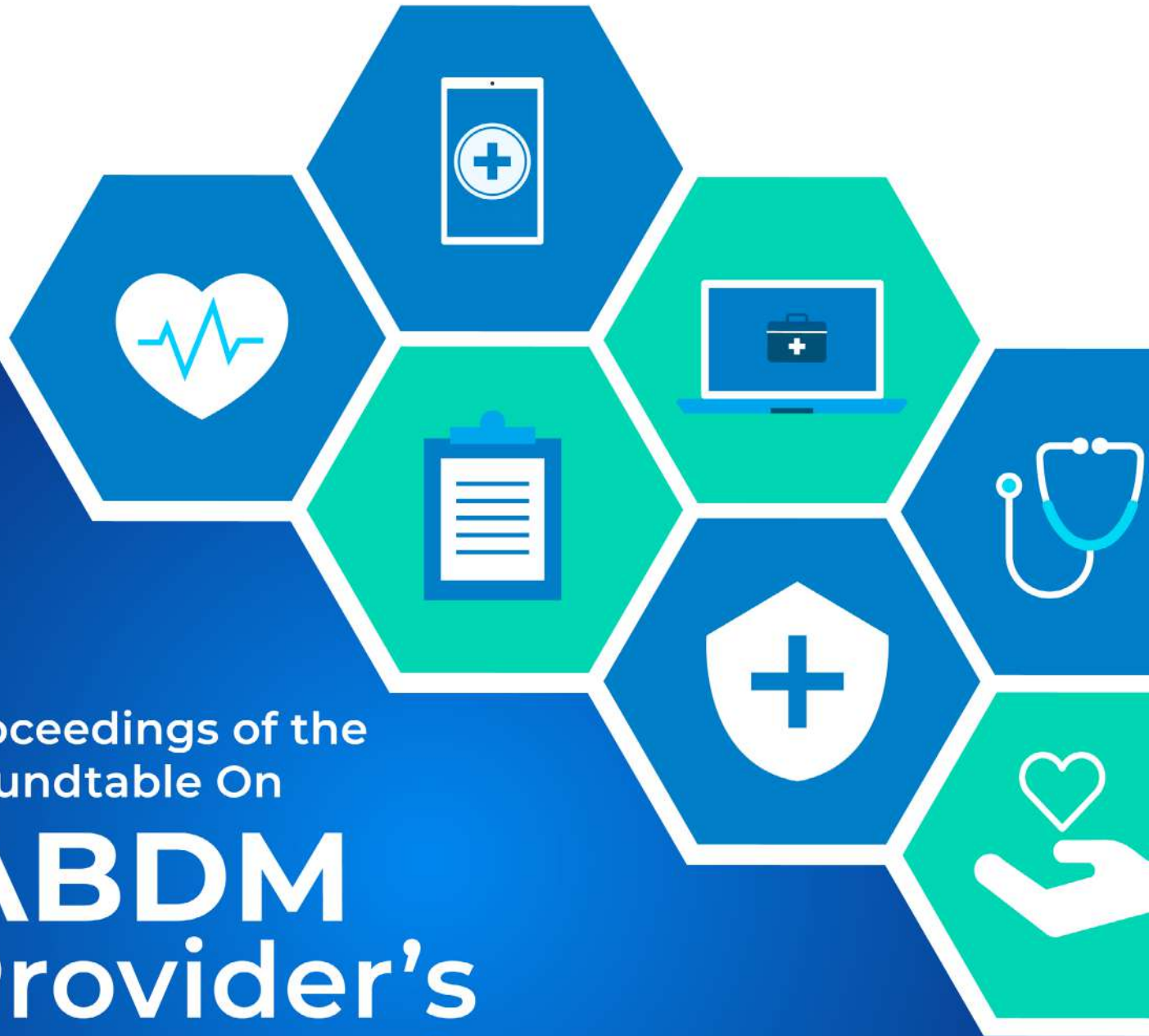




Office of the Principal Scientific Adviser
to the Government of India



ACCESS
health international



Proceedings of the
Roundtable On

ABDM Provider's Perspectives

Opportunities & Challenges



Friday, 3rd May 2024
2:30 PM - 6:00 PM

Office of Principal Scientific Advisor

About O/o PSA - The Government of India established the Office of the Principal Scientific Adviser (PSA) in November 1999. The PSA's office aims to provide pragmatic and objective advice to the Prime Minister and the cabinet in matters of Science and Technology. The Office of PSA was placed under the Cabinet Secretariat in August, 2018.

The Office of the Principal Scientific Adviser (PSA) serves as a high-level advisory body providing strategic guidance and scientific advice to the government on matters of science, technology, and innovation. The primary objective is to align scientific advancements with national development goals and address complex challenges across different sectors. The PSA's office coordinates and facilitates scientific efforts across ministries and departments. It plays a pivotal role in formulating science and technology policies, fostering collaboration between academia, research institutions, and industry, and promoting innovation-driven solutions. The O/o PSA acts as a bridge between the scientific community and the government, advising policymakers on the integration of cutting-edge research into governance strategies. This includes recommendations on harnessing technology for sustainable development, promoting scientific temper, and addressing critical issues such as climate change, healthcare, and national security.

The Office of the Principal Scientific Adviser plays a pivotal role in shaping a nation's scientific and technological landscape, ensuring that advancements in science contribute meaningfully to societal progress and addressing contemporary challenges.

S&T Cluster Initiative

About Clusters The Union Budget observed that many of our cities have various research institutions, universities, and colleges supported by the Government of India. Hyderabad for example has about 40 such major institutions. It proposed setting up formal umbrella structures (Science and Technology Clusters) so that these institutions can have better synergy, while also retaining their internal autonomy.

The Science and Technology Clusters works in areas of national importance, leveraging the existing strengths in geographical proximity, driving future economic growth, wealth creation, and enabling rapid and direct knowledge exchange. Seven such city clusters have been initiated under the Office of PSA at Bengaluru, Bhubaneswar, Chandigarh, Delhi, Hyderabad, Jodhpur, and Pune. These clusters are supported by the O/o PSA on the recommendation of the Prime Minister's Science, Technology and Innovation Advisory Council (PM-STIAC) to create an Atmanirbhar Bharat through S&T. These clusters create strong linkages between existing academic institutions, national & state research laboratories, and other stakeholders like relevant ministries, industry partners, start-ups, MSMEs, state governments, philanthropic foundations, and international organizations.

Research and Innovation Circle of Hyderabad (RICH)

Research and Innovation Circle of Hyderabad (RICH), launched in 2017 as a first-of-its-kind initiative by the Government of Telangana, is a collaborative platform that fosters research and innovation in Hyderabad, India. RICH is also the Hyderabad Science and Technology Cluster, an initiative spearheaded by the Office of Principal Scientific Adviser to the Government of India.

RICH acts as a unifying collaborative force, bringing together academia, research institutes, startups, industries, government bodies, and other pertinent stakeholders to elevate the realms of science and technology research and innovation. It functions as a catalyst, propelling forward technological progress and fostering economic prosperity within the region. Through facilitating the exchange of knowledge, fostering collaboration among stakeholders, and offering resources to startups and researchers, RICH has established itself as a central hub for pioneering research and innovation across three key sectors: Food and Agriculture, Health and Life Sciences, and Sustainability. Through its array of initiatives and strategic partnerships, RICH assumes a crucial role in Telangana's innovation ecosystem, both nationally and internationally.

Access Health International

ACCESS Health International is a global think tank, advisory group, and implementation partner focused on improving access to high-quality, affordable healthcare. With 15 years of experience across various healthcare areas, ACCESS Health engages in evidence-based research, partnership cultivation, and capacity building. The organisation operates through five major work streams: research, capacity building, advice and technical support, advocacy, and awareness.

In digital health, ACCESS Health is notable for its work in designing the India National Digital Health Blueprint, which led to the creation of the National Digital Health Mission, promoting interoperable health data standards. Additionally, the organisation provided technical support for PMJAY, a health insurance program covering 500 million people, and implemented digital health initiatives during the COVID-19 pandemic.

Other focus areas include healthcare financing, healthcare delivery systems, quality and process improvement, training, business engagement, maternal and child health, elder and long-term care, primary care, and healthcare technology. The organisation's expertise spans health policy, public health, management, administration, and various specialised fields. ACCESS Health has offices in India, Singapore, Dubai, and the United States and remains committed to fostering global knowledge exchange and cooperation for universal health coverage.

The KOL's

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Director



Shri. R.V Karnan
Director



Dr. N. Krishna Reddy
CEO of ACCESS Health International and Chairman of TRUST Hospital



Dr. Vinayendar Tulla
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Mr. Kinjal Saxena
CTO



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General Manager - IT Systems



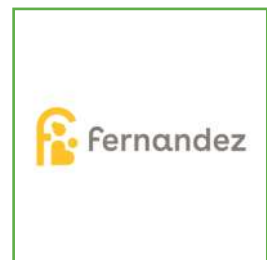
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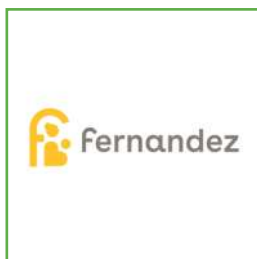
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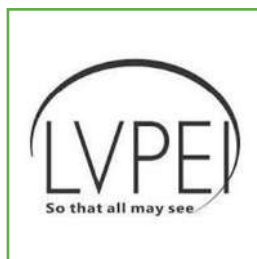
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1. Introduction

(Discussion and report content are adapted from - <https://abdm.gov.in/>)

Digital health solutions are reshaping the trajectory of healthcare globally, fueling a multitude of advancements and patterns such as online pharmacies, telemonitoring, personalized medicine, and the management of chronic illnesses. Embracing digital technologies opens avenues for healthcare providers to broaden their enterprises, bolster profitability, and enhance the accessibility and affordability of healthcare services. The ambitious Ayushman Bharat Digital Mission (ABDM) spearheaded by the government in India is at the forefront of this revolution, striving to digitize every facet of the healthcare ecosystem.

Ayushman Bharat Digital Mission (ABDM) is a transformative initiative poised to revolutionize healthcare accessibility and delivery in India. Stemming from the lessons learned during the COVID-19 pandemic, the Indian government initiated Digital Public Goods (DPGs) to establish a comprehensive digital healthcare ecosystem. Leveraging existing digital platforms like Aadhaar and UPI, India has made significant strides in enhancing mobile and internet access, laying the groundwork for widespread adoption of digital health solutions. ABDM aims to bridge existing gaps in healthcare delivery by providing a robust digital infrastructure for seamless data exchange among various stakeholders and ensures better coordination among healthcare providers. This initiative has led to improved service delivery, enhanced access to care, and increased workforce capacity, especially in rural areas. Ultimately, this mission has the potential to bridge the gap between urban and rural healthcare facilities, making affordable and quality healthcare more accessible to every Indian citizen.

The digitalization drive and ABDM bring forth several advantages for providers, including heightened financial and operational efficiency, expanded reach to diverse patient demographics, a competitive edge via enriched patient interactions, future-proofing capabilities, data-centric decision-making, and improved preventive healthcare measures. However, the journey toward a fully digitized healthcare system presents challenges, including private sector engagement, and infrastructure disparities. Clear guidelines for private sector involvement, stringent measures to safeguard patient data, and incentives to drive adoption are in progress for overcoming hurdles.

Despite obstacles, ABDM remains a beacon of hope for achieving universal health coverage in India. Through embracing technology, fostering public-private partnerships, and implementing robust policy frameworks, ABDM has the potential to revolutionize healthcare delivery, empower patients, and enhance health outcomes nationwide. As India marches toward a digital healthcare future, ABDM stands as a testament to the transformative power of technology in building a healthier and more inclusive society.

In spite of robust demand and a comprehensive rollout plan, healthcare providers, especially private sector, lag in ABDM adoption. To delve deeper and understand the private healthcare provider's perception of ABDM's opportunities and challenges, RICH along with Access Health International organized a roundtable on "ABDM Provider's Perspectives: Opportunities & Challenges" with 10 Hyderabad based private healthcare providers.

The afternoon commenced with registration, followed by a welcome address and introduction to RICH from Ms. Rashmi Pimpale, the CEO of RICH. Then, Shri. Kiran Gopal Vaska, IAS, Director, National Health Authority (NHA) presented NHA's perspectives on ABDM. Subsequently, Shri. R.V. Karnan, IAS, Director, Health and Family Welfare Department, Govt. of Telangana highlighted State Health Authority (SHA) perspectives on ABDM. Then, Dr. Krishna Reddy from Access Health International delivered a thought-provoking keynote address on ABDM and Dr. Supriya Prabhakar presented a detailed deck on ABDM's architecture and use-cases. Post that, open floor moderated roundtable discussion was conducted on two themes: ABDM-Opportunities & Benefits and ABDM-Challenges & Barriers. The roundtable provided providers with a platform to engage in extensive discussions. Finally, Dr. Sushmitha Sundar, Head of Life Sciences, RICH, extended her gratitude in the vote of thanks. The roundtable concluded with a High Tea & Networking Session, fostering valuable connections among participants.

This discussion format aimed to encourage open dialogue and the exchange of views among stakeholders from hospitals, gathering insights into both the opportunities and challenges in integrating ABDM by private hospitals. The ultimate goal was to collaboratively identify strategies for overcoming any obstacles, with RICH and Access Health aiming to compile a report containing valuable insights and recommendations for moving forward.

This document is a comprehensive proceeding report of the valuable discussions, insights, and recommendations that emerged from this significant roundtable. RICH and Access Health International express their sincere appreciation to all the participants and contributors who played a pivotal role in making this roundtable a resounding success.

2. Opening remarks by Ms. Rashmi Pimpale, Chief Executive Officer, Research and Innovation Circle of Hyderabad (RICH)

In her address, Ms. Rashmi Pimpale, CEO of the Research and Innovation Circle of Hyderabad (RICH), provided a comprehensive overview of RICH's mission and approach, setting the stage for an important discussion on Ayushman Bharat Digital Mission (ABDM).

Ms. Pimpale began by highlighting RICH's establishment in 2017, initiated by the State Government and supported by the O/o PSA to bridge gaps within the innovation and research ecosystem.

Ms. Pimpale outlined RICH's multidisciplinary approach, focusing on three key sectors: Life Sciences including health, Food and Agriculture, and Sustainability. Within these sectors, RICH identifies complex problems that require collaborative solutions, bringing together diverse groups of experts to implement pilot projects aimed at demonstrating tangible success on the ground.

She highlighted an example of RICH's initiatives, the establishment of a bio-bank for tissue and blood samples in hospitals. Ms. Pimpale emphasized the valuable resource these samples represent and underscored the potential for collaboration between RICH and hospitals to transform these samples into valuable assets for research and industry use.

Throughout her address, Ms. Pimpale reiterated RICH's role as an enabler and facilitator of collaboration.

Transitioning to the recent inter-cluster collaboration initiative led by the Office of the Principal Scientific Advisor (PSA), Ms. Pimpale discussed RICH's pivotal role in healthcare-related efforts as the lead cluster. RICH has received a request to make efforts to populate Ayushman Bharat Health Account (ABHA) and encourage hospitals to adopt Electronic Health Records (EHR) as a standard. She elaborated on the purpose behind this initiative, emphasizing the need to thoroughly understand why private hospitals might be hesitant or encountering obstacles in generating ABHA numbers. To achieve this understanding, the present roundtable discussion was organised specifically focusing on Ayushman Bharat Digital Mission (ABDM).

Ms. Pimpale expressed optimism about the outcomes of the roundtable discussion, welcoming the enthusiastic participation of attendees. Her address not only provided insight into RICH's mission and approach but also set the tone for a productive and engaging dialogue on ABDM and its implications for the healthcare sector.

3. Remarks on National Health Authority's (NHA) Perspectives on ABDM by Shri. Kiran Gopal Vaska, Director, NHA

In his address to senior members of the hospital community, Mr. Kiran Gopal Vaska, emphasised the importance of understanding the benefits, opportunities, and challenges of Ayushman Bharat Digital Mission (ABDM). He underscored the roundtable's overarching goal: to ensure the delivery of quality healthcare, particularly to vulnerable populations in remote areas.

Mr. Vaska highlighted the collaborative nature of ABDM and the intricate framework upon which ABDM is built involving both public and private sectors to achieve universal health coverage. He elaborated on ABDM's principles, emphasising that government infrastructure supports the exchange of health information, creating registries and health exchanges while adhering to open standards. Mr. Vaska shared the progress of ABDM, with 200 integrators, including private entities, already onboard. He assured participants of data security, explaining that patient data remains with respective hospitals unless consented to transfer.

Mr. Vaska addressed concerns about competition, emphasising that quality healthcare provision attracts patients and ensures fair market competition. He stressed ABDM's design to prevent monopolies, promoting fairness and transparency. He highlighted ABDM's role in streamlining insurance claims processing through the National Health Claims Exchange, making insurance more accessible and affordable.

He expressed gratitude to the Government of Telangana and urged hospitals to integrate with ABDM, emphasizing its potential to enhance healthcare accessibility and transparency. Mr. Vaska concluded by urging participants to prioritize citizen-centred healthcare and leverage ABDM systems for transparent service delivery.

4. Remarks on State Health Authority's (SHA) Perspectives on ABDM by Shri. R.V Karnan, IAS - Director, Health and Family Welfare, Government of Telangana

Mr. R.V. Karnan, representing the Government of Telangana as the Mission Director of Ayushman Bharat Digital Mission (ABDM) expressed gratitude to RICH for organizing the round table discussion. He highlighted the significance of the discussion, focusing on the perspective and challenges of major providers in the ABDM initiative.

Mr. Karnan emphasized the transformative potential of ABDM in the healthcare sector, linking its impact to the digital revolution experienced in other domains. He highlighted the pivotal role of Ayushman Bharat Health Account (ABHA) in revolutionizing patient care and hospital services administration through seamless data sharing, particularly for insurance claims and patient records.

Providing examples of ABDM's implementation, Mr. Karnan illustrated how government institutions and hospitals are integrating patient data systems for improved efficiency and patient care. He also stressed the importance of decentralized data storage and sandbox techniques to ensure data security and privacy, highlighting ABDM's innovative approach.

Mr. Karnan urged market forces, start-ups, and health setups to capitalize on ABDM's potential by developing apps and services aligned with its framework. He emphasized the game-changing impact of ABDM on personal health records, insurance, and healthcare exchanges, predicting widespread adoption in the future.

Furthermore, Mr. Karnan outlined the government's proactive approach to ABDM implementation, including registering healthcare professionals and establishing microsites across the state. He envisioned ABDM as a catalyst for enhancing healthcare access, appointment scheduling, follow-up treatments, and insurance claims processing.

In conclusion, Mr. Karnan highlighted Telangana's vibrant healthcare and education ecosystem and expressed readiness for collaboration with private organizations, facilitated by entities like RICH.

5. Keynote address by Dr. N. Krishna Reddy, CEO of ACCESS Health International and Chairman of TRUST Hospital

Dr. Krishna Reddy's insights shed light on the current state of the healthcare system, emphasising its fragmentation and the need for greater interconnectedness. He drew parallels between the disjointed nature of healthcare providers, ranging from public hospitals to private clinics, and the isolated functioning of organs in our body's systems. Dr. Reddy underscored the importance of integration for the efficient functioning of the healthcare system, likening it to the harmonious coordination of organs within the body.

Drawing inspiration from successful integration models in other sectors, such as finance with UPI and GST, Dr. Reddy highlighted the transformative potential of ABDM in healthcare. ABDM aims to establish a seamless flow of information across various healthcare providers and systems, similar to a well-connected highway for healthcare data. He reassured participants that privacy and security are paramount in this endeavour, ensuring the protection of sensitive medical information.

Despite the perceived complexity of data and standards, Dr. Reddy emphasised the simplicity and necessity of having a common language in healthcare. Standardisation facilitates efficient communication and decision-making among healthcare stakeholders, ultimately leading to improved quality of care for patients and accelerated medical advancements.

Dr. Reddy encouraged embracing ABDM as a catalyst for positive change in healthcare, envisioning its potential to revolutionise patient care and drive groundbreaking research initiatives. He offered his support in navigating through this transition, underscoring the collective effort needed to realise the transformative impact of ABDM on healthcare in India.

In conclusion, Dr. Reddy urged participants to embrace the future of healthcare by embracing ABDM, highlighting its potential to bring about tangible improvements in healthcare delivery and outcomes for all.

6. Presentation insights

Supriya Prabhakar, from ACCESS Health International, conducted an informative presentation to showcase the practical application of the ABDM and its components within patient pathways.

The demonstration focused on illustrating pathways within an ecosystem comprising various stakeholders from the private sector, including labs, hospitals, clinics, and pharmacies keeping patients at the core of care. The use case demonstrated empowering the patient with decision-making authority over their health data, process and preferences for information sharing using consent mechanisms.

The highlight of the presentation was the discussion surrounding the ABHA ID, a pivotal component serving as a health account for patients. This unique identifier enables patients to seamlessly access and manage their health data through Personal Health Record (PHR) apps. Such empowerment allows patients to exert control over the sharing and revocation of their information with the providers, all while being safeguarded by a robust consent management system designed to uphold privacy and security standards.

Moreover, the significance of health professional and facility registries was highlighted. These registries serve as centralised repositories of validated professionals and services, thus single-source-of-truth, enhancing discoverability for patients and streamlining accessing the healthcare facilities and providers.

The presentation also shared the importance of Unified Health Interface (UHI), emphasising the necessity of vendor-agnostic interfaces to facilitate interoperability and operational ease within the healthcare ecosystem.

Additionally, attention was drawn to the health claims exchange as a pivotal component for optimising claims processing. By aiming for auto-adjudication, this exchange seeks to minimise manual intervention and standardise the processing of claims, thereby enhancing efficiency and accuracy in healthcare transactions.

Overall, the presentation provided valuable insights into the practical implementation of ABDM components using Ayushman Bharat Digital Mission (ABHA), Health Facility Registry (HFR), Health Professional Registry (HPR), and Personal Health Record (PHR) apps through patient pathways, showcasing the potential for enhanced efficiency, patient empowerment, and streamlined healthcare processes.

7. Open-floor Moderated Roundtable Discussion Insights

The following insights were generated during the open floor discussion on the two themes – Opportunities and Benefits, and Challenges and Barriers.

7a. Theme- Opportunities and Benefits

i) Unlocking Potential:

- » Improved Rural Healthcare: ABDM integration can bridge the gap in healthcare reporting and data availability in rural areas. By enabling seamless data exchange between rural healthcare facilities and centralized systems, providers gain access to critical patient information, leading to more informed diagnosis and treatment decisions.
- » Research and Development: ABDM integration provides researchers with access to large datasets for analysis, driving innovation in healthcare research and development. By leveraging comprehensive patient data, researchers can identify trends, develop new treatments, and improve healthcare delivery models.
- » Telemedicine and Remote Monitoring: ABDM enables the development and adoption of telemedicine and remote monitoring solutions, expanding access to healthcare services and improving patient outcomes. Remote patient monitoring technologies can help healthcare providers monitor patients' health status in real-time, allowing for timely interventions and personalized care.
- » Adoption of New Technologies: The centralized nature of ABDM encourages the adoption of new technologies and tools in healthcare delivery. From electronic health records (EHRs) to artificial intelligence (AI) algorithms, healthcare organizations can leverage innovative solutions to enhance patient care, streamline workflows, and improve operational efficiency.

ii) Beneficiary Opportunities:

- » Patient Empowerment: ABDM empowers patients by providing access to their health data, enabling them to actively participate in their care decisions. Patients can review their medical records, track their health metrics, and communicate with healthcare providers more effectively, fostering a patient-centric approach to healthcare innovation.
- » Patient Consent: Patient consent is paramount in data sharing initiatives, as it ensures that patients have control over who can access their health information. Building trust with patients through transparent consent processes fosters collaboration among healthcare providers and encourages patients to actively participate in their care.
- » Care Context: Categorizing data based on care context helps specify the type of information shared, ensuring that only relevant data is exchanged. This approach enhances data privacy and security while enabling efficient collaboration among healthcare stakeholders.

iii) Operational Benefits:

- » Centralized Data Access: Having all patient data in one place allows healthcare organizations to analyse population health trends, identify areas for improvement, and formulate targeted policies to address public health challenges. This centralized approach enhances decision-making and resource allocation for better healthcare outcomes.
- » Standardized Data: Standardization of data entry ensures consistency and accuracy in healthcare records. By adhering to standardized protocols for recording patient information, healthcare providers can minimise errors, prevent misdiagnosis, and improve overall data quality, enhancing patient care and safety.
- » Standardisation and Mandates: Establishing standards and mandates for data sharing promotes interoperability among healthcare systems and facilitates seamless exchange of information. Mandating certain data elements ensures that essential information is transferred between healthcare providers, enabling coordinated care delivery and improving patient outcomes.
- » Data Completeness: Ensuring the completeness of transferred data is crucial for effective collaboration among healthcare stakeholders. Incomplete or inaccurate data can lead to misinterpretation of patient information, compromising care quality and patient safety. Therefore, efforts must be made to establish protocols for data exchange that prioritize data completeness and accuracy.
- » Efficiency and Effectiveness: ABDM integration streamlines healthcare data management by providing a centralized platform for storing and accessing patient information. This eliminates the need for healthcare providers to navigate multiple systems or physical files, saving time and reducing errors in care delivery.

7b. Theme-2 Challenges and Barriers

i) Resource Challenges:

- » Device Integration: Integrating various devices, such as smartphones, tablets, and computers, into the adoption process can pose challenges. These challenges include ensuring compatibility across different operating systems, synchronising data effectively, and providing a consistent user experience regardless of the device being used.

- » **Integration and Compatibility:** Integrating ad options solutions with existing healthcare IT systems requires careful planning and execution to ensure compatibility and interoperability. Challenges include conducting thorough compatibility testing to identify potential conflicts, documenting API specifications to facilitate integration, and fostering collaboration between IT teams to streamline the integration process.
- » **Interoperability:** Interoperability challenges arise when integrating disparate systems, such as electronic health record (EHR) systems, administrative management platforms, and diagnostic tools. Achieving seamless data exchange requires standardising data formats, establishing reliable API integrations, and adhering to industry interoperability standards to facilitate seamless communication between systems.
- » **Vendor Accountability and Compliance:** Engaging third-party vendors introduces additional complexities in ensuring data security and compliance. Challenges include establishing contractual agreements that outline vendors' responsibilities, conducting thorough vendor assessments to evaluate their security practices, and implementing monitoring mechanisms to ensure ongoing compliance with security standards.

ii) Data Concerns:

- » **Cybersecurity Concerns:** With the increasing digitization of healthcare processes, cybersecurity becomes paramount. Challenges include implementing robust encryption protocols to safeguard data during transmission and storage, enforcing strict access controls to prevent unauthorised access, and conducting regular security audits to identify and address vulnerabilities.
- » **Data Misuse and Security Breaches:** Data security breaches can have severe consequences, including unauthorised access to sensitive patient information and potential misuse of data for malicious purposes. Challenges include implementing robust access controls, monitoring systems for suspicious activities, and establishing effective incident response protocols to mitigate the impact of security breaches.
- » **Compliance and Certification:** Adherence to regulatory requirements, such as HIPAA in the United States or GDPR in the European Union, is essential for protecting patient privacy and data security. Challenges include staying updated with evolving regulations, conducting regular compliance audits, and obtaining certifications to demonstrate adherence to industry standards.
- » **Data Privacy and Consent Awareness:** Effective communication and education are essential to ensure that patients understand their rights regarding the use and sharing of their personal health information. Challenges include developing educational campaigns to inform patients about privacy concerns, transparently communicating data usage policies, and implementing user-friendly consent mechanisms to empower patients to make informed decisions about their data.
- » **Liability and Responsibility:** Clarifying roles and responsibilities among stakeholders is crucial for addressing liability concerns in the event of data breaches or security incidents. Challenges include navigating legal frameworks to allocate liability, establishing contractual obligations that define each party's responsibilities, and implementing risk-sharing agreements to mitigate financial and reputational risks.
- » **Risk Management and Mitigation:** Proactive risk management is essential for protecting against cybersecurity threats and data breaches. Challenges include conducting comprehensive risk assessments to identify vulnerabilities, implementing proactive security measures to mitigate risks, and developing robust incident response plans to effectively respond to security incidents and minimise their impact.

iii) Stakeholder Concerns:

- » Patient Education and Consent: Patient participation requires informed consent regarding the use and sharing of their personal health information. Challenges include effectively communicating complex privacy policies to patients, ensuring they understand the implications of data sharing, and providing mechanisms for patients to control and revoke consent as needed.
- » Continuation Page Across Providers: When users interact with multiple service providers within the ecosystem, ensuring a seamless experience becomes crucial. Challenges arise in maintaining consistent branding, user interface elements, and data interchange standards across these diverse platforms.
- » Insurance Providers Benefits and Concerns: A promising avenue to streamline and offer speedy claim resolution. However, concerns linger regarding the integration of ABDM into existing healthcare systems, data security, and privacy issues surrounding the vast amount of personal health information collected.
- » Revenue Impact and Taxation Concerns: Private hospitals are apprehensive about how the ABDM will affect their revenue streams. One major concern is the transparency and potential regulation of pricing that could arise from the digitization of health records and services. The ABDM allows health service providers to set their own prices for services, but there is uncertainty about how this will be regulated and monitored, potentially affecting hospitals' ability to maintain profitability. They also raise a concern that integration of digital health records and services might lead to increased scrutiny and potential changes in taxation which could lead to more stringent tax assessments and increased compliance burdens for private healthcare providers.

8. Conclusion

Indeed, the Ayushman Bharat Digital Mission (ABDM) is a groundbreaking initiative designed to revolutionize healthcare delivery in India through digitalization. By utilizing existing digital platforms and developing a robust infrastructure for seamless data exchange, ABDM aims to significantly enhance healthcare accessibility, particularly in rural areas, and bridge the gap between urban and rural healthcare services. The initiative focuses on improving service delivery, expanding workforce capacity, and empowering patients, reflecting a comprehensive approach to healthcare reform.

The digitalization effort brings numerous benefits, such as improved financial and operational efficiency for providers, broader reach to diverse patient demographics, and enriched patient interactions. However, achieving a fully digitized healthcare system involves several challenges, including engaging the private sector, overcoming infrastructure disparities, and addressing cybersecurity concerns. The integration of ABDM also poses operational hurdles like device compatibility, data privacy, and regulatory compliance, all of which require careful management and strategic planning.

Despite these obstacles, the advantages of ABDM are significant. It promises to give patients greater control over their health data, support research and development through access to comprehensive datasets, and encourage the adoption of new technologies in healthcare. Additionally, ABDM's potential to streamline insurance claims processing and enhance overall healthcare delivery efficiency makes it a crucial initiative for the future of India's healthcare system.

The roundtable discussions organized by RICH and Access Health International showcased the enthusiasm and dedication of the private hospital providers towards ABDM's successful implementation. The insights and recommendations from these discussions will be instrumental in addressing challenges and maximizing the opportunities presented by this ambitious mission.

In conclusion, while the path to a fully digital healthcare ecosystem presents significant challenges, the Ayushman Bharat Digital Mission represents a beacon of hope. Through technology, public-private partnerships, and robust policy frameworks, ABDM has the potential to transform healthcare delivery, making quality healthcare accessible and affordable for all Indian citizens. As India moves towards this digital healthcare future, ABDM exemplifies the transformative power of technology in building a healthier, more inclusive society.

Annexure-1: Pre-read on ABDM

Ayushman Bharat Digital Mission's Integrated Digital Health Ecosystem - The Foundation of Universal Health Coverage in India

Introduction

The COVID-19 pandemic highlighted the urgency of digitizing healthcare worldwide. In response, the Government of India built Digital Public Goods (DPGs), initiating various initiatives to build an integrated national digital health ecosystem. This ecosystem aims to bolster Universal Health Coverage by furnishing real-time data, information, and infrastructure through open-source, interoperable, standards-based digital systems. Over the past decade, India's digital public infrastructure has surged, with initiatives like Aadhaar and Unified Payments Interface (UPI) anchoring public service delivery. UPI, particularly, streamlined payment modalities, uniting them in a secure mobile-based system. Mobile and internet connectivity have proliferated, reaching even remote villages. Currently over 572,000 villages out of 597,000 have mobile or network connectivity.[1]

During the pandemic, India leveraged digital health solutions for contactless medical care. Aarogya Setu and the COVID Vaccine Intelligence Network (CoWIN) emerged as Digital Public Goods, facilitating risk assessment and vaccine scheduling. Aarogya Setu evolved into a nationwide health platform, offering telehealth consultations, digital reports, prescriptions, and serving as an electronic medical record. This heightened digital innovation's importance, emphasising the need for a cohesive digital healthcare ecosystem. Launched on September 27, 2021, by the Prime Minister under the National Health Authority, the Ayushman Bharat Digital Mission (ABDM) swiftly established a robust framework for accessible, affordable, and equitable digital healthcare. It aims to foster an integrated digital health infrastructure, bridging gaps through digital highways to enhance service delivery efficiency, effectiveness, and transparency for diverse stakeholders, including alternative medicine.

Enhancing Service Delivery in Health Services Delivery

Some of the envisioned digital health interventions for addressing health service delivery reforms include:

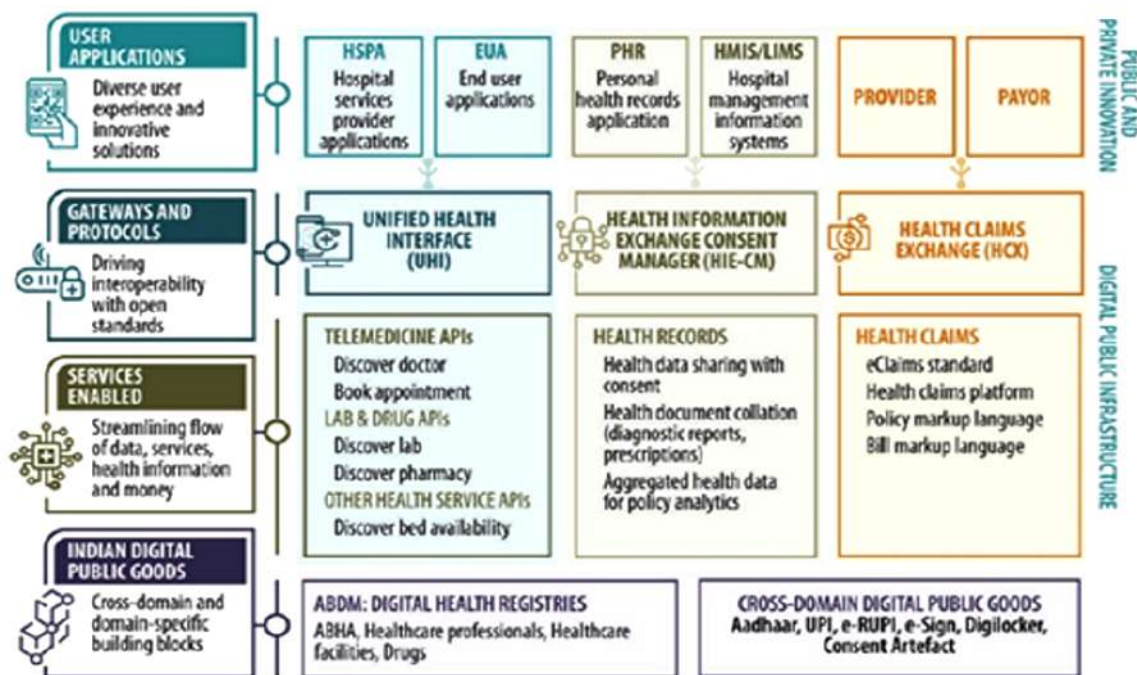
- » **Infrastructure:** Strengthening healthcare infrastructure and helping to reach the underserved particularly in rural areas.
- » **Access to Care:** Reducing disparities that exist in access to healthcare between urban and rural areas.
- » **Workforce:** Building a network of trained healthcare professionals across the country, and especially in rural areas. Creating a workforce with a focus on distribution, skill mix, and performance
- » **Affordability:** Improving the quality of public healthcare service delivery to all populations and the capacity to meet the demand
- » **Quality of Care:** Improving overall quality and differences in health care by improving adherence to treatment guidelines, regulating prescription of medication, and appropriate use of high-end diagnostics and procedures.

Despite the emerging innovations, digitising healthcare in India is tough. With over 5 million healthcare workers and 1.2 million facilities serving nearly 1.4 billion people, it's a huge task. Healthcare data is complex, with many different types of files and strict rules for keeping it safe. This includes things like X-rays, lab reports, prescriptions, and medical records, all of which are written in different ways. And because healthcare data is so personal, it's even more important to keep it secure. Therefore, the digitization of health care is more complex and challenging when compared to other sectors.

Technology Principles

The ABDM is a flexible platform built on an open Application Programming Interface (API), allowing various technologies to connect. It's designed to ensure all its components can easily share data, using open standards and protocols. Security and privacy are key priorities, with strict measures in place to protect against unauthorised access. Using a federated architecture, ABDM has six core building blocks centrally maintained, with other blocks operating independently but in a compatible manner. Data is stored close to where it's generated, with centralised registries ensuring accuracy and consistency, guided by robust data governance principles.

Figure 1: Technology Architecture of the Ayushman Digital Health mission



Source: NHA Annual Report 2021–2022_d4f624f7b5.pdf, page 86.

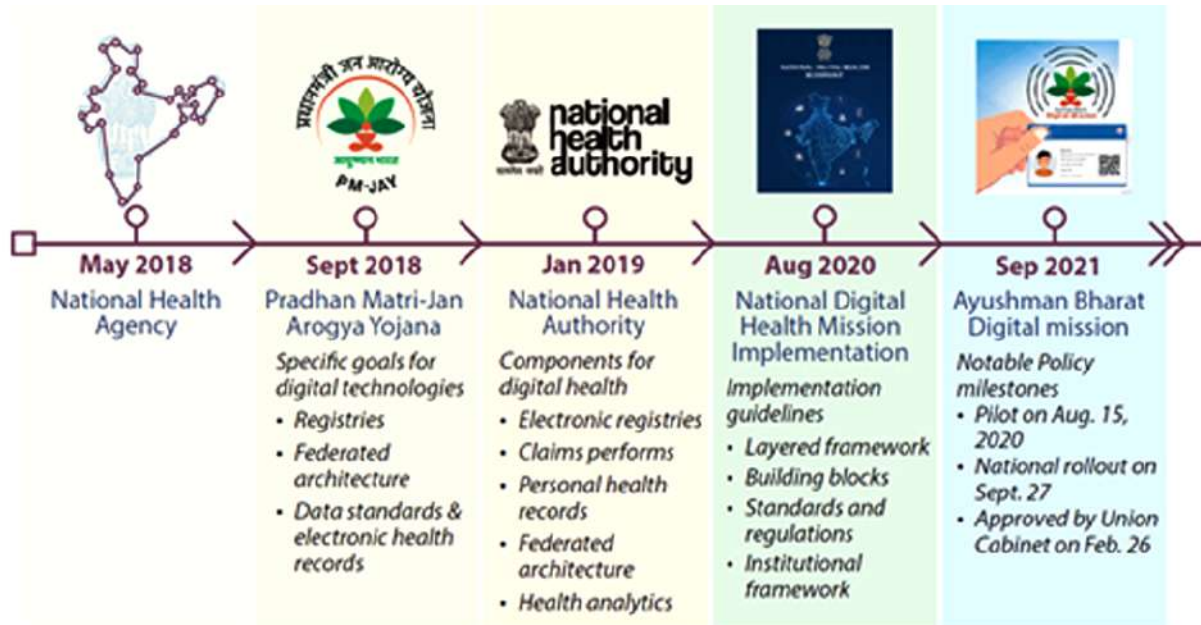
Figure 1 is a representation of the architecture of the Ayushman Bharat Digital Mission (ABDM) formerly known as the National Digital Health Mission (NDHM). The key objectives of these overarching technology principles are to ensure that:

- » **Patients** can securely store and access their medical records, such as prescriptions, diagnostic reports, and discharge summaries, and share them with health care providers for assured and appropriate treatment and follow-up. In addition, patients can access accurate information on both private and public health facilities, and service providers can access health services remotely through tele-consultation and e-pharmacy.
- » **Health care professionals** have full access to a patient's medical history, after obtaining informed consent, to ensure they can prescribe the right interventions. This integrated system supports a seamless continuum of care.
- » **Policy makers** and program managers have access to better quality macro and micro-level data, advanced analytics, which enables geographic and demography-based program monitoring and the use of preventive health care. This facilitates informed decision making to improve policy design, strengthen program implementation, and increase the accountability of health care providers.
- » **Researchers** can use aggregated data to study and evaluate the effectiveness of various programs and interventions, creating a feedback loop with policymakers and providers.

Major implementation milestones

The ABDM was launched in 2021 to accelerate the digitalization of health care across India by building digital highways to promote connectivity between disparate existing digital health systems, developed prior to COVID-19, and integrate existing digital health solutions to support the creation of interoperable platforms, bringing them all together under one comprehensive and holistic ecosystem. The key milestones that led to the launch of the ABDM are illustrated in Figure 2.

Figure 2: Key milestones leading to the launch of the Ayushman Bharat Digital Mission



Source: Adapted from *NHA_Annual_Report_2021_2022_d4f624f7b5.pdf* page 82.

Since its launch, the foundations for a robust public digital health infrastructure are being laid through core registry building blocks or modules of:

- » Individuals/citizens/patients (Ayushman Bharat Health Account (ABHA) registry)
- » Health care professionals (Health care Professionals Registry)
- » Health care facilities, including but not limited to hospitals, laboratories, and pharmacies (Health Facility Registry)

In these registries, each individual entity is assigned a Unique Identifier (UID), which is used across the entire ecosystem. This helps to establish linkages through APIs and enhances accessibility of information. The aim is to digitally empower individuals, patients, doctors, and health facilities to streamline the delivery of health care services and related information. Some of the key implementation building blocks include:

1. Creation of individual ABHA Numbers and health accounts. ABHA numbers consist of a unique 14-digit identification number created either using the individual's/patient's mobile number or Aadhar number. The ABHA enables citizens to compile a comprehensive medical history across various health care providers through PHR (Patient Health Record), thereby improving clinical decision-making. As of April 2023, nearly 595 million ABHA numbers, are generated, and 366 million patient health records are linked to the individuals' ABHA accounts (ABDM Dashboard)[2]

2. Creation of UIDs for service providers. Health facilities and professionals receive unique 14-digit UIDs, stored in the Health Facility Registry (HFR) and Health Professional Registry (HPR) respectively. The Health Facility Registry is “a single centralised repository of all the health facilities in the country” to facilitate storage and exchange of standardised data from both the public and private health facilities in the nation. The Health Professional Registry, also known as the Digi Doctor Platform or Doctors Directory, is a single, updated repository of all doctors enrolled in a nation with all the relevant details of doctors such as name, qualifications, specialisations, registration number with State medical councils, etc. The HFR and HPR help improve the identification/ discovery of healthcare facilities and allow health professionals to build an online presence and offer their services more effectively. In addition, a Drug Registry is also being designed to create a single, up-to-date, centralised repository of all approved drugs across all systems of medicine.
3. Expansion and integration of Telehealth Services “eSanjeevani” with ABDM. The program has telehealth services available, allowing patients in rural and remote areas to access digital medical consultations to solicit advice from specialists. The integration allows existing users of eSanjeevani to create an ABHA account, manage their existing health records, such as prescriptions and lab reports, and to share these with the doctors on eSanjeevani for better clinical decision-making and to support the continuum of care. As of April 2024, eSanjeevani services have reached over 234 million Indians (eSanjeevani website, 2024).[3]
4. Launch of Health Information Exchange and Consent Manager (HIE-CM): The HIE-CM platform is launched to facilitate the exchange of health information between health care providers and other stakeholders, such as patients, insurance companies and public health agencies. This system ensures that the identity of persons intending to share information is first verified, consent of the person/patient is taken and logged, and only after that are the health records shared.
5. Implementation of health analytics. The data collected through both the HMIS and EHRs is being analysed to identify patterns, trends, and opportunities for improvement in the healthcare delivery system.

As of April 2024, about 366 million digital health records have been linked to ABHA accounts of individuals and 596 million citizens have generated their unique ABHA allowing them to access and manage their digital health records anytime, anywhere. The digital linking of individual’s health records with ABHA is being carried out extensively across different health facilities of the country with the support of State Governments.

Enablers

1. Creation of innovative technologies and leveraging these to enhance quality of care and health service delivery. The ABDM employs various innovative technologies to improve healthcare delivery. These tools include a variety of: (i) Mobile Applications used for beneficiary identification, eligibility verification, and for accessing health services; (ii) Web Portals: used by healthcare providers, insurance companies, and government agencies to manage the program, including enrolment of beneficiaries, and monitoring of program’s performance; (iii) EHRs used by health care providers to store and manage the health information of beneficiaries, including their medical history, treatments received, and test results; (iv) information systems like HMIS streamline hospital management and patient care. (v) telehealth services enable video and tele-consultations, including solutions like ‘e-Sanjeevani’ (vi) Payment systems used to manage the payments to insurance companies, health care providers, and technology providers, for example Paytm and Unified Payment Interface (vii) ‘Scan and share’ uses a QR code-based token system to manage queues at hospital counters and streamline the outpatient registration process in large hospitals. In addition, there are several other user-friendly and clinical decision support systems that are under development and have the potential to overhaul the health care sector of India. Some of these include the Internet of Medical Things to digitise and connect all critical care units of a hospital such as the ICUs, operating rooms, ventilators, navigation systems and artificial intelligence via the Innovation Wing in the National Health Authority.

2. Establishment of a standardised digital healthcare ecosystem that supports stakeholders to connect in a trusted environment. The ABDM establishes a unified digital platform that fosters seamless interaction among stakeholders. Through the Unified Health Interface, various applications can integrate and function cohesively, enabling services like appointment booking, teleconsultations, and ambulance access. This interface, built on open network protocols, overcomes the challenge of disparate digital solutions by providing a trusted environment for stakeholders. It promotes innovation and ensures efficient, transparent delivery of care by digitising healthcare records at scale.
3. Development of policies, strategy, regulations, and standards for a unified digital health ecosystem. A series of policies, guidelines, regulations and standards across all levels and core components of the ABDM have been developed and operationalized/deployed and are regularly updated with a view to strengthening the digital health care infrastructure.
4. Public-private partnership is the nucleus of the ABDM. The private sector plays a pivotal role in the establishment of the ABDM's comprehensive and interoperable digital architecture. The private sector has joined hands with the National Health Authority and is involved in the following ways:

- » **Technology providers:** The private sector through “small start-ups” and “developers” is involved in the development and implementation of the technology platform, and other innovative applications like the mobile apps, and web portals to ensure seamless implementation and reduce the chances of fraud and abuse.
- » **Health care providers:** Private hospitals and clinics participate in the program to deliver digital healthcare services to beneficiaries. They adhere to standard treatment protocols and quality standards set by the National Health Authority (NHA), with efforts underway to enhance their capacity and improve care quality.
- » **Private insurance companies:** provide health insurance coverage, manage claims and the reimbursement process. They are selected through a bidding process and are paid a premium by the government for providing insurance coverage. Through a stakeholder engagement plan, the ABDM informs, communicates and problem solves with the private sector in an efficient and consultative manner.

Through stakeholder engagement initiatives, ABDM ensures efficient communication and collaboration with the private sector, addressing concerns and fostering a consultative approach to problem-solving.

Challenges

Some of the key challenges faced under the ABDM include:

- » **Uncertainty related to private sector engagement:** While ABDM guidelines have fostered collaboration with technology firms, expanding involvement to private hospitals and clinics remains uncertain. However, concerns persist regarding the expansion of private sector involvement beyond technology firms and startups and on how to enhance engagement with private sector hospitals, as well as the integration of small clinics and independent doctors into the ABDM ecosystem.
- » **Need to strengthen data privacy and cybersecurity across the ecosystem:** While the program ensures data privacy and cybersecurity, including a standardised 14-digit UID format across individuals, service providers, and health facilities, concerns persist among private sector service providers. Despite stringent laws prohibiting the storage of health data in government-owned clouds or servers, there's apprehension that health insurance companies could access patient information within the ecosystem to analyse disease trends and potentially increase premiums. More awareness is being made to educate providers on the patient consent mechanism and data storage policy.

- » **Need to address inequities:** In many hospitals, particularly small hospitals, there is lack of investment in computer hardware and digital storage space in health facilities, which are prerequisites for ABDM. At some remote places, internet connectivity issues also exist.
- » **Financial sustainability:** There is a perception that the ABDM is expensive, hence additional work is needed to secure public trust for more citizens to continue to enrol into the program allowing it to reach critical mass and offer better value for money.
- » **Need for incentives to enhance compliance:** According to a recent report titled 'Leapfrogging to a Digital Healthcare System (FICCI,2020)', it is estimated that there are over 500 software providers who provide HMIS software to hospitals and the adoption of EHR in India is less than 10% and is characterised by fragmentation and low digital penetration. Adopting ABDM requires doctors to write prescriptions on their laptops/ computers/ tablets, which is a huge behavioural change. Given the workload on them, incentivizing them to use computers and laptops is a big challenge that is being addressed through awareness campaigns. The same is true for other healthcare professionals like nurses, pharmacy etc. In such campaigns, efforts are being made to show the doctors and healthcare staff the advantages of ABDM: time saved due to pre-filled prescriptions, ability to quickly look at records chronologically rather than searching paper records. To address this issue a Digital Health Incentive scheme has been developed to provide financial incentives to health facilities, diagnostic laboratories, and Digital Solution companies to enhance adoption of ABDM.

Conclusion

Ayushman Bharat Digital Mission (ABDM) is a transformative initiative poised to revolutionise healthcare accessibility and delivery in India. Stemming from the lessons learned during the COVID-19 pandemic, the Indian government initiated Digital Public Goods (DPGs) to establish a comprehensive digital healthcare ecosystem. Leveraging existing digital platforms like Aadhaar and UPI, India has made significant strides in enhancing mobile and internet access, laying the groundwork for widespread adoption of digital health solutions. ABDM aims to bridge existing gaps in healthcare delivery by providing a robust digital infrastructure for seamless data exchange among various stakeholders. This initiative has led to improved service delivery, enhanced access to care, and increased workforce capacity, especially in rural areas. However, the journey toward a fully digitised healthcare system presents challenges, including private sector engagement, and infrastructure disparities. Clear guidelines for private sector involvement, stringent measures to safeguard patient data, and incentives to drive adoption are in progress for overcoming hurdles. Despite obstacles, ABDM remains a beacon of hope for achieving universal health coverage in India. Through embracing technology, fostering public-private partnerships, and implementing robust policy frameworks, ABDM has the potential to revolutionise healthcare delivery, empower patients, and enhance health outcomes nationwide. As India marches toward a digital healthcare future, ABDM stands as a testament to the transformative power of technology in building a healthier and more inclusive society.

[1] <https://openknowledge.worldbank.org/server/api/core/bitstreams/52d765df-cd6e-4603-9c5f-c034e965e850/content>

[2] <https://dashboard.abdm.gov.in/abdm/>

[3] <https://esanjeevani.mohfw.gov.in/#/>

Annexure-2: ABDM Presentation deck

ACCESS Health International

ABDM: Transforming Healthcare

ACCESS Health International
03 May 2024

ACCESS Health International

Unlocking Healthcare Benefits

The diagram illustrates the ABDM Digital Health Ecosystem as a multi-layered structure. At the top, 'Individuals and Patients' are connected to the ecosystem. Below them are 'ABDM Digital Health Ecosystem Partners' which include 'HMIS | EMR | LMIS | PHR | Consumer Health Apps | Doctor Apps'. The core of the ecosystem is 'ABHA', which contains 'Content Manager', 'UPI (Unified Public Interface)', and 'FCC (Health Care Gateway)'. At the bottom, 'Healthcare Professionals (Doctors, Nurses, Paramedics, Lab Technicians, etc.)' and 'Facilities (Hospitals, Labs, Pharmacies, etc.)' are connected to the ecosystem. The central logo is the 'Digital Health India' emblem.

Individuals and Patients

ABDM Digital Health Ecosystem Partners
HMIS | EMR | LMIS | PHR | Consumer Health Apps | Doctor Apps

ABHA
Content Manager
UPI (Unified Public Interface)
FCC (Health Care Gateway)

Healthcare Professionals (Doctors, Nurses, Paramedics, Lab Technicians, etc.)

Facilities (Hospitals, Labs, Pharmacies, etc.)

ABDM Digital Health Ecosystem

BUILDING BLOCKS OF A CONNECTED HEALTHCARE ECOSYSTEM

ABHA & PHR App: Single point of access to all health records, empowering patients to manage their health data. Empowers patients to take ownership of their health, providing a comprehensive view of health history.

Health Facility and Professional Registries: Facilitate accurate identification and verification of healthcare providers and facilities.

ABDM-enabled Solutions:

CMIS:

- Streamlines clinical workflows.
- Improves patient care coordination.
- Enables secure exchange of clinical data between healthcare providers.

HMIS (Hospital Management Information System):

- Manages hospital operations efficiently.
- Provides real-time data for decision-making.
- Improves patient safety and quality of care

LMIS

- Automates lab processes.
- Reduces errors and improves accuracy.
- Provides real-time access to lab results.

Pharmacy

- Access legitimate prescription
- Reduces errors and improves accuracy

ABHA PHR App & Health Registries

Patient Empowerment

- Empowers patients to own and manage their health records
- Provides easy access to personal health data
- Enables patients to participate in their healthcare

ABHA PHR App

- ABHA PHR App provides single access point for health records
- Empowers patients to manage their health data effectively
- Enables patients to take ownership of their health
- Provides comprehensive view of health history

Health Facility & Professional Registries

- HFR enables accurate identification of providers
- Ensure integrity and authenticity of healthcare institutions
- Verifies healthcare professionals and facilities

Key Components of ABDM

Consent Manager

- Empowers individuals to control access to their health records
- Facilitates secure linking of records with medical facilities and doctors
- Enhances privacy and control as patients can manage consent
- Gives patients greater autonomy over their personal health information

Health Information Exchange

- Facilitates secure and seamless exchange of health records
- Enables secure sharing of patient data among authorized users
- Enhances care coordination and improves patient outcomes
- Reduces medical errors through improved data sharing

Unified Health Interface & Digital Health Partner Ecosystem

- Promotes information exchange across healthcare applications
- Empowers access to diverse healthcare services via unified platform
- Digital Health Partner Ecosystem enables collaboration and information exchange
- Streamlines healthcare operations through software provider integration

ABDM-Enabled Solutions

Clinical Management Information System (CMIS)

- CMIS streamlines clinical workflows and improves care coordination
- Enables secure exchange of clinical data between providers
- Enhances efficiency and quality of healthcare delivery

Hospital Management Information System (HMIS)

- HMIS efficiently manages hospital operations
- Provides real-time data for informed decision-making
- Improves patient safety and quality of care

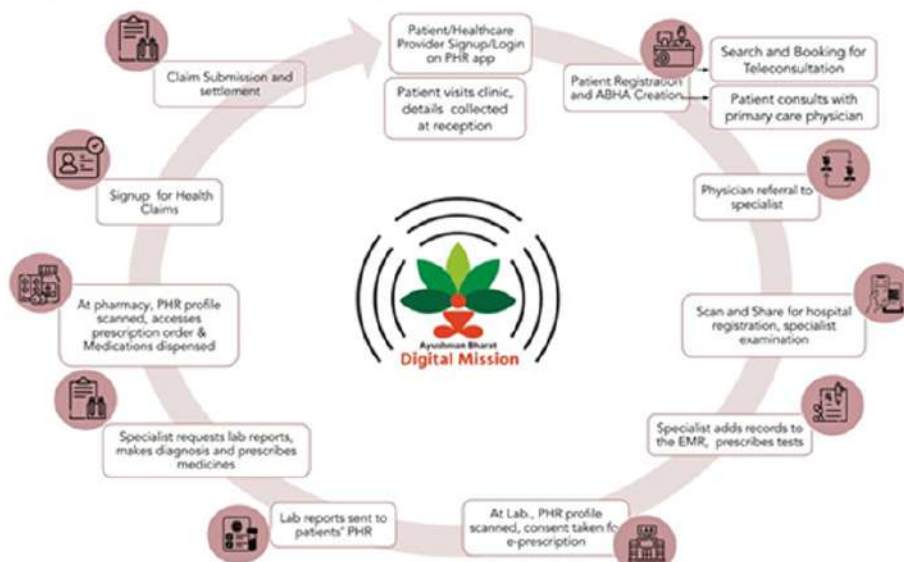
Laboratory Management Information System (LMIS) & Pharmacy Solutions

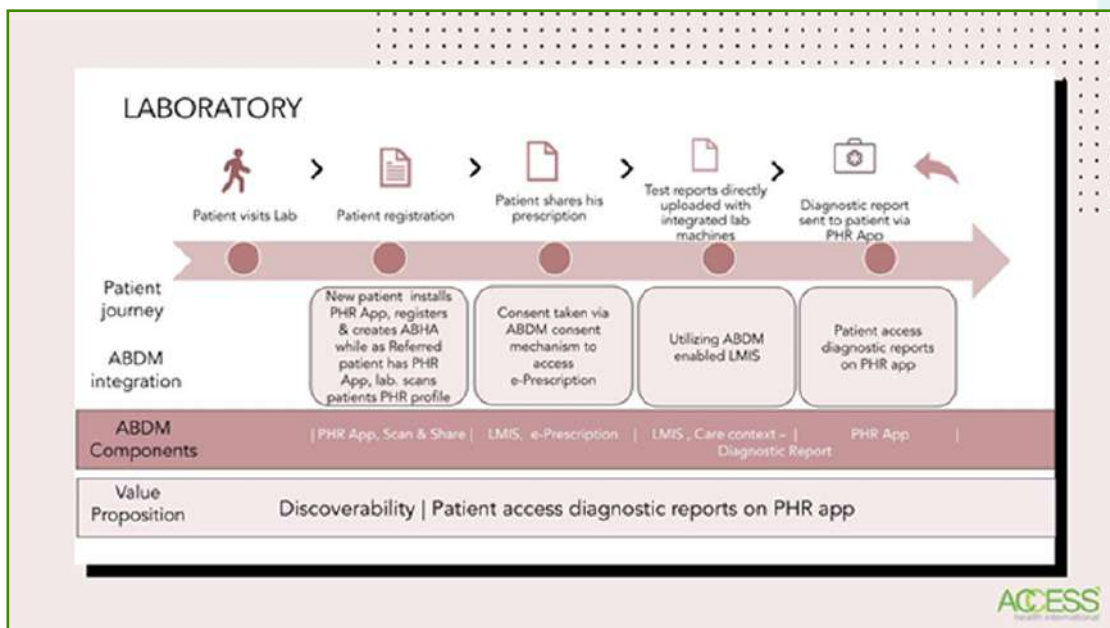
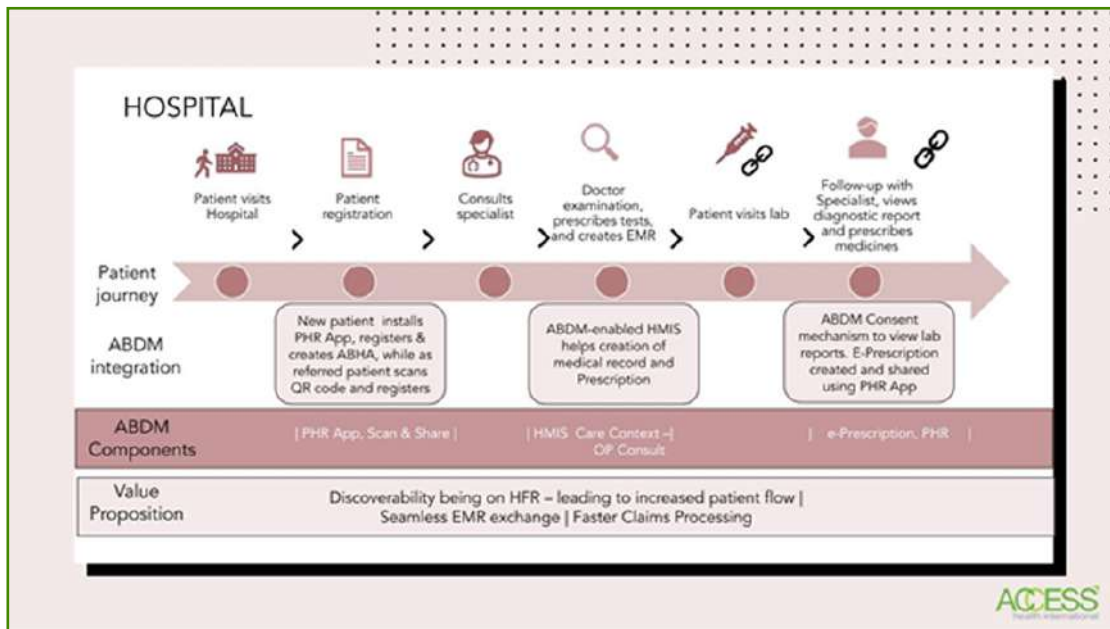
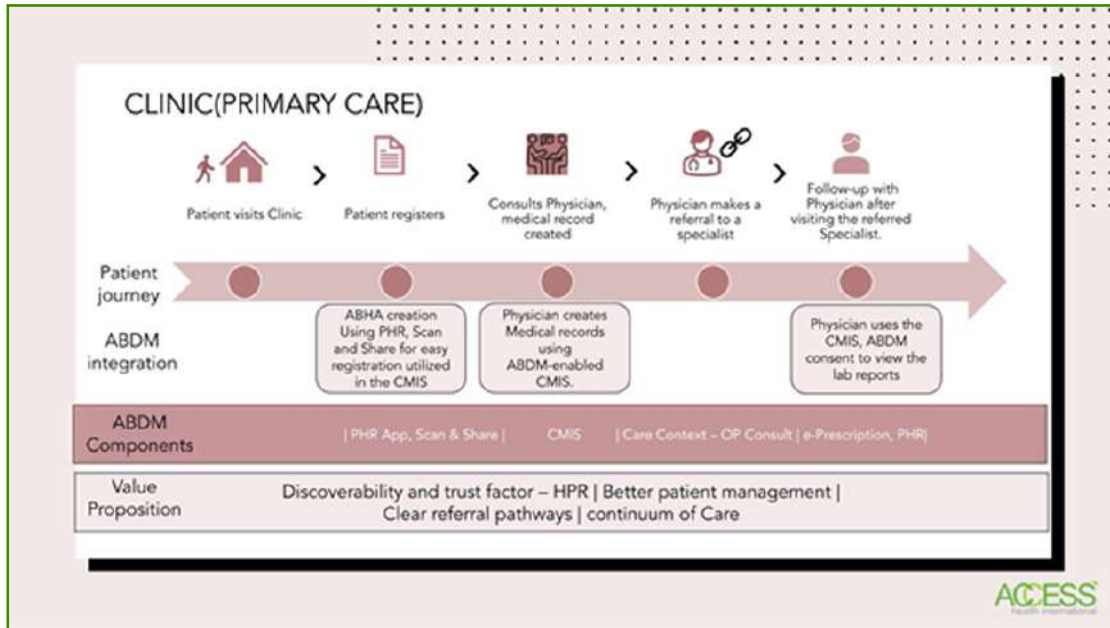
- LMIS automates lab processes and reduces errors
- Provides real-time access to lab results
- Pharmacy solution ensures legitimate prescriptions and reduces errors

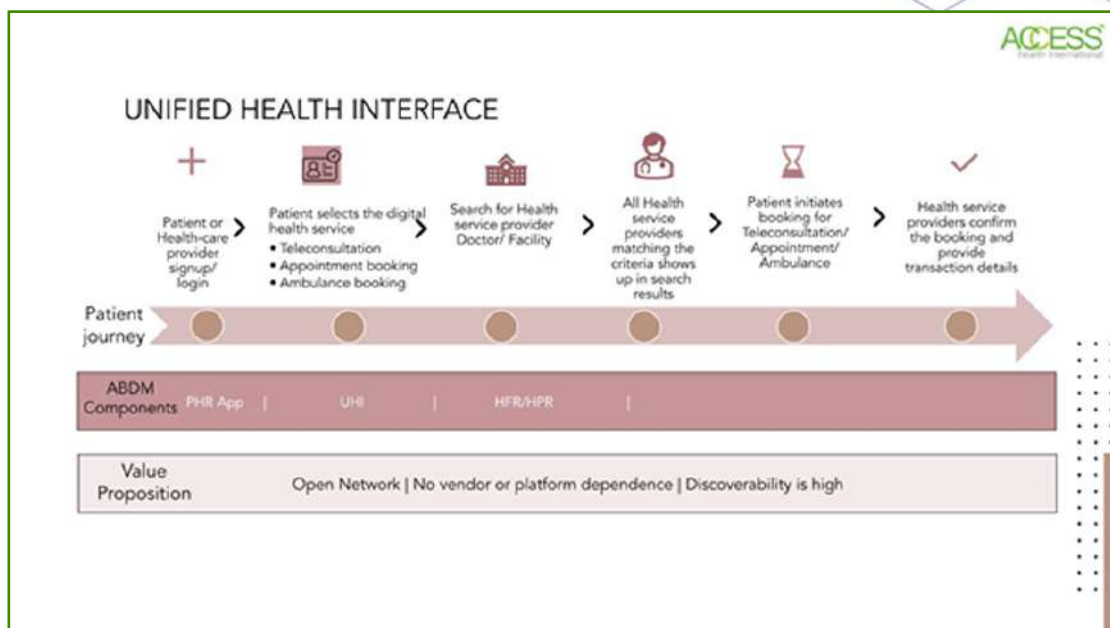
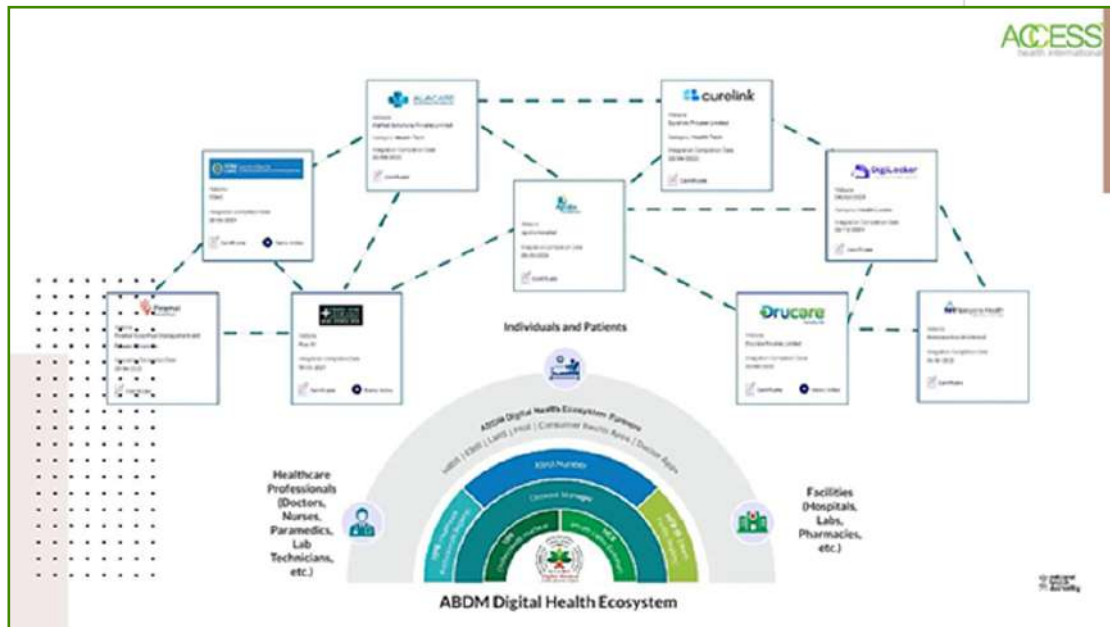
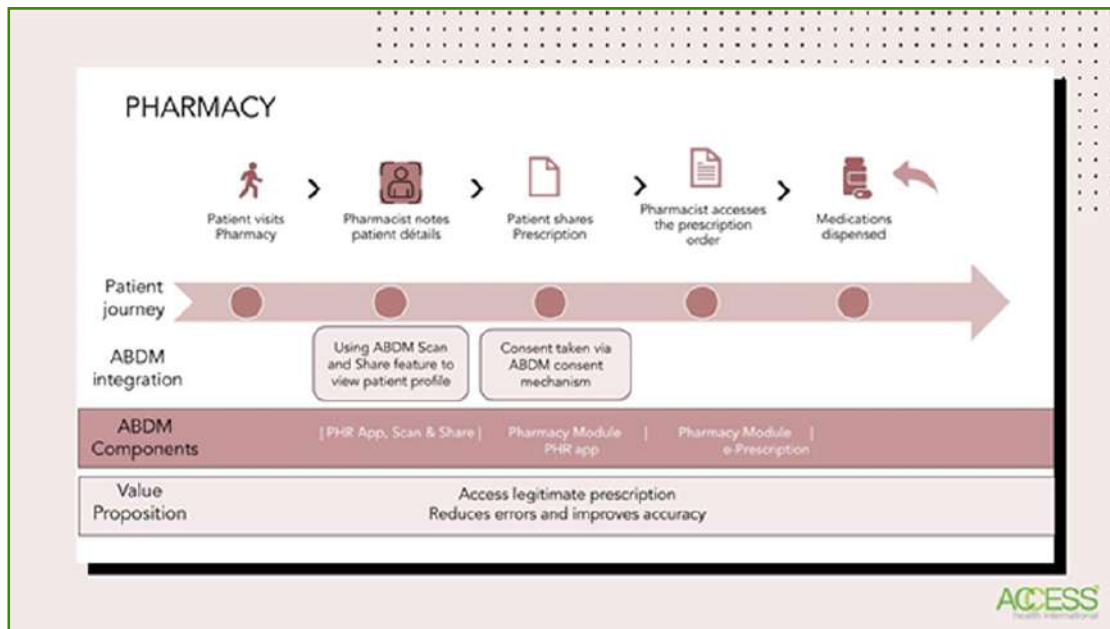
WORKFLOWS REIMAGINED

IN THE ABDM ECOSYSTEM

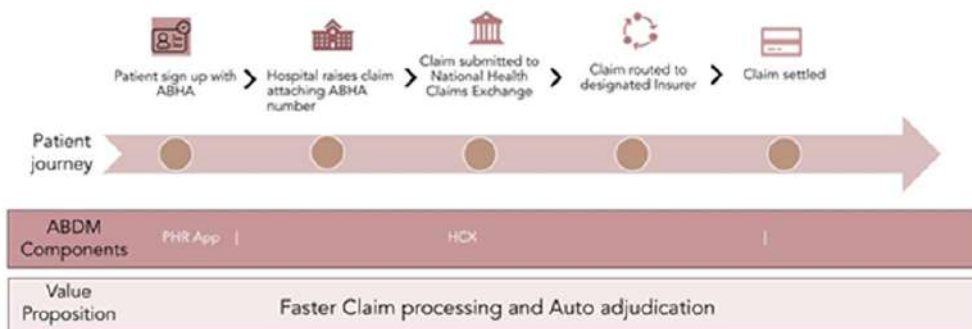
PATIENT JOURNEY IN ABDM ECOSYSTEM







HEALTH CLAIMS EXCHANGE



Benefits of Health Claims Exchange (HCX)

Seamless and Paperless Processing

HCX facilitates the seamless and paperless exchange of health records and claims, streamlining the entire process for all stakeholders involved.

Direct Payment and Easy Tracking

Valid claims are directly paid by insurance companies into hospital accounts, simplifying the tracking process and providing clarity to patients regarding their claim status.

Overall Improvement and Efficiency

HCX contributes to improving the efficiency of medical claim settlements, benefiting patients, hospitals, and insurance companies through digitalization and standardization.

Benefits to Patients

Accessibility and Affordability

- Patients can electronically link and share health records
- Book appointments and consult healthcare professionals
- Improves accessibility and affordability of healthcare services

Time and Cost Savings

- Saves patient's time and cost for registration, and appointments
- Enables access to healthcare services without physical records
- Enhances convenience and affordability of healthcare for patients

Improved Healthcare Management

- Empowers patients to manage long-term health records
- Eliminates OPD registration queues
- Ensures comprehensive and up-to-date health information

Benefits to Providers

Efficient Administrative Work

- Online Appointments
- Data is auto-summarized and shared electronically
- Reduces administrative load and maximizes resources.

Streamlined Processes

- Enables efficient utilization of manpower, HR, and other resources.

Business Growth

- Streamlines hospital registration with entities
- Simplifies insurance agency entanglement
- Drives hospital business growth

WAYS TO BECOME ABDM-COMPLIANT



Upgrade current solution to ABDM

Upgrade your current solution to an ABDM-compliant one with the help of your solution provider



Transition to ABDM Solution

Transitioning from legacy systems to new ABDM cloud solution. Organization looking to retire outdated and non-standardized systems.

[ABDM Partner Offers](#)



ABDM Wrapper

ABDM wrapper as a layer on existing system for integration. Require access to code and database to make changes. Needs vendor support to provide the access.

GETTING FUTURE READY



India is revolutionizing healthcare towards a citizen-centric model



Enhancing Public Health through Digital Transformation



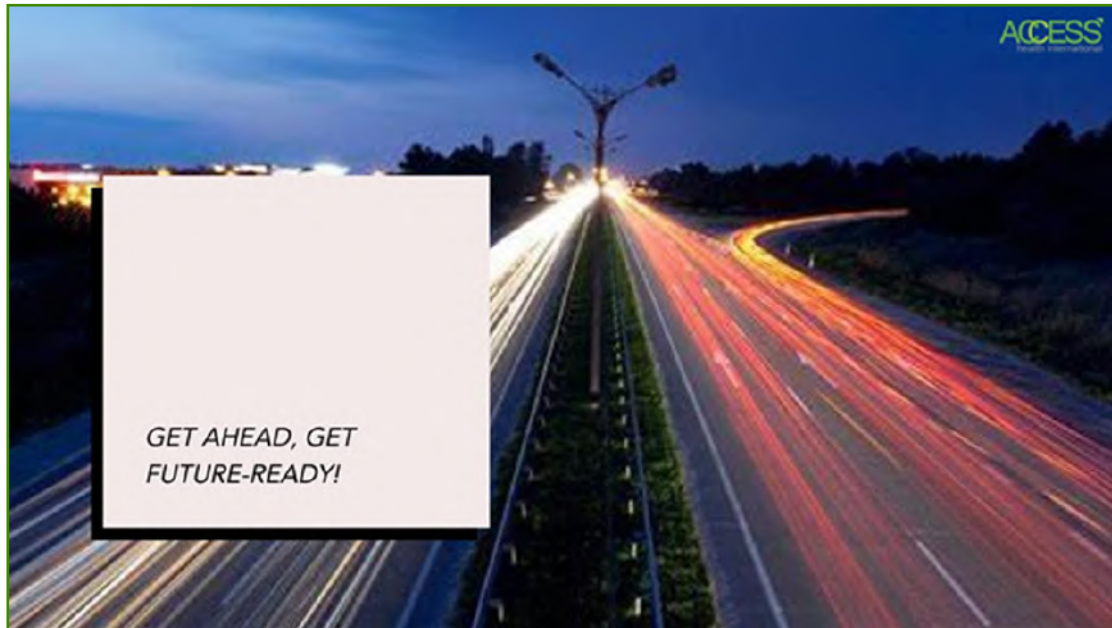
ABDM Microsites- Building a Macro-level Digital Health Ecosystem in India



SIDH (System Integrator Digital Health) program - boost EMR (Electronic Medical Record) adoption across India.



ABDM redefines healthcare accessibility and record management across India.



Annexure-3: Glimpses of the Roundtable





The Organizing Team

S.No	Organisation Name	Person Name & Designation
01	RICH	Mr. Ajit Rangnekar Director General
02	RICH	Ms. Rashmi Pimpale CEO
03	RICH	Dr. Sushmitha Sundar Head, Life Sciences
04	RICH	Mr. Aravind Kumar Project Manager, Life Sciences
05	RICH	Ms. Aboli Ingle Business Associate
06	Access Health International	Dr. Girish Bommakanti Director Operations & Growth (SA, SEA and MENA Region)
07	Access Health International	Dr. Anju Agarwal Technical Head, Insurance & Innovation
08	Access Health International	Ms. Komal Malhotra Program Manager, Digital Health
09	Access Health International	Ms. Supriya Prabhakar Sr. Digital Health Expert



RICH
Research and Innovation
Circle of Hyderabad

Research and Innovation Circle of Hyderabad

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