# Mutual Learning Series on Digital Health Ecosystems

## Preparing for Inclusive, Accountable and Integrated digital health models beyond the pandemic

# MUTUAL LEARNING SERIES ON DIGITAL HEALTH ECOSYSTEMS

## Preparing for Inclusive, Accountable and Integrated digital health models beyond the pandemic

भारतीय जन स्वास्थ्य प्रतिष्ठान
PUBLIC HEALTH FOUNDATION of INDIA

institute of development studies

SUSTAINABLE HEALTH INNOVATIONS

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# Introduction

The COVID-19 pandemic has revealed fault lines and capacity gaps in many health systems. It has also led to an acceleration in the incorporation of technological and organisational innovations. The disruption brought on by the pandemic has reduced the resistance by public and private sectors to experimentation and governments have been willing to try new things without being certain of the outcome. This has enabled the introduction of a variety of technological innovations.

These rapid technological changes are influencing the organisation of health services and they are leading to the establishment of new kinds of partnerships between governments and digital actors.[1] These developments present opportunities to accelerate progress toward universal health coverage, but also new challenges that require innovative governance responses. This was the conclusion of a recent Lancet and Financial Times commission on digital health.[2]

This paper reports on three online panel discussions that were organised by the Public Health Foundation of India, the Institute of Development Studies Sussex and the Centre for Sustainable Health Innovations in late 2021 and early 2022, to identify lessons learned from India's response to COVID-19 for future strategies for strengthening health services in mixed health systems. They were organised as part of Digital Health Week, funded and facilitated by Transform Health, a global coalition of organisations, individuals and institutions committed to achieving universal health coverage through the equitable use of digital technologies.

The panels enabled people working at the cutting edge of digital health in India and in other countries to share their reflections on the recent experience of very rapid change. They included senior government officials from state and national levels, leaders in the private sector and academic researchers. They all agreed that digital technologies have the potential to contribute to big improvements in access to health services but that this outcome was not guaranteed. They also agreed that there is no international blueprint for the management of digital health transformation and that governments, the private sector, regulators, citizen groups and political leaders will need to be willing to experiment and learn in order to ensure that digital health transformations contribute to progress towards universal health coverage.

# Background

## Development of digital health in India

India has a thriving health innovation ecosystem[3] and the private sector has brought a wide variety of low-cost technologies to the market.[4] Some prominent examples of digital health services in India's health market include diagnostics, primary and geriatric care, telemedicine, precision medicine, electronic records, self-monitoring applications and access platforms, electronic health records, mobile health, aggregators and e-pharmacies.

Central and state governments are exploring technological solutions for improving health system performance and government-funded accelerators support several technology start-ups.[5] Low-cost smartphones, affordable data and telecom bandwidth have further enabled medical expertise reach underserved rural markets through telemedicine and tele-consulting programs, delivered over mobile phones.

COVID-19 revealed inadequacies in India's health system. It also triggered an acceleration of the introduction of digital services to address health system gaps.[6] These services included government and private sector partnership projects such as a national telemedicine platform called Swasth[7], the government-led CoWIN[8] vaccine registration and tracing registry and a number of private sector projects[9] to meet the needs of people without smartphones and internet. The pandemic has highlighted the potential importance of telehealth and digital tools; it has also brought into sharp relief the need for new strategies to ensure that the services are effective and affordable, access is equitable and issues of privacy and digital accountability are respected.[10]

## Digital health policy in India

The evolution of digital health policy since the mid-2010s (Figure 1) created a context that supported the rapid response to COVID-19. In 2015 the government launched the Digital India campaign aimed at increasing access to government services by improving digital infrastructure, including in rural areas. The campaign focused on the creation of digital infrastructure, digital service delivery and promotion of digital literacy.[11]

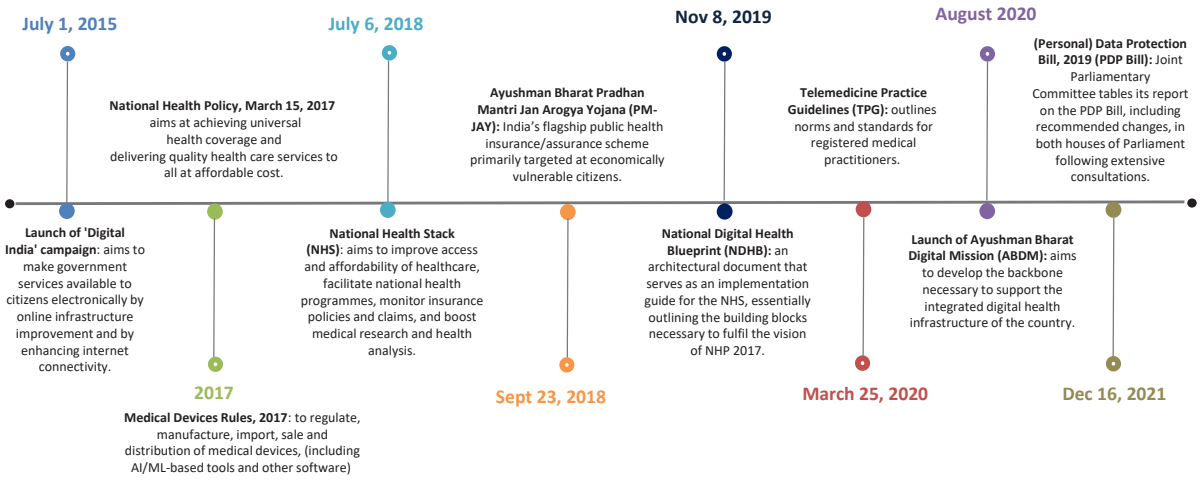
The National Health Policy (NHP) of 2017 emphasised improving access and quality, and reducing cost through the application of digital tools. It outlined the need for a national digital health ecosystem to regulate, develop and deploy digital health across a continuum of care.[12] During 2018-19 the National Health Authority implemented its flagship public health insurance/assurance scheme called Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PM-JAY), which, amongst other things, provides 100 million poor and vulnerable families with health care insurance coverage for up to Rs. 500,000 each.[13]

In 2018 the National Institute for Transforming India (NITI) Aayog, the government's apex public policy think tank, laid out a vision for a national digital framework; the National Health Stack.[14] This is intended to be a nationally shared digital infrastructure, usable at central and state levels by both public and private sectors. This vision was further developed in the National Digital Health Blueprint[15] published in 2019, which proposed a federated architecture and a unique health identifier (UHID) for everyone.

The National Digital Health Mission (NDHM), also called the Ayushman Bharat Digital Mission (ABDM), was launched in August 2020.[16] Its aim is to develop the digital architecture necessary to support an integrated digital health infrastructure, including a unique health ID for every citizen, a registry of healthcare professionals, a registry of health care facilities and a system of personal health records. The NDHM is encouraging domestic health technology providers to link to this infrastructure through electronic medical records and artificial intelligence (AI) to extract insights from patient data to deliver better care. Following a pilot phase in six Union Territories, the Mission is expanding to states across the country. Nationwide rollout of the Mission is expected to begin in April 2022.

### Figure 1. Digital Heath Policy Timeline

**Figure. 1 Timeline of Digital Health Policy in India**



The government and the private sector face many challenges in translating this policy vision into effective institutional arrangements on the ground. The rapid development of new diagnostic and treatment technologies are creating major opportunities but also pose challenges to the creation of sustainable approaches to incorporating them at scale. These include privacy and right of access to health records and potential conflicts of interest if suppliers of drugs or diagnostic equipment have a financial stake in digital health companies. In many LMIC countries, including India, the legal and regulatory landscape that governs digital health is fragmented with weak legal scholarship.[17] This is largely because the scope of digital health is vast and covers various business models, which inherently makes it difficult to regulate as a whole. Policymakers often struggle to adapt technology to their domestic health systems, while international bodies are only just starting to develop the principles, practices, and tools to help late adaptors and developing nations catch up.

In addition to regulatory issues another major challenge in digital health integration is that health is a subject of state in India. States play a vital role in shaping the delivery of health services and are responsible for on-the-ground implementation while policy directions are often centrally directed. Individual states are legally entitled to vary from central health directives, but are struggling to develop digital and regulatory frameworks that they can apply to prioritise and integrate digital health partners at local levels and contexts.[18] State governments also identified the need for guidance and evidence on managing health information from various digital platforms currently working in silos due to limited interoperability, lack of trained work force and lack of governance frameworks for digital health.[19, 20] Furthermore, there is increasing evidence on the need for considered use of digital solutions in rural versus urban settings in India with relation to acceptability, feasibility and effectiveness.[21, 22, 23]

The mobilisation of the digital health ecosystem in response to COVID-19 provided a major opportunity to identify some of these challenges and begin to explore strategies for addressing them. The mutual learning panels were organised to contribute to discussion and debate about the next steps in building effective partnerships for improving access to health services on a sustainable basis. They were organised as three dialogues, which explored different aspects of the digital health system: the design of interventions with issues of equity and inclusiveness in mind; the creation of an appropriate regulatory framework and the challenge of incorporating digital technologies into mixed public/private health systems at scale.

## Mutual learning panels on digital health

### Dialogue 1 - Inclusivity in design and governance of digital health in India

Although there is an international consensus on the potential for increasing access to health care through the incorporation of digital technologies, there is a concern that some population groups may be left behind due to the so-called "digital divide".[24] This has led to a growing interest in the design of interventions aimed at reducing inequalities linked to broader efforts to avoid digital exclusion. The National Digital Inclusion Alliance (NDIA) defines digital inclusion as the capacity to ensure that all individuals and communities, including the most disadvantaged, have the ability to access and use digital tools, in terms of connectivity, digital literacy or training and digital content or application that enables and encourages self-sufficiency, participation and collaboration.[25] The participants in this panel were asked to reflect on the extent to which digital health interventions that were introduced at scale in response to COVID-19 addressed the needs of vulnerable and underserved populations and the lessons that have been learned for future strategies for the management of digital health transformation.
The panelists included a government official, leaders of two prominent technology innovations and an academic researcher:

1. **Ms. Sujata Saunik IAS**, the Additional Chief Secretary of the Department of General Administration in the Department of Health of the Government of Maharashtra

2. **Ms. Shipra Dawar**, the Founder and CEO of ePsyClinic, a remote consultation service for people with mental health problems, which greatly expanded its services to reach rural areas in the response to COVID-19
3. **Mr. Sanjiv Chhabria**, a volunteer at Project StepOne, a volunteer driven model offering home-based primary health care and COVID-19 management, at scale
4. **Dr. Sarthak Gaurav**, an Assistant Professor at the Shailesh J. Mehta School of Management, IIT Bombay, whose research focus has been on issues of equity of access to health care

## Key Learnings

The panelists agreed that the experiences gained during the response to COVID-19 were important and demonstrated the potential contribution of digital technologies to progress towards universal health coverage. Ms. Saunik stressed the need to build on these experiences in formulating strategies for health system strengthening during and after the pandemic. Dr. Gaurav called for a focus on priority health needs and on strategies for reducing inequalities. The representatives of both technology companies stated that their interventions were intended to provide equitable access. However, they acknowledged that they were designed hurriedly during an emergency and that, in the future, they would need more sustained engagement with communities to develop more inclusive approaches.

> ***"The moment you are thinking inclusive mental healthcare, you have to think about people who don't have smartphones, who don't have access to internet, who are probably sitting in rural India, who are providing access to healthcare as ASHA workers and workers in the very farthest corners of the country. ePsyClinic's model and vision is to bridge mental healthcare capacity gaps."***
>
> **- Ms. Shipra Dawar**

> ***"Project StepOne was established during the pandemic in March 2020 with the aim to blend technology and human resources to provide healthcare access to populations of all ages, locations and socioeconomic status."....."Our vision itself is one of inclusivity to basically say that we want to create a world where nobody's deprived of healthcare."***
>
> **- Mr. Sanjiv Chhabria**

There was a discussion about the need to bridge the different mindsets and perspectives of technology innovators, government health officials, local civil society actors and health professionals. The panelists agreed that mechanisms are needed to encourage more effective cooperation. They emphasised that effective interventions will require new forms of collaboration between public and private sectors.

One area of concern was the need to build consensus on key aspects of health equity–informed digital health solutions. There was agreement that solutions that don't consider health equity in the development stages can lead to a widening of equity gaps. They called for the development of an equity framework to guide the development and implementation of digital health policies. They particularly stressed the need to involve patients in the development of this kind of framework.

There was a discussion of practical strategies for building on the lessons learned during the pandemic. The panelists proposed that the government continue to encourage start-ups and emphasised the need to ensure that they take into account the need for coherence between different interventions and government systems. These initiatives need to be complemented by efforts to build digital literacy in poor and excluded communities to reduce the risk of exacerbating inequalities because of the digital divide.

> *"As patients have generally been satisfied with remote healthcare services without face-to-face encounters with their doctors, everyone has found value in this and we need to build on these opportunities that have now emerged."…..."As COVID-19 persists, contactless services using advanced technologies are likely to infiltrate people's daily lives and it is expected that the current growth trajectory of telemedicine will continue in the post pandemic era. The government encourages start-ups to continue to innovate and to use existing systems such as Aadhar, KYC for service provision as opposed to creating parallel data."*
>
> **- Ms. Sujata Saunik**

> *"So what we understand from our conceptualisation of equity in the health perspective, particularly those differences in health outcomes that are unnecessary, that are avoidable, that are unfair and that are unjust. These are the inequities that need to be addressed."….."There are certain general frameworks for health equity and we believe there is scope for us to really discuss and have a dialogue over a period of time to arrive at a set of guidelines as well as a framework for digital health."*
>
> **- Dr. Sarthak Gaurav**

The experience of the response to COVID-19 highlighted the limitations of a digital service that is not linked to providers of health care based in the community. This is especially the case for people with limited access to phones and the internet and for those who need more advanced or specialised health care. The technology start-ups raised the concern that it may be difficult to maintain the kind of engagement with communities that occurred during a crisis in the long term.

All four panelists referred to the speed of change since the outbreak of COVID-19 and the need to learn what works well in terms of the design of interventions and the creation of a partnership between technology companies and government health service. The lack of systematic evidence makes it difficult for the government to decide on the most appropriate innovations and on strategies for long-term engagement with developers of these innovations. The technology start-ups are making efforts to put in place mechanisms for gathering evidence on impact and they indicated a willingness to collaborate with independent research institutes in generating objective evidence to enable them to improve their services and to contribute to efforts to develop good practice guidelines.

There was agreement that the incorporation of digital innovations into system-wide strategies for making progress towards universal health coverage will require new kinds of partnerships between government and technology actors. Ms. Saunik referred to the Maharashtra State Innovation Society as an example of how governments can encourage innovation by collaborating with a variety of start-ups. At present the state supports 14,000 start-ups through 17 incubation centres. One example of how this kind of structure has facilitated the emergency response to COVID-19 is the partnership between Maharashtra State and the ACT[26] platform that several large private companies established to fund digital health entrepreneurs to develop solutions for pressing health service problems during the COVID-19 crisis. With a budget of around $15 million, it has supported a variety of interventions, including the two represented by the panelists. The Maharashtra Department of Health has found a number of the interventions to be very useful, but it faces big challenges in assessing the longer-term potential for working with this kind of platform in identify promising innovations and integrating them into its strategies for health system strengthening.

## Dialogue 2 - Accountability- Regulatory framework for driving safe digital healthcare adoption in India

There is a growing recognition that the health regulatory systems in many countries need to adapt to support a highly innovative health technology sector. Digital solutions have the potential for improving the quality of health care with greater capacity for precise diagnosis and use of evidence-based treatment strategies. However, for digital health solutions to flourish, trust is imperative. This will come from having robust laws and reliable mechanisms to redress grievances. This will include laws that define the rights and liabilities of stakeholders, establish minimum standards, provide proper instructions to doctors and patients, and create a system for data protection and privacy. Existing frameworks governing digital health tend to be fragmented and out-of-date.

This session brought together a policy-maker, a hospital manager and a digital health innovator with a technology lawyer to explore how India's legal and regulatory framework can be strengthened to protect the interests of the population in this context of rapid change. They included:

1. ***Dr. Madan Gopal***, a Senior Consultant, Health at the National Institute for Transforming India (NITI Aayog), the apex public policy think tank of the Government of India
2. ***Dr. Uma Nambiar,*** MD at Zeeden Life Sciences and Chairperson at Digital Health India Association (DHIA)
3. ***Mr. Sridhar Pillalamarri,*** the CEO and Co-founder at Ubiqare Health, a technology-based healthcare start-up focused on post-acute and chronic patients
4. ***Ms. Sreenidhi Srinivasan,*** (Moderator) a Principal Associate with Ikigai Law, a law firm with a focus on technology and innovation-led businesses

### Key learnings

The discussion began with a presentation of recent developments in India's regulatory system: the 2017 Medical Devices Rules[27], the 2019 Personal Data Protection Bill[28] and the 2020 Telemedicine Practice Guidelines[29]. The panelists agreed that reforms of the regulatory system are essential to ensure that digital transformation of health systems leads to improved access to effective, affordable services for all. Dr. Gopal presented the government's vision for digital health care and upcoming policy priorities. He emphasised the need to adapt the regulatory system to new needs, but to also keep in mind the limited capacity of government to enforce top-down regulations. Dr. Nambiar highlighted the need to agree on quality standards for the incorporation of digital technology in the services of hospitals and other facilities. She referred to the lack of globally agreed standards and argued that India, with its highly innovative technology sector, is well-placed to play a leading role in the creation of appropriate institutions to manage digital health transformation. Mr. Pillalamarri focused on lessons learned by technology innovators for ensuring the quality of services they provide and the need for effective collaboration between government and technology companies to ensure that quality standards are met.

> ***"The Telemedicine Practice Guidelines was designed in response to the COVID-19 pandemic."....."Its limitations are recognised and the guidelines will evolve with needs....favouring a bottom-up approach that addresses the nuances of India's healthcare system and a limited capacity for regulation requires that providers self-regulate."***
>
> **- Dr. Madan Gopal**

The response to the COVID-19 emergency took place in a context of a highly fragmented health and digital health ecosystem. The 2020 Telemedicine Practice Guidelines legitimated the practice of telemedicine and offered guidance on the nature of care that may be provided and the manner of providing such care. The panelists agreed that the current version is very basic and has little to say on issues such as consent management, prescription of drugs, maintenance of patient records and applicability of state-level provider registrations. They agreed on the need for future guidelines to clearly outline the roles and responsibilities of various actors involved in patient care, including

technology partners. They also need to provide clarity on data management, specifically where the responsibility lies in case of security breaches. However, these guidelines need to be appropriate for different contexts. One example is the situation in villages, where it may be difficult to enforce privacy of medical consultations. The rules need to protect people from the most serious harms but "*We cannot simply copy privacy laws that are enacted in the West*".

> ***"While the Telemedicine Practice Guidelines served as a crisis management tool, its current version is fairly rudimentary and fails to provide granular detail on several issues. This lack of clarity has a potential for misuse. Guidelines and laws governing digital health should be enabling and need to consider the Indian context."***
>
> **- Dr. Uma Nambiar**

The panelists acknowledged the limited capacity of government to enforce regulations in a top-down manner. Simply passing more laws will not necessarily lead to big changes in the behaviour of digital health providers. New approaches are needed to ensure that services adhere to the vision of a coherent digital health ecosystem and a health sector that contributes to the achievement of universal health coverage. There was a discussion of the potential contribution of self-regulation. This would involve a commitment by the digital health sector to adhere to agreed norms and standards and some form of performance monitoring by business and professional associations. There was also a discussion of the need to involve patients and their representatives in the development of these standards and monitoring adherence to them.

> ***"Digitisation of healthcare involves replacing the physical infrastructure with a virtual one. While policies and guidelines are needed to make the process efficient, these must be drafted with a focus on providing a continuum of care and improving patient outcomes."***
>
> **- Mr. Sridhar Pillalamarri**

There was also a discussion of the potential that digitisation of health care presents for more effective provision of continuity of care and the "*ability [of these technologies] to improve the efficiencies of the system*". This involves the use of data not previously available to health service managers or regulators and raises important questions about the kinds of information that digital health providers should make available to regulators.

Another area of concern is the rapid rate of change in technologies and their application to the provision of health services. The regulatory arrangements will need to adapt to these changes. This will require a learning approach in which new types of regulation are tested and their impact assessed. The research community can generate evidence to contribute to this process.

## Dialogue 3 - Scale and integration in digital health ecosystems

The success of digital innovations will ultimately depend on their incorporation by the health system, the capacity of governments to manage this change and the creation of sustainable business models. This is especially the case with the rapid development of new diagnostic and treatment technologies, which are creating major opportunities but pose challenges to the creation of sustainable approaches to incorporating them at scale. In India, multiple mHealth innovations are run as research projects, pilots, and government-led projects for the delivery of specific services, such as maternal and child health care.

The integration of diverse digital innovations into health systems remains a big challenge. This was the topic of the third digital dialogue. It focused on the role of government in facilitating a process of digital transformation that supports increasing access to effective and affordable health services by all social groups. This will involve new kinds of engagement between government and a variety of private, non-state organisations, including small and large digital technology companies.

The panelists included a policy expert, a senior advisor to governments in Georgia and other countries in Eastern Europe, and a health system researcher with experience in a large number of countries:

1. ***Dr. Dinesh Arora IAS,*** a public health and policy expert, the former Director of NHM Kerala, Director at NITI Aayog (Health) and former Deputy CEO of the National Health Authority/ Ayushman Bharat, Government of India
2. ***Dr. George Gotsadze***, the Founder and President of Curatio International Foundation, Republic of Georgia with strong expertise in health financing and health systems strengthening
3. ***Dr. Birger Forsberg***, an Associate Professor within the Department of Global Public Health at Karolinska Institutet, Sweden and a Senior Physician at the Stockholm County Council

## Key learnings

All three panelists agreed that it is important to recognise the context of mixed health systems in which both public and private sectors play important roles in service delivery, coordination and quality assurance. The rapid rise in the importance of digital health has meant that information technology companies are becoming increasingly involved in the health sector. This raises big challenges in the management of the transformation towards a coherent system with the capacity to meet the needs of all, including the poor and socially excluded.

> ***"Covid has definitely showed us across the globe that there is a shift to self-care and this change and disruption happened very quickly. We also became more used to remote consultations and many countries met with this challenge without having proper regulations in place. In the past there were clear lines of delineation for governments to regulate including clear target entities to regulate. However, digital transformation has blurred those lines and therefore warrants different approaches to regulation."....."Establishing laws and regulations for data protection to assure individual data is well protected and individual freedoms are guaranteed will be a critical domain.***
>
> **- Dr. George Gotsadze**

There was a discussion on the tension between the incentives that individual firms face to secure and protect market share and the need to establish a coherent system that provides cost-effective care to all. There was agreement on the need for government to lead the creation of the backbone of a digital health system including ensuring basic foundational structures like good network connectivity. This will require deep dialogue between the government and the private sector and possibly the creation of incentives to ensure that the public and private sectors participate in a common platform, as outlined in government policy documents.

Public health insurance schemes like Ayushman Bharat could provide an important mechanism for the provision of incentives for private engagement with a common platform. The experience of the Ayushman Bharat Digital Mission indicates the importance of continued dialogue with all stakeholders including public and private hospitals and drug manufacturers, and experimenting with arrangements appropriate to the Indian context.

> ***"Something we do not talk about is the "grey divide" and this will be equally challenging because this is the segment (seniors) that requires maximum healthcare. Seniors will therefore require some hand holding to learn digital techniques."***
>
> ***"..... So if a patient goes to a big hospital and then goes down south to another hospital, he loses his record. Who is going to build the backbone for this? The government will need to lead facilitation and build the backbone for a digital health system including ensuring basic foundational structures like good internet connectivity and a common platform like ABDM. The scale and equity angle will come only with the government participation."***
>
> **- Dr. Dinesh Arora**

There is a need for systematic evidence on what works well. This led to a discussion about access to data and its use. On the one hand the digitisation of health systems will generate a large body of data. However, in order to utilise these data to build a body of evidence on factors leading to good performance, independent researchers will need to be given access to them. This will have to be supported by a policy on data privacy and security to build trust in the population. Systems have to be designed where ownership rights are clearly defined; patients own their data and decide which facilities can access their data or not. Peer learning is warranted in order to understand and clearly define what the provisions of data protection and ownership rights should be in the legislation.

The discussion concluded with a consideration of the need for standards and norms on appropriate evidence-based interventions. There was agreement that it may not be appropriate to import standards developed in high income economies. However, it may not be efficient for every country to develop its own standards. One option that was put forward was for WHO to take a lead in developing these standards.

## Recommendations arising from the dialogues

Digital technologies have demonstrated a potential to leapfrog health system fault-lines. They have made it possible to provide access to services despite the disruption associated with the pandemic. However, there is a lot to learn about how governments and digital health companies can work together to provide benefits to the population. Although there is wide agreement on the vision of a future digitally enabled health system, the direction of change and the services available on the ground will be strongly influenced by how the process is managed. That is why governments and the health technology sector will need to develop new skills to manage the next steps in this health system transition. All panelists unanimously said that this kind of opportunity to exchange ideas with people outside their usual network demonstrated the importance of working together to find solutions to problems. This section summarises some of the recommendations that emerged from the discussions:

***1. Inclusive design for sustainable and scalable digital solutions.*** To avoid widening inequalities, technology must be designed to ensure that all population groups, especially the most disadvantaged, have the ability to access and use digital tools. Technology entrepreneurs and government officials need to develop a health equity framework to guide the design and implementation of digital solutions. This should address the different factors that influence access to digital health services including connectivity, training and content for user populations that enables and encourages self-sufficiency, participation and collaboration.

***2. Empowerment of citizens.*** Engagement of various stakeholders is critical for promoting digital health and achieving healthcare goals. There needs to be greater collaboration with civil society voices, technology providers and with organisations within the government that support innovation. Citizen engagement can provide valuable insights on technology applications that include ease of use, implementation, embeddedness in the health system and design in relation to well-being, autonomy, and privacy. One strategy for enabling people to engage effectively with digital health services is to organise training in digital literacy for communities and their representatives.

***3. Role of front-line workers in digital health.*** There is a need to clarify the role of grass-root health workers (public and private) within a digital health ecosystem, specifically how they participate in it. Incentive mechanisms and training and skilling front-line workers in digital tools and technology will be essential.

***4. Need for collaboration in the management of change.*** The management of digital transformation of the health sector requires new kinds of collaboration across disciplinary and organisational boundaries. It will be important to facilitate interaction between technology service providers, health system managers and professionals, and health system researchers to ensure that innovation is driven by the goal of universal health coverage. This will need to involve new kinds of relationships between public and private sectors and also an increased involvement of civil society organisations in the design and implementation of new technological approaches.

***5. Digital architecture and standards.*** Governments must consider the challenges and infrastructural capabilities of rural primary healthcare providers when adopting and implementing standards.

***6. Build on opportunities that have emerged through the pandemic***. Digital health services have largely been positively received by user populations who seem satisfied with remote healthcare services without face-to-face encounters with their doctors. Governments and innovators both recognise the need to build on opportunities that have emerged during the pandemic while prioritising digital health access and digital literacy to advance health equity.

***7. Address privacy concerns.*** Considering privacy and security remains a principal concern, data ownership rights must be clearly defined; patients own their data and decide which facilities can access their data or not. Peer learning is warranted in order to understand and clearly define what the provisions of data protection and ownership rights should be in the legislation. Addressing privacy and security concerns will also be key to using data for research.

***8. Role of Governments.*** Governments play a critical role as enablers of digital transformations and champions of innovation. Innovations in digital health stewardship will involve new types of partnerships with NGOs and other development partners who can bring evidence and evaluative expertise to foster and facilitate innovative technology for better integration and inclusion into country health systems. The development of new regulations and clarification of existing ones, specifically the roles and responsibilities of all actors, must leave room for innovation. The absence of a blueprint or tested, ideal model necessitates that governments adopt an evolutionary approach that will involve a combination of government-led agreement on norms and standards, a bottom-up approach to regulation and oversight including a degree of self-regulation and the empowerment of civil society groups to play an effective role in monitoring adherence to standards.

***9. Need for research and evidence.*** In this process of digital transformation, there is a need for systematic assessment of what works well, what works badly and how to move forward. Several digital health innovations were designed and applied in response to a pandemic, I.e., a time of great uncertainty and greater need. This meant implementation was prioritised and a large proportion of information regarding what populations benefit from services and the quality of services was anecdotal in nature. While innovators made efforts to implement more structured methods to gather evidence on impact, there is a need for the research community to serve as a key contributor to further the agenda of such systematic learning.

## Conclusion

Non-state technology actors bring in different dynamics and expectations to health service access and delivery in terms of scope, business models, orientation and quicker time frames compared to more traditional private providers. Many governments, often unfamiliar with these differences, have less experience tailoring policies and mechanisms of engagement that ensure accountability of all actors.[30] There are lessons to be learned in the great possibilities of digital transformations along with risks, and committed efforts are required to learn how to make this work well and how to avoid problems. Effective engagement and regulatory strategies must invariably engage a multiplicity of stakeholders—that include a range of government sector, civil society, and private sector representatives—and consider their priorities as well as incentives in order to be successful.

The principal conclusion of the series of dialogues - is that governments, regulatory agencies, business and professional associations, citizen groups and individual companies need to build a capacity to collaborate in translating a vision of a digitally-enabled health system into a reality on the ground. There was agreement on the need for regular dialogues to build a capacity to work together in addressing the many challenges listed above.

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# ANNEXURES

## Dialogue 1

**Matters of Inclusivity in design and governance of digital health in India**

December 16th 2021

Youtube link :
**https://youtu.be/Mu_Qq6xsjCw**


## Dialogue 2

**Matters of Accountability - Regulatory framework for driving safe digital healthcare adoption in India**

January 19th 2022

Youtube link :
**https://youtu.be/xxM13I8xhS0**

## Dialogue 3

**Matters of Scale and integration in digital health ecosystems**

December 2nd 2021/February 28th 2022

Youtube link:
**https://youtu.be/fNXp1v_WDnE**