AND ABDM AMONG INDIAN CONSUMERS**

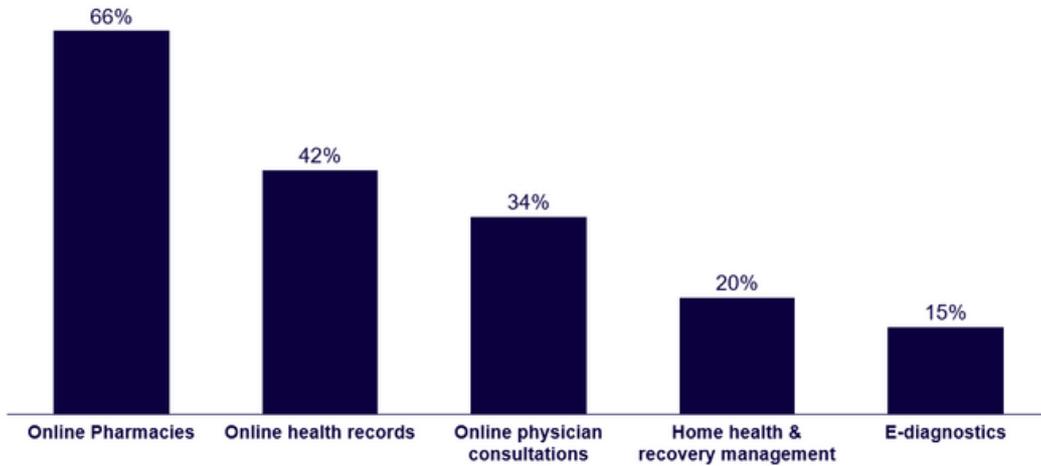
ADL commissioned a broad-based consumer survey administered across the country to understand the general population's awareness and adoption levels of digital health solutions and ABDM components. In addition, the current trends and findings were validated by analyzing longitudinal data from previous surveys, including from "India's fast-evolving healthcare industry on the cusp of a digital revolution driven by the Indian consumer: A Bold Vision for 1 Billion Digital Health users in India by 2030" by NATHEALTH and ADL and focus group discussions. The survey results strongly suggest that the consumers of the Indian healthcare ecosystem are keen to adopt digitalization:

**1. CONSUMER AWARENESS OF BOTH DIGITALIZATION AND ABDM IS SIGNIFICANT:** 74% of the total respondents were aware of the digitalization of health services and 72% of the respondents were also aware of the ABHA ID. This shows that the Indian customer understands the value of digital health and ABDM, and is keen to adopt the same.

**2. CONSUMER ADOPTION LEVELS ARE ENCOURAGING:** 67% of the respondents reported that they had used a digital health solution in the last year, depicting a high adoption with respect to awareness. Online pharmacies have the highest adoption with a 66% adoption rate among the digital health-aware respondents (Figure 1).

There is significant adoption of ABDM by citizens, with ABHA IDs created for 22% of the country's population and 25.6 crore health records linked with ABHA.

**Figure 1: Adoption rate of different digital health services among citizens who are aware of digital health services**



Source: Arthur D. Little

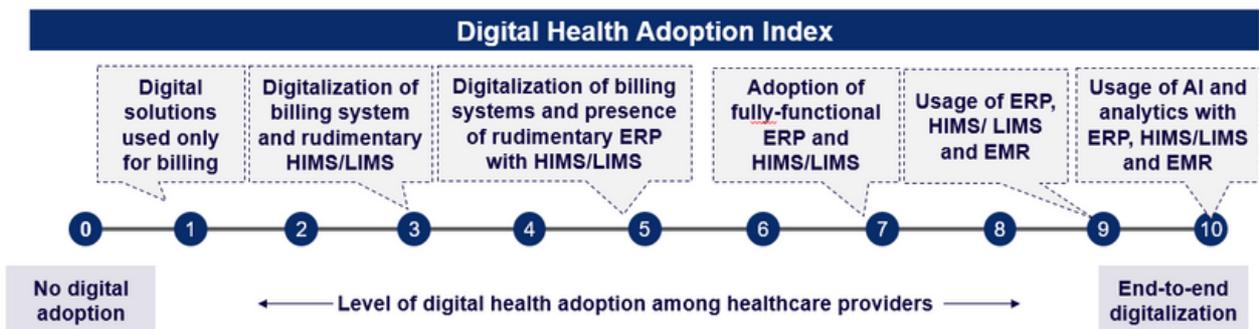
**3. RECOGNITION OF THE BENEFITS OF DIGITALIZATION AND ABDM IS HIGH:** 73% of the respondents recognize the benefits of digital health records and 74% acknowledged that a single window approach for seamless health data transfer will be useful. This signals a strong validation for the value of two key components of ABDM, namely, Personal Health Records (PHRs) and the Unified Health Interface (UHI).

**4. WILLINGNESS TO PAY FOR THESE BENEFITS IS LOW:** Only 10% of the respondents are willing to bear the additional costs associated with digital health records. Thus, efforts to increase the confidence of citizens in the benefits offered by PHRs combined with digitalization and financial incentives for usage will be key levers to accelerate ABHA registrations.

## DIGITAL HEALTH ADOPTION INDEX

The ADL survey also revealed varying levels of digitalization across different healthcare provider segments in the country. We developed the 'Digital Health Adoption Index' to better understand the extent of digitalization among different segments of providers (Figure 2). It scores levels of digitalization across provider segments on a linear 0-10 scale. 0 indicates no digital adoption, 5 indicates digitalization of billing along with the presence of rudimentary ERP (Enterprise Resource Planning) and HIMS/LIMS (Hospital Information Management System/Laboratory Information Management System), and 10 specifies end-to-end digitalization with the presence of ERP, HIMS/LIMS and EMR (Electronic Medical Records) along with usage AI and analytics.

Figure 2: Digital Health Adoption Index



Source: Arthur D. Little

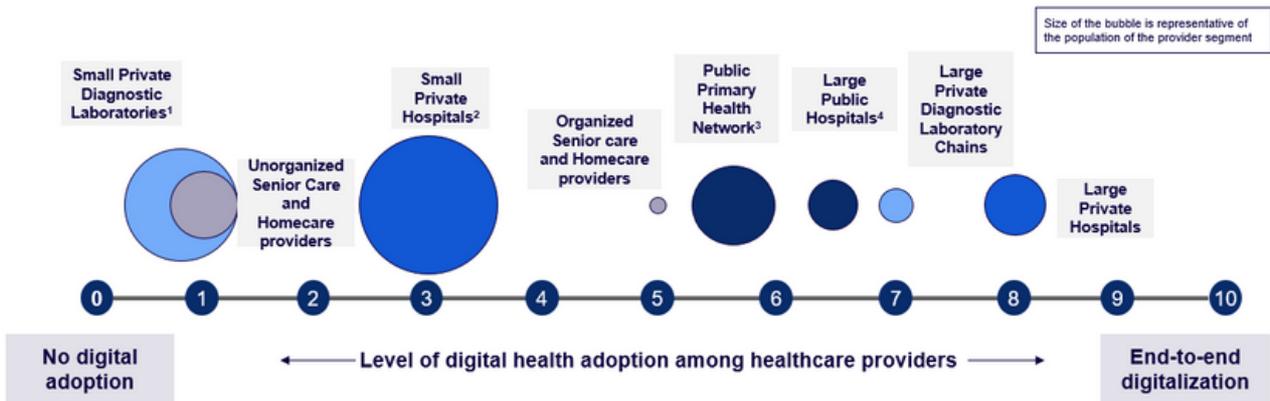
We further scored the Provider segments on the Digital Health Adoption Index through insights gathered from industry interviews and the provider-side survey (Figure 3).

**1. Large private diagnostic laboratory chains and hospitals have widely adopted digitalization and rank high with scores of 7 and 8, respectively.** These segments adopted digitalization early on to manage their operations and are now gradually adopting EMR.

**2. Large public hospitals and the public primary health network also fare well with scores between 5 and 7.** Digital systems are available in all National Institutes, Medical colleges, CHCs, and most of the Health and Wellness Centres (HWCs). ABDM and AB-PMJAY are driving a large part of the digitalization efforts in public healthcare.

**3. Other private providers score 5 or less, with small players scoring 3 or below.** This resistance from smaller players is primarily due to their perception of digitalization as an additional cost rather than a worthy investment. As depicted in Figure 4, 93% of the provider-side respondents agreed that digitalization is beneficial for the healthcare ecosystem, 80% recorded using digital tools for the most common use case, i.e., to register customer data (demographic and clinical), and 53% indicated usage of digitalization beyond billing and registering customer data. However, only 7% of the providers have adopted digitalization across all operational use cases. Thus, digital adoption remains nascent in private providers even though they acknowledge its benefits.

**Figure 3: Spread of different healthcare provider segments in the country across the Digital Health Adoption Index**



Note: 1. Standalone diagnostic centres whose offerings are limited to basic pathology/microbiology/radiology tests  
 2. Hospital size is less than 100 beds 3. Includes CHCs, PHCs, SCs, and HWCs 4. Includes National Institutes, District Hospitals, and medical colleges  
 Source: Arthur D. Little

**Figure 4: Extent of digital health adoption among surveyed private players**



Source: Arthur D. Little

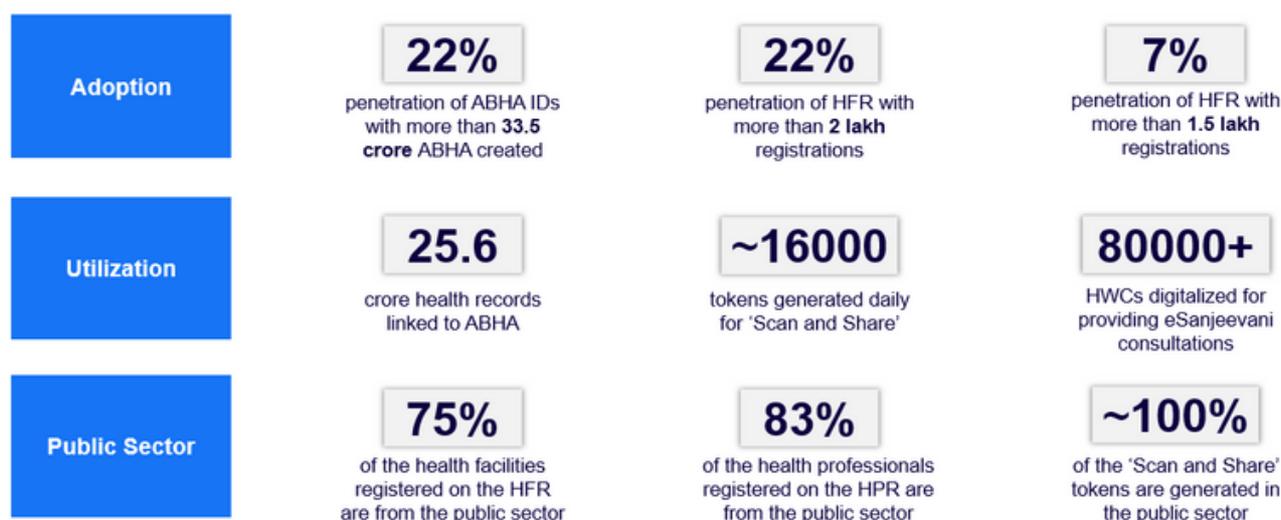
## CURRENT ABDM ADOPTION LEVELS

The government of India has been promoting ABDM adoption across the various healthcare stakeholders. There is a concerted effort to increase both adoption and usage of ABDM components. This is reflected by the widespread adoption of ABHA IDs, health record linking and Health Facility Record (HFR) usage. More than 22% of Indian population currently has ABHA IDs and more than 25 crore health records have been linked with them. Simultaneously, almost 22% of the country's health facilities are registered in the HFR. The use of ABDM-enabled QR solution for OPD registrations "Scan and Share" has also received wide adoption with more than 16000 tokens generated daily. However, the penetration of ABDM is highly skewed towards public facilities (Figure 5).

**1. The public health system is leading ABDM adoption in the country.** For instance, 75% of the facilities registered on the HFR are public health facilities, and 83% of the health professional registered on the HPR work in the public sector.

**2. Despite the difference in digitalization levels, ABDM adoption remains limited across private providers.** Even providers that score high on the Digital Health Adoption Index, such as large hospitals and diagnostic laboratory chains, are concerned about the implications of sharing internal digital systems and data, including the possibility of security breaches of confidential customer data.

Figure 5: ABDM uptake levels among citizens and providers in the country



Note: As on March 3, 2023

Source: ABDM Public dashboard, ADL analysis



## GOVERNMENT INITIATIVES TO PROMOTE ADOPTION

The government has designed and implemented several initiatives to push digitalization through ABDM. These incentives focus on increasing ABHA ID creation, incentivizing ABDM utilization, and driving payor-side adoption. ABHA ID creation has been made platform agnostic to enable a multitude of platforms to create ABHA, reducing technical failures and enabling a large population of grass root workers such as ASHAs to create ABHA IDs. Simultaneously, the Digital Health Incentives Scheme aims to reward users of ABDM through financial incentives on crossing certain established thresholds of health record linking with ABHA. While the scheme has started recently, it is expected to be scaled to bring more providers into the benefit pool.

**1. Multi-platform ABHA creation:** Multiple platforms such as COWIN, PMJAY, and BIS support the creation of ABHA ID.

Benefits:

- Increases ABHA registrations through the involvement of state and central health resources.
- Multiple platforms reduce the probability of technical failure of ABHA registrations.
- Improves community adoption in rural areas by engaging ASHA workers.

**2. Digital Health Incentives Scheme (DHIS):** This scheme aims to use financial incentives to hospitals and diagnostic centres registered on the HFR and to DSCs registered on the ABDM Sandbox in order to improve ABDM adoption. Awareness of the program is one of the key challenges in its successful adoption.

Benefits:

- Emphasizes ABDM integration as a lucrative way to kick-start digital adoption by partially offsetting associated costs.
- Promotes ABDM utilization by incentivizing linking of health records to ABHA IDs.

**3. Health Claims Exchange (HCX) platform:** This platform is envisioned as a common platform for facilitating all exchanges of claims-related information between all relevant actors (payors, providers, beneficiaries, regulators, and observers) and processing all health claims.

Proposed benefits:

- Will drive payor-side digitalization which, in turn, is expected to increase provider-side digital health and ABDM adoption.

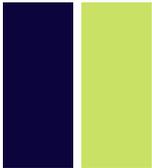
- Will improve the efficiency and reduce the costs of claims processing through a single platform.

It is evident from the surveys that Indian customers are aware of the benefits of digital health and are keen to use it for addressing their health needs. However, the willingness to pay for the same remains poor. This has to be addressed by a combination of building use cases for adoption and a suitable incentive framework. At the same time, provider adoption has been largely limited to public healthcare facilities and large private hospitals and national laboratory chains. The onus of digitalization and ABDM integrations now lies with private healthcare providers. ABDM can be positioned as a low-cost alternative for smaller providers to digitalize and cater to the demand of digital health from customers. This can help ensure that the benefits of digitalization reach all providers and customers of the Indian healthcare ecosystem.

# **Barriers to scaling adoption of digital health and ABDM**

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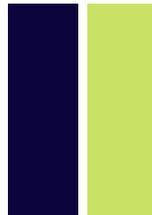
The Digital Health Adoption Index arranges different providers across a spectrum. The larger players and public healthcare facilities have adopted digitalization while the smaller players score poor on adoption of digital. We further analyzed the levels of adoption of ABDM among the players and the reasons for resistance to ABDM integration and digitalization. This analysis reveals a clear demarcation between the larger and the smaller players on motivation of digitalization and ABDM adoption.



## **LARGER PRIVATE PROVIDERS DO NOT UNDERSTAND THE BENEFITS OF ABDM INTEGRATION**

Large private hospitals and diagnostic laboratory chains use fully functional HMS/ LIMS, which are mostly developed in-house (Digital Health Adoption Index Score = 7 or 8). However, the following barriers deter the adoption of ABDM by these providers:

- Players lack awareness about the benefits of ABDM integration to business.
- Providers are concerned about the implications of sharing internal digital systems and data, including the possibility of security breaches of confidential customer data.
- Players lack clarity on how ABDM will evolve and its potential implications.



## **FOR SMALLER PRIVATE PROVIDERS, AWARENESS OF THE BENEFITS OF DIGITALIZATION AND ABDM INTEGRATION IS A MAJOR BOTTLENECK**

- Players with a Digital Health Adoption score of 5 or less are hesitant to digitalize primarily due to their perception of digitalization being an additional cost rather than an investment. For instance, 40% of the respondents in ADL's provider-side survey believed that high financial cost is the key barrier to digital health adoption. This, in turn, is mainly due to a lack of awareness of the benefits of digitalization or ABDM on the bottom line.
- Small players (Digital Health Adoption score of 3 or less) are also resistant to digitalize despite having the resources to do so. For instance, 80% of the surveyed providers reported that they had enough financial capabilities to expand digitalization efforts but only 53% are planning to/ have already digitalized end-to-end. This resistance stems from efforts to avoid regulatory scrutiny resulting from increased transparency brought about by digitalization.

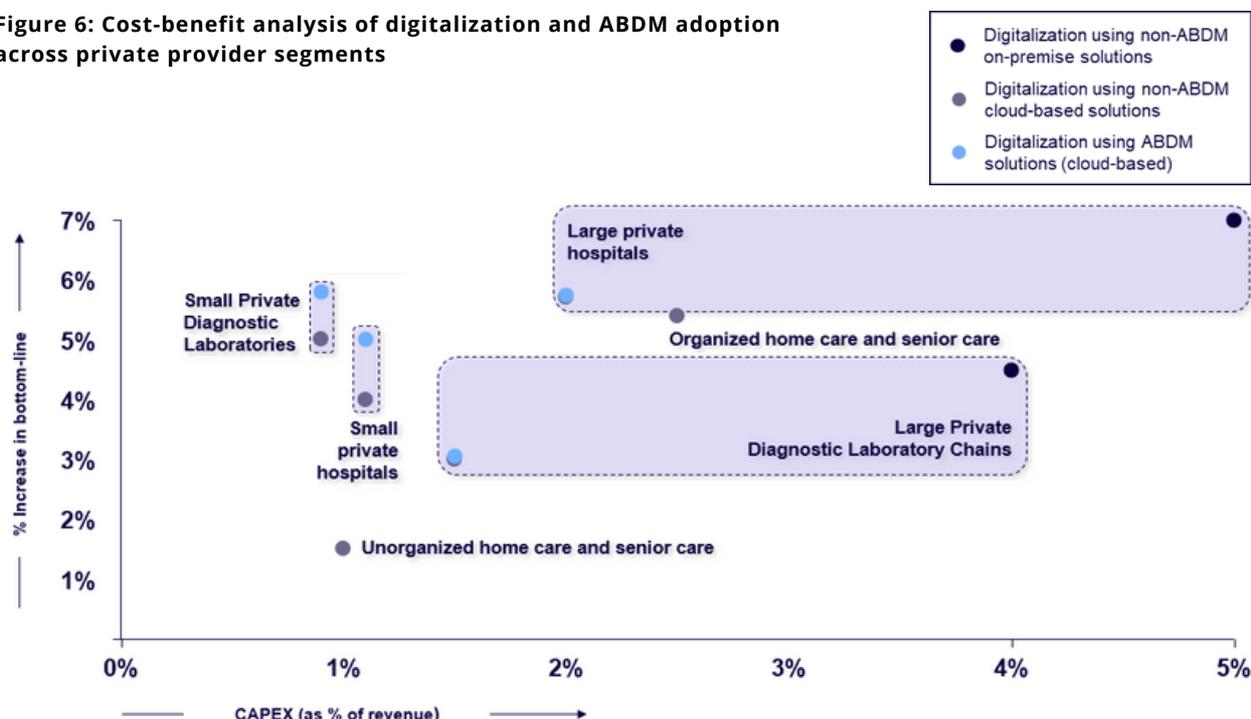
- Unorganized home healthcare and senior care players have limited digital health adoption as they do not recognize any value of digitalization. Attendants and administrative staff, who are technologically challenged, are also resistant to change due to digitalization
- Currently, no specific ABDM module exists for out-of-hospital (home healthcare and senior care) providers.

## STRONG BUSINESS CASE FOR DIGITALIZATION AND ABDM ADOPTION

Since several small providers allude to cost being a major challenge to digitalization and ABDM adoption, we conducted a cost-benefit analysis to quantify the different scenarios of digitalization with and without ABDM. The benefits of adoption to the bottom line are depicted in the following cost-benefit analysis of digitalization (through on-premise, cloud-based, and ABDM-integrated solutions) across private provider segments (Figure 6). Strong business cases emerge for digitalization and ABDM adoption across the board. Notes on the analysis are as follows:

- For large private hospitals and diagnostic laboratory chains, non-ABDM (on-premise) solutions are more customizable and thus offer higher benefits to the bottom line.

Figure 6: Cost-benefit analysis of digitalization and ABDM adoption across private provider segments



Source: Arthur D. Little

- For small private hospitals and diagnostic laboratories, an on-premise solution is not feasible. Multiple HIMIS/LIMS software vendors provide ABDM-compliant solutions at zero/discounted rates for the first 1-3 years. This can help in reducing OPEX when compared to non-ABDM (cloud) solutions.
- For home care and senior care players, only the non-ABDM (cloud) case exists because their distributed model of operations rules out the possibility of an on-premise solutions and there are no specific ABDM modules for these players.
- Benefits range from capturing cost efficiencies in procurement, clinical operations, reducing revenue leakages in pricing/discounting, increased revenue realization by bundling more value-added services e.g., wellness programs to the overall offerings.

**The ADL cost benefit analysis revealed the following key insights:**

- Digitalization using cloud-based solutions could add 3-6% to the provider's bottom line with a payback period of less than 18-36 months.
- ABDM can emerge as a powerful catalyst of digital adoption for the full healthcare provider ecosystem.
  - ABDM-integrated solutions make digitalization feasible for players with a Digital Health Adoption score of 3 or less. ABDM solutions reduce Capex by up to 60% as compared to on-premise systems and decrease the Opex by 20-40% during the initial years in comparison to non-ABDM (cloud) solutions.
  - Large Providers using ABDM-compliant systems from the outset of digitalization can capture more than 80% of the benefits of digitalization with a 60% reduction in Capex as compared to on-premise systems.
- Thus, there is no need to subsidize capital costs associated with digitalization. However, uptake can be significantly improved by better awareness of the benefits of digital adoption and ABDM integration, and deployment of usage-linked incentives for all.

We believe that there is a widespread lack of awareness of the benefits of ABDM integration across private healthcare providers, with noted resistance against digitalization from smaller players. Concerted efforts to increase awareness will help providers recognize the value of digital health and ABDM integration, thus driving adoption. These awareness campaigns must emphasize the strong business cases for digital health and ABDM integration as describe above, and position ABDM adoption as the most cost-effective way to capture the benefits of digitalization.

**Key insights from  
global case studies on  
large-scale adoption of  
digital health**

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Healthcare systems around the world are increasing digital adoption to increase the efficiency and effectiveness of care delivery. A few selected case studies are highlighted in Figure 7 and depict some of the use cases and forces that are driving digital health adoption globally. Government efforts to incentivize greater adoption of digital health solutions by providers include building preferred provider networks, driving payor-side integration and conducting dedicated training programs. Telemedicine emerges as a key immediate use case for public health systems around the world.

Figure 7: Selected global case studies on digital health adoption

 <p>Appointment reminders for TB treatment</p>	<ul style="list-style-type: none"> <li><b>Problem Statement:</b> In India, patients often miss appointments or forget to take medications, leading to poor health outcomes. This is particularly problematic for patients with chronic conditions such as tuberculosis (TB)</li> <li><b>Efforts:</b> ReMinD is a digital health platform that uses automated voice calls and SMS reminders to prompt patients to take their medication and attend appointments. The platform also provides health education and counseling services.</li> <li><b>Success:</b> A study of ReMinD's impact on TB patients in India found that the platform led to a significant increase in treatment adherence and improved health outcomes. Patients who received reminders were more likely to complete their treatment and had a lower risk of relapse compared to those who did not receive reminders.</li> </ul>
 <p>Telemedicine program to deliver healthcare in rural areas of Chile</p>	<ul style="list-style-type: none"> <li><b>Problem Statement:</b> In Chile, there is a shortage of healthcare professionals in rural areas, making it difficult for patients in these areas to access medical care.</li> <li><b>Efforts:</b> the Ministry of Health has launched a telemedicine program that enables doctors in urban areas to remotely consult with patients in rural areas. The government has also invested in electronic health records and mobile health apps.</li> <li><b>Success:</b> The telemedicine program has been successful in improving healthcare access for patients in rural areas. A study found that patients who received telemedicine consultations had similar health outcomes to those who received in-person consultations and were more satisfied with the care they received.</li> </ul>
 <p>Virtual counselling to treat mental health services in Canada</p>	<ul style="list-style-type: none"> <li><b>Problem Statement:</b> In Canada, mental health services are often fragmented and difficult to access, particularly in rural areas.</li> <li><b>Efforts:</b> Several digital health initiatives have been implemented to improve mental health services in Canada. For example, the government has invested in online mental health resources, including virtual counseling services and self-help tools. The government has also launched a mobile app called "Wellness Together Canada" that provides mental health support and resources.</li> <li><b>Success:</b> These digital health initiatives have led to increased access to mental health services, particularly for patients in rural areas. The virtual counseling services have been effective in treating mild to moderate mental health conditions, and patients have reported high levels of satisfaction with the care they received. The "Wellness Together Canada" app has also been well-received, with over 1 million downloads since its launch</li> </ul>



Note: 1. Preferred Provider Networks

Source: 'Digital health technology: Global Case studies of health care transformation' (Deloitte, 2019), Government portals, Altera health, "Empowering the health workforce" (OECD, 2021), ADL analysis

A thorough analysis of healthcare digitalization case studies from different countries highlights the following key learnings:

**Using payors as drivers of digitalization across the healthcare ecosystem has been remarkably effective.** Payors can be leveraged to drive both provider and consumer-side adoption through complete digitalization of the health insurance lifecycle, as in the case of Clalit Health Services in Israel (Figure 7). Faster payments and/or higher rates of reimbursements from payers for digitalized providers prove to be effective incentives in driving digitalization. Scaling digital adoption through payor groups similar to the PPN in Brazil (Figure 7) is also an effective way to drive digital health adoption, wherein the onus is on the group payor to drive digitalization among the providers it is in contract with. Additionally, since most providers have limited resources and capabilities to understand technical standards, **the burden of technical compliance must be systemically placed on the Digital Solution Companies.** Ensuring the existence of multiple compliant and certified healthcare software vendors in the market will reduce compliance-related issues faced by providers (especially smaller players). Healthcare providers can then just focus on choosing the software best suited to their internal needs.

**Deploying targeted use cases for digitalization aimed at benefiting specific populations** (nurses, doctors, OPD patients, organ donation seekers) is more effective in increasing adoption than broad use cases meant for all citizens or providers. Additionally, creating dedicated and accessible digital training programs for all healthcare staff, as done by the Australian Digital Health Agency, is also beneficial. However, engaging **non-physician staff (clinical and administrative)** to use digital tools is easier than training physicians as efficiency gains due to digitalization benefit the former much more than the latter. Training programs targeted towards non-physician staff can function as a strong lever in decreasing the resistance against digitalization from small players with non-tech-savvy staff.

Finally, **setting interim milestones and staggered compliance timelines is important to ensure that providers continue to improve their digitalization levels.** Frequent checkpoints, as providers gradually increase their Digital Health Adoption score, help them realize the ROI of digitalization at each step. Alternatively, unrealistic, or aggressive timelines can demotivate smaller players enough for them to give up on all digitalization efforts.

Regular compliance milestones be supported by a more holistic assessment of digital deployments across the providers in the country. **Digital health deployments must be closely monitored and evaluated using input and output metrics specific to each provider segment.** Continuous assessment of the digital solutions in use and overall digitalization levels is paramount in ensuring that technology evolves and adapts to the changing needs of the providers.

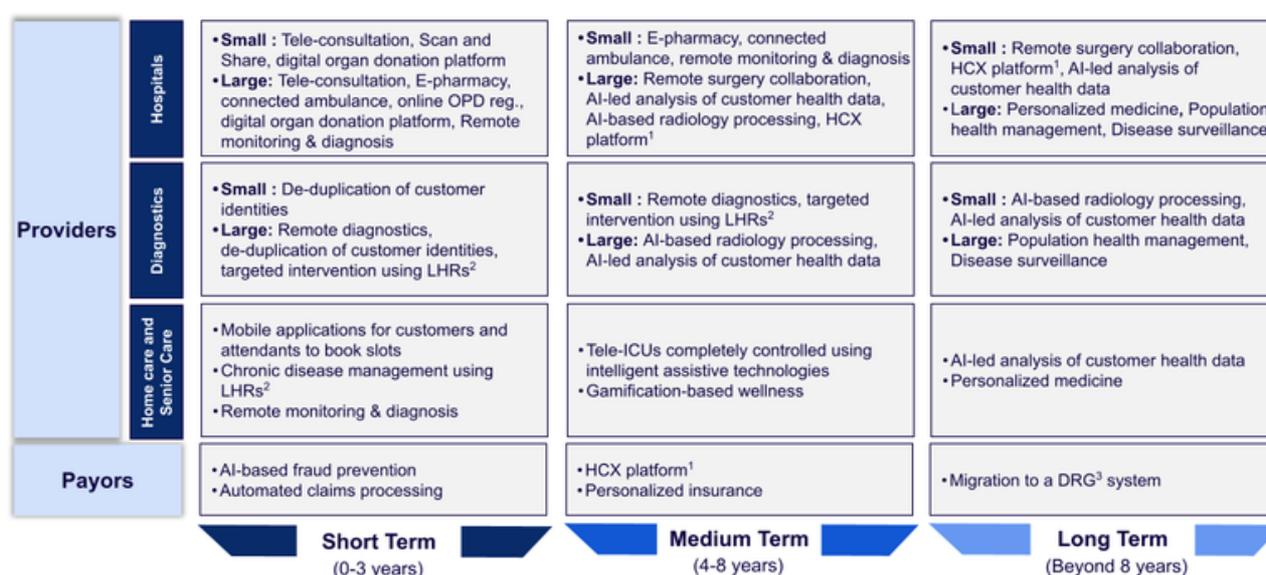
These insights highlight the importance of following a comprehensive integrated approach when designing programs and mandates to improve digitalization among healthcare providers. Payors and Digital Service Companies emerge as powerful drivers and must be enabled to boost digitalization. Since digital health adoption involves creating fundamental behavioral changes among stakeholders, clear benefits must be outlined through population-specific use cases and demonstrated through training programs, especially for non-physician staff. These efforts must be supplemented by regular compliance invigilation and input/ output monitoring. All stakeholders must work together to enable adoption of such initiatives leading to the en masse digitalization of the Indian healthcare ecosystem.

# **Roadmap of future use cases for digital health in India**

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Digitalization of healthcare ecosystem is expected to result in multiple opportunities for the stakeholders. This will result in increased efficiency while improving the scale and reach of the providers. At the same time, use cases with strong benefits to business will become important in driving large-scale adoption of digital health and ABDM across the healthcare ecosystem. We have explored the different use cases for different stakeholders at varying degrees of digital maturity. Figure 8 depicts a roadmap of such future use cases for different provider segments and payors.

Figure 8: Roadmap of future use cases which will drive adoption



Note: 1. Health Claims Exchange 2. Longitudinal Health Records 3. Diagnosis-Related Group  
Source: Arthur D. Little

The roadmap of future use cases indicates that digitalization and ABDM integration will offer opportunities to different providers and payors in the following ways:

- **Hospitals:** Hospitals will benefit from the low-cost scaling of services that is possible due to digitalization. Players will benefit from teleconsultations and OPD registrations through QR codes immediately. Remote monitoring and diagnosis, including through health wearables, will be prevalent in the short-to-medium term. As digitalization levels improve further, the use of Artificial Intelligence (AI) based radiology processing and AI-based health data analysis will help hospitals provide low-cost targeted solutions to patients. The HCX platform is expected to get deployed after 4-8 years and drive extensive adoption among hospitals.

- **Diagnostics:** De-duplication of customer identities emerges as the most important use case for these providers in the short term. Further use cases are AI-led and are focused on the analysis of customer health data to optimize operations and undertake disease surveillance.
- **Home healthcare and senior care:** Longitudinal health records will enable these providers to provide better chronic disease management. Adoption will enable these players to increase offerings to include tele-ICUs, personalized medicine, and wellness.
- **Payors:** Fraud prevention and the deployment of the HCX platform will boost adoption among payors which will, in turn, drive provider-side adoption.

It is noted that **e-pharmacies** emerge as important future use cases for hospitals. Current online pharmacy players are also among the digital front-runners in the Indian healthcare ecosystem. They can champion digitalization, and their data and digital capabilities can be leveraged to push greater adoption across the ecosystem. However, there is a need for improved clarity around the relevant legislation and regulations governing e-pharmacy players. This should include building a platform to facilitate communication between these players and all the concerned regulatory authorities.

As evident from the use cases, all healthcare players have much to gain from undertaking digital adoption. These benefits will allow players to increase the scale of operations and use digital tools to reach a larger population. These use cases also demonstrate the use of innovative technologies to improve operational efficiency and improve profitability. The roadmap outlined above serves as a guide for providers on how use cases for digitalization and ABDM integration will evolve and should be used to prepare for scaling-up adoption in time. Providers must act now and adequately digitalize their systems in order to maximize benefits gained from the large-scale digitalization of the ecosystem.

**Key imperatives to  
boost digital health  
and ABDM integration**

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Indian healthcare is sitting at the cusp of digital transformation. A collective effort by the government, payers, and the private sector is required to drive adoption among the providers. The paper proposes **10 key imperatives to boost the adoption of digital health and integration of ABDM across private providers** in the country:

**1. Demonstrate data security and privacy safeguards for customer health records:** The larger providers are concerned about data safety and privacy implications of ABDM integration. Their primary concern is centered around the sharing of patient data from their internal IT systems and its potential misuse. Demonstration of data security and privacy safeguards for customer health records through technology demonstrations and regulatory interventions such as the Data Privacy bill will help assuage their concerns and build confidence in ABDM. This will, in turn, accelerate adoption by the larger hospitals and laboratory chains.

**2. Engage with providers holistically:** Many providers, especially in Tier-2 and 3 cities are not aware of the benefits of ABDM and have concerns regarding the costs associated with digitalization. Engagement with providers to emphasize the benefits of digitalization and ABDM integration will help accelerate adoption by providing a strong business case for it. These forums should also be used to provide clarity on the future roadmap for ABDM.

**3. Create initial champions and partners (ABDM evangelists):** A large number of providers are sceptical of the adoption and evolution of ABDM. Creating initial ABDM champions from among the digital-forward private providers (including healthtech and out-of-hospital players) will help communicate the value of ABDM adoption to the remaining players more effectively. These partners can advocate for ABDM integration and conduct digital-skill training programs for smaller players.

**4. Increase the ambit of ABDM:** ABDM in its current form caters largely to only hospitals and diagnostic laboratories. Increasing the ambit of ABDM to include the healthtech, home healthcare, and senior care segments will increase the reach of ABDM and also enable a larger number of providers to benefit from its adoption. However, this will require creating clear certification criteria and timelines for the roll-out of these new ABDM modules. Healthtech players, with their data and digital expertise, can drive transformation for the entire ecosystem and ABDM can help catalyze digital adoption among home healthcare and senior care segments.

**5. Encourage/incentivize use of ABDM-compliant software:** Encourage /incentivize the use of ABDM-compliant software for all hospitals and diagnostic centers. This can be implemented by linking their utilization to the required NABH and NABL certifications, use of social health insurance schemes, etc. However, this move would require incentivizing more DSCs to integrate into the ABDM ecosystem. It will also be essential to set clear milestones for digitalization and ABDM integration, along with staggered timelines for compliance. This will nudge players to initiate small actions immediately rather than postponing the entire investment into digital and ABDM integration.

**6. Increase insurance penetration and move towards payor-side consolidation:** Increasing insurance penetration (including the introduction of contributory insurance for the missing middle) combined with payor-side digitalization of claims processing can push large-scale digitalization of private players. The launch of ABDM's Health Claims Exchange (HCX) platform can function as a strong lever for digitalization among both payors and providers.

**7. Scale the ABDM tools/software provider ecosystem:** Build a supportive ecosystem by simplifying and demystifying compliance processes, and through mandating DSCs to offer ABDM-compliant software to providers. This will help the providers, especially smaller players in Tier-2 and 3 cities, to adopt digitalization and ABDM without worrying about technical and regulatory compliances.

**8. Scale ABDM citizen adoption:** Drive citizen-side adoption of ABDM by driving universal creation of the ABHA ID and through citizen awareness programs to highlight associated benefits. This will help ensure strong consumer demand for ABDM solutions, which will result in increased provider-side adoption. Deployment of usage-linked incentives for citizens will also accelerate adoption.

**9. Institute training programs for non-physician staff:** Institute training on digitalization and ABDM adoption among non-physician staff, especially nurses. This must be done in conjunction with the creation of a free and accessible content ecosystem with modules for self-training. Non-physician staff, especially nurses, stand to gain the most from eased process flows and documentation due digitalization and have lower resistance to adoption than physicians. This will act as a major lever to digitalize small providers.

**10. Reward digitalization and ABDM integration:** Monetarily reward digitalization and ABDM integration through better reimbursements (higher rates and faster payments) for PMJAY, ESI, other social health insurance (CGHS, ECHS etc.), and PSU panel. Scaling and expansion of DHIS to include all provider segments, and other usage-linked incentives for providers should be planned.

The recommendations outlined above engage all relevant stakeholders in the Indian healthcare ecosystem to address providers' concerns, create demand and deploy incentives for adoption. When acted upon, these recommendations, will thus create the impetus required for large-scale digitalization and ABDM integration of private healthcare providers in the country.



## Acknowledgements

We would like to acknowledge the following people and organizations for their contributions to this report:

Names	Organization
<b>Government Stakeholders</b>	
Mr. Kiran Anandampillai (Advisor, Technology); Mr. Himanshu Burad (OSD to ACEO & MD, ABDM); Ms. Aishwarya Rohatagi (YP, ABDM)	National Health Authority (NHA)
Dr. K Madan Gopal (Senior Consultant - Health)	NITI Aayog
<b>NATHEALTH Secretariat</b>	
Ms. Vrinda Chaturvedi (National Lead); Ms. Anugrah William (Government Partnership Specialist and Northern Region Chapter Lead)	NATHEALTH - Healthcare Federation of India
<b>Key Stakeholders</b>	
Dr. Ashutosh Raghuvanshi (CEO & MD); Mr. Mayank Bhargava (Chief Information and Digital Officer); Mr. Ravinder Sharma (DGM - Business Solutions)	Fortis Healthcare
Dr. Om Prakash Manchanda (MD); Mr. Munendra Soperna (CIO)	Dr. Lal PathLabs
Dr. Rajeev Sharma (VP); Mr. Prateek Verma (VP)	1mg
Mr. Arvind Sivaramakrishnan (CIO)	Karkinos Healthcare
Mr. Daljit Singh	
Mr. Dharmil Sheth (Co-Founder)	PharmEasy
Dr. Gaurav Thukral (EVP & COO)	HCAH
Mr. Girish Koppar (GM-IT)	Wockhardt
Mr. Mahesh Shinde (Director - IT & Telecom)	Hinduja Hospitals
Mr. Mitesh Daga (MD)	TPG Global
Ms. Nanki Lakhwinder Singh (CEO & Director)	ProTribe
Mr. Rajiv Mehta (CEO & MD)	Antara Senior Living
Mr. Rizwan Koita (Co-Founder & Director)	Koita Foundation
Mr. Sanjay Jain (MD)	Akhil Systems Pvt. Ltd.
Mr. Shashank ND (Founder & CEO)	Practo Technologies Pvt. Ltd.

## Authors

### **BARNIK CHITRAN MAITRA**

Managing Partner, India & South Asia,  
Arthur D. Little

### **BRAJESH SINGH**

Associate Director, India & South Asia,  
Arthur D. Little

### **Dr. GAURAV SHARMA**

Manager, Healthcare & Life Sciences,  
Arthur D. Little

### **KRITHIKA BITLA**

Business Analyst,  
Arthur D. Little

### **Dr. SHRAVAN SUBRAMANYAM**

President,  
NATHEALTH

### **SIDDHARTHA BHATTACHARYA**

Secretary General,  
NATHEALTH

### **SALONI MEHTA**

Business Analyst,  
Arthur D. Little

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