

VISION PAPER

The Reimagined Healthcare Experience for Every Citizen

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Executive Summary

In August 2022, A brainstorming workshop and a series of discussions were organized to articulate a 10 Year Vision of a reimagined Indian health system. The workshop deployed a context independent systems lens to articulate critical concepts and ideas aimed to enable policymakers, practitioners and philanthropists to improve citizen experience of healthcare. The participants of the workshop articulated the 10 Year Vision for a health system as one where **“Everyone has the resources to improve their health and well-being”**. Towards achieving the same, **three key ideas** emerged at the end of the workshop that form the foundation for reimagining the healthcare experience for every citizen:



FOCUS ON OBSERVABILITY

The key aspect to ensure a well-functioning health system is that the system is not blind. All healthcare interactions and challenges need to be visible to all the relevant stakeholders. We need to be able to answer for each citizen “Did I get the resources to manage my health and well-being”. Accurate diagnosis of access, quality, service denial challenges is made possible through this and the system is geared to respond and prevent this from happening.



DEFINE THE RESOURCE STACK

Resources can't be viewed in isolation but as an interconnected stack. A system will need to have 'resources' built and managed in every layer. The fundamental building blocks in the new system are Personal Health Records, Open Data, Preventive Health Infrastructure, and Community Care Navigators. Adaptations of existing resources such as doctors, community care navigators as well as newer technological resources will also be needed to ensure citizen experience.



UNDERSTAND THE SYSTEM ADOPTION CURVE

To build a great citizen experience, it is necessary to understand 'system adoption'. No system is adopted 100% and there are various challenges at every milestone in the journey of scaling up. Healthcare in India will have particularly unique and intersecting challenges which will have to be mediated and supplanted.

The participants of the workshop articulated the 10 Year Vision for a health system as one where “Everyone has the resources to improve their health and well-being”.

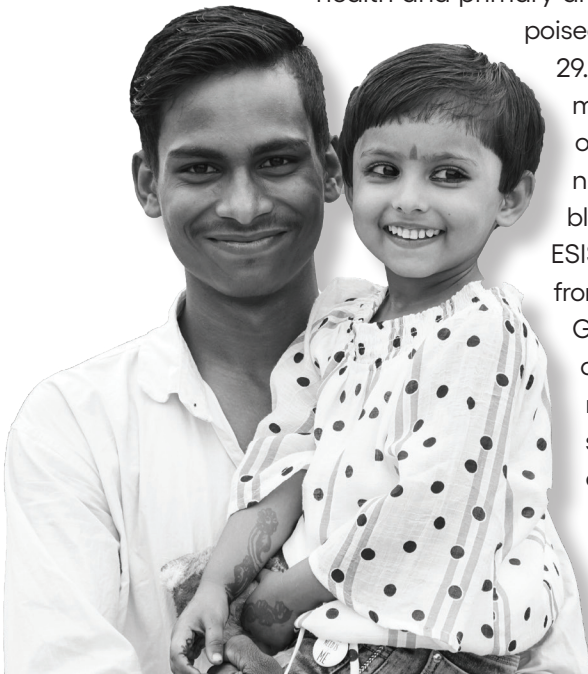


Enabling the system to be observable, building and managing resources across the resource stack and solving for user adoption at each stage of the scale-up journey in an iterative manner is key for solving the myriad health systems problem plaguing our country today. These principles and constructs can be applied to any context and systems change initiative to produce better impact outcomes. To demonstrate, we have used real life case studies of four different citizens in the health system today who face unique challenges and showed how applying this vision can transform their experience.

Background

Over the last few years, India has made great strides towards achieving Universal Health Coverage (UHC) through Pradhan Mantri Jan Arogya Yojana (PM-JAY), Employees' State Insurance Scheme (ESIS), strengthening primary healthcare through the rollout of 150,000 Health & Wellness Centres (HWCs), setting up medical universities cum tertiary care centers such as the All India Institute for Medical Science (AIIMS), and laying out the building blocks and roadmap for a digital health infrastructure and public health delivery through Ayushman Bharat Digital Mission (ABDM). The second wave of the pandemic in 2021 starkly highlighted the fissures in the system when the oxygen and hospital capacity in many cities and states was overburdened. However, it also generated momentum in the government towards reforming the system and working widely with a range of actors to deliver high quality, accessible and cost effective care.

Today, there is no shortage of innovative solutions around community health, digital health and primary and tertiary care. By 2025, the digital health market is poised to reach \$504.4 billion in India, growing at a CAGR of 29.6%¹, as health-tech startups have already raised \$504 million between 2014-18². The government is progressing on nation-wide schemes such as PM-JAY and ESIS. The number of hospital admissions under PM-JAY have doubled to reach 1 crore just between 2019 and 2020³, while ESIS has seen a five-fold rise in the number of enterprises from 0.22 million in 1999-2000 to 1.03 million during 2018-19⁴. Given the potential these hold to solve challenges around quality and access of care, we believe that the time is ripe to ask ourselves, 'What is the vision of a healthcare system that India can be proud of and all actors can collectively strive to achieve in the next 10 years?'





This question is important for many reasons. For one, it helps us look beyond and be satisfied with the incremental progress we have made over the past few years. Second, it helps drive greater engagement and alignment between different stakeholders if we are able to articulate and define what we seek. Finally, it sparks the imagination of changemakers and social entrepreneurs to envision a reformed healthcare system.

In the spirit of 'If you can imagine it, it can get real', this vision document offers a set of big ideas that will stimulate the discussion towards building an aspirational 10-year health system that is accessible, high quality and cost effective, regardless of who is accessing it and their context. It is the product of a workshop to improve health

By 2025, the digital health market is poised to reach \$504.4 billion in India, growing at a CAGR of 29.6%.



system design in India. The north star for the workshop was to articulate the ideal healthcare experience for every Indian citizen. There were four main principles underpinning the workshop. First, bringing diverse perspectives to reimagine citizen experience at the intersection of health systems, digital transformation and systems change. Second, taking a 10-year view instead of incremental improvements to the current system. Third, acknowledging that while feasibility is critical, it is not a binding constraint for the purpose of this discussion. Fourth, not focusing on orchestrating immediate

collaborative action or commitments from the participants through the workshop.

We are extremely grateful to all our contributors⁵ who engaged in multiple rounds of discussions and came together as a group to deliberate and outline these ideas over two days in Bangalore. This paper is a result of all the creative brainstorming and ideas discussed and presented during those two days, and the run up to them.

We hope these ideas spark hope and unique possibilities, set new directions and inspire each of us to come together to do our own bit and play a role in shaping the future of healthcare in India. These ideas can be leveraged by

- **Policymakers** to center frictionless citizen experience within the agenda underlying healthcare policies and schemes across the country
- **Philanthropies** to support research and implementation through grantmaking and partnership enablement to further strengthen these ideas
- **Practitioners** to validate them through their experiences and suggest further areas for modification and improvement.

Introduction

India is poised to become a trillion-dollar economy by 2030⁶. The combined forces of demographic dividend, urbanization, vibrant and growing entrepreneurial culture and innovations in the area of payments, telecom, identity, interoperability and finance hold the promise of a new future. Yet, the country cannot fully leverage and realize this promise if it is unable to provide affordable, accessible and quality essential services to all its citizens. Widespread economic participation and growth is contingent on basic education and healthcare for all, the slow pace of which acts as a barrier to sustainable and more equal economic development.

Healthcare in particular is a multifaceted problem in a country of 1.4 billion people for many different reasons. First, health is a credence good, i.e. care seekers have limited ability to assess the suitability and utility of the health service they access. This makes the problem of information asymmetry quite acute and needs to be solved before market mechanisms can be used to drive efficiency. Second, health is an extremely context intensive problem. Issues such as high prevalence of febrile diseases in urban slums, arsenic poisoning in Bihar, high neonatal mortality in Rajasthan and yearly outbreak of encephalitis in Uttar Pradesh occur due to a multitude of context specific systemic gaps, and a single top-down approach cannot sufficiently solve all of them. These reasons contribute to wicked public health challenges, such as inappropriate clinical pathways, unwillingness of the state to invest, high out of pocket expenditure, low investment and low political salience driven by high friction patient journeys.



The landscape of healthcare in India today has several features and challenges which shape the citizen experience:



SCARCITY LED DECISION-MAKING

There are only 3.2 providers per village on average⁷, who remain largely private and unqualified. There is limited data on quality of healthcare delivered as well.



DENIAL OF SERVICE

There is high public sector absenteeism, the travel time for people to access care is high, and the availability of medicines from public systems is low⁸. Further, skewed capacity causes under and over utilization of care across locations.



UNDER AND OVER-TREATMENT

Typically, not more than 5% of Indians receive scientifically appropriate care⁹. Differences in effort and knowledge exerted by private and public doctors does not lead to much difference in quality. Doctors in private facilities are equally likely to under and over treat patients as those in public facilities.



HIGH OUT OF POCKET EXPENDITURE

Today, Out of Pocket Expenditure (OOPE) in India is over 50% and insurance coverage is still low among the poor (under 10%)¹⁰. However, the challenging journey of grappling with the COVID pandemic has, however, provided an opportunity to create a stronger and more resilient health system.

Outlining effective solutions to these wicked public health problems requires taking a step back, and bringing the health system as a whole into perspective, instead of looking at parts of the problem independently. A health system consists of all 'organizations, people and actions whose primary intent is to promote, restore or maintain health.

A health system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health. It has six building blocks¹¹:



HEALTHCARE FINANCING

Function of health system that look at mobilizing, allocating and spending adequate funds for population healthcare needs and financial protection as well as provide incentives for providers and users to be efficient.



SERVICE DELIVERY

The structure, organization and management of healthcare services across the continuum of care.



HEALTHCARE WORKFORCE

All people involved engaged in action whose primary intent is to enhance health.



SUPPLIES

Equitable access to essential medical products, vaccines and technologies of assured quality, safety, efficacy and cost-effectiveness.



DATA

A set of components and procedures organized with the objective of generating information which will improve healthcare management decisions at all levels of the health system.



DEMAND

Behavior of the population grounded in social and cultural structures and influenced by beliefs, perceptions, attitudes and cultural norms.



Given the context intensive nature of health, a single top-down approach cannot solve all these challenges. What we need is a context-independent infrastructure that forms the firm foundation and framework for stakeholders to innovate and create context-aware and context-intensive positions.

	Description	Solution Approach
CORE FOCUS	Context Intensive <ul style="list-style-type: none"> • Niche local problem affecting the population. • Stakeholders on ground own outcomes. • E.g. Arsenic contamination leading to high cancer incidence in Bihar. 	<ul style="list-style-type: none"> • High-level awareness of depth and diversity to be kept in mind. • Our solution blueprint should enable local stakeholders to solve for these challenges.
	Context Aware <ul style="list-style-type: none"> • Disease (CD, NCD) prevalence across country. • Stakeholders create knowledge hubs and customized disease focused solutions. • E.g. Action plan to eliminate Tuberculosis by 2025. 	<ul style="list-style-type: none"> • Broad knowledge of key indicators accounted for. • Our solution should enrich local stakeholders' toolkit to address these challenges.
	Context Independent <ul style="list-style-type: none"> • Structural problems in the health system. • Stakeholders focus on policy, architecture, system design. • E.g. Financing, Workforce, Governance. 	<ul style="list-style-type: none"> • Key focus of our discussion. • Our solution blueprint should address bottlenecks, and unlock resources to solve these challenges.

Source: Societal Thinking

This paper uses a context-independent lens to outline the drivers, resources, and adoption journey to enable health systems change in India. It presents a set of ideas and concepts that comprise core features of a reimagined healthcare system for India. It intends to provide an overarching framework and vision to accelerate efforts towards the United Nations Sustainable Development Goal 3 of providing 'Good Health and Well-being' to all.



In doing so, it answers three questions:

- 1** What is the driver of the reimagined system that will trigger a chain of positive effects?
- 2** What are the resources that such a system requires?
- 3** What are the realities one needs to navigate in the journey towards adoption?

The first question brings forth a concrete vision to move the health system from low equilibrium today, to a high functioning, self-improving and efficient resource optimizing one in the future. The second question seeks to imagine and define the tangible resources and features that people in this new health system will experience, and how these will enable a frictionless and optimal citizen journey. The final question aims to build a bridge between the present and the future and outline the complexity and challenges we are likely to encounter to realize this vision. Each of these questions are answered through certain big ideas that emerged in the course of the discussion, as presented in the following sections¹².

Big Ideas

Observability as a Key Feature of Health Systems

Nirmala, a 24-year-old resident of a village in Nainital, was forced to give birth on the road while waiting for an ambulance for over two hours in the rain. Despite the ambulance being dispatched after calling the '108' number, it returned without bringing Nirmala. She was ultimately brought to a distant Community Health Center (CHC) by a passerby, where they did not have the facilities to provide her with the care she required, even though a nearby facility was equipped with the resources she needed. Nirmala ultimately lost her child¹³. Despite incurring expenditure and making all the arrangements, as well as the system being funded and equipped with human resources, supplies, facilities, and finance, they could not orchestrate delivery of care for Nirmala. The tragedy here is not only that this woman did not receive adequate care. The greater tragedy is the lack of observability - where thousands of such cases can go unreported or unnoticed.



In India, one often needs social networks and patronage to make the health system work effectively. Lack of information, data and insights cripple the system and perpetuates low level equilibrium. Despite the requisite resources and facilities being in place, the inability to observe Nirmala's situation and coordinate her care resulted in the easily avoidable loss of her child. Today, the ability to observe, monitor and coordinate care is a critical gap in ensuring effective healthcare delivery.

While infrastructure and resources are present to a certain extent, they remain disparate and opaque for citizens to access in a timely and frictionless manner. Borrowing from the premise of ‘what we can’t see, we can’t solve’, enabling observability provides the necessary condition for systemic change while also building individual agency to make better choices. It has the potential to act as an underlying question around which the system can be galvanized - allowing researchers to draw insights, policymakers to find solutions and citizens to have agency over their own care. In line with Aadhaar’s premise of asking the basic question- ‘Am I who I say I am?’ Arriving at a similar statement for healthcare would thus provide a true-north and lay the foundation for change, giving rise to multiple configurations of solutions which can turn this vision into reality.

In India, one often needs social networks and patronage to make the health system work effectively.

Thus, a similar question to enable observability for healthcare is:

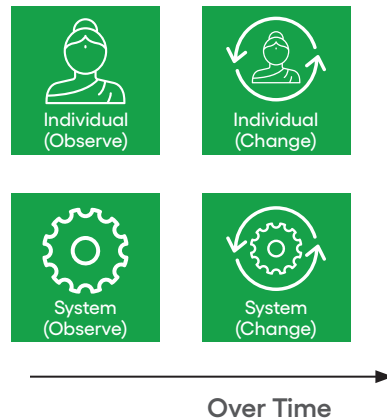
‘Did I/everyone have the resources to improve my/their (physical, social and mental) health and wellbeing?’

Here, each word has been carefully chosen to represent a particular aspect of the system:

- **Did:** As observability is critical to this question, using the term ‘did’ allows us to indicate observable facts instead of ‘could’ or ‘should’ which would be more aspirational.
- **I/Everyone:** While ‘I’ refers to the individual citizen and their ability to track and observe changes at an individual level, ‘everyone’ refers to the healthcare system at large. It involves public health concerns and enables systems thinking. It is important to note that such a view ensures inclusivity, accounting for individual citizens hand-in-hand with the system. This helps enable citizen agency, which is further developed by empowerment through data.

- **Resources:** Includes access to infrastructure, funding, data, care information and services. Some of these resources may come from the government, some from the market, and others from civil society.
- **Improve:** Enables focus on improvement at scale instead of attaining the desired quality
- **Physical, social and mental health and wellbeing:** Enables a holistic understanding of health, stepping beyond absence of disease to encapsulate overall quality of life. Includes health-seeking behavior and preventive healthcare.

This observation and measurement of events can occur at a systemic and individual level over time through a mutually reinforcing mechanism:



This will help us overcome a core limitation in our system – an inability to understand why something that was supposed to happen did not happen. Why, for instance, was an ambulance unable to reach a pregnant woman in the hills of Nainital undergoing premature labor on time¹⁴? Why was a Musahar woman refused care in a primary health center in Uttar Pradesh¹⁵? These incidents are a mere fraction of the thousand events that occur daily, and a lack of understanding of why things are going wrong undermines our ability to systematically solve it.

Through this mechanism, the fact that the ambulance was unable to reach a pregnant woman in Nainital on time could be observed both individually and at a systemic level. Individually, she would be able to observe multiple ANC providers available within her radius, and make an informed decision to select her provider (i.e. individual change). The data would signal a coordination problem at the level of the health system, and coordinate relevant resources to assist her (i.e. system change).

Repeated denial of care experienced by a particular social group, such as Musahar women in Uttar Pradesh, could also be addressed similarly. Once recorded at a systemic level and made discoverable, relevant officials such as the Chief Medical Officer, could orchestrate measures to reduce discrimination and enable transparency in healthcare provision. Further, visibility of the extent of denial of care across different providers could empower care-seekers to make an informed decision regarding their provider of choice.

It is important to note that observability is the first critical step to make sure that the health system is not opaque and effective diagnosis of gaps takes place. It is a necessary but not a sufficient condition. Driving change will also depend on the political salience, health system capacity and citizen advocacy for improvement in quality. Here's where discoverability of observed data becomes critical. Aggregate data regarding citizen journeys across the health system should be made accessible universally. Discoverability entails making sure that relevant bodies are able easily obtain, view, and utilise data that has been observed across several metrics. This may take the form of an interactive dashboard at a district or sub-district level where information on multiple indices is regularly published and updated. Easily discoverable data would thus encourage prompt action and enable accountability.





Asking the question ‘Did everyone have the resources to improve their health and wellbeing?’ allows us to observe and measure individual actions as well as the healthcare system at large, allowing for a scalable solution which accommodates diverse perspectives from different users across interconnected problems over time. Similarly, on the supply side, one could ask, ‘Did everyone have the means, motives, and opportunities to do what was expected of them so that their individual actions could collectively produce good public health outcomes?’ A similar approach of embedding observability into systems was used by the US Embassy to display the AQI

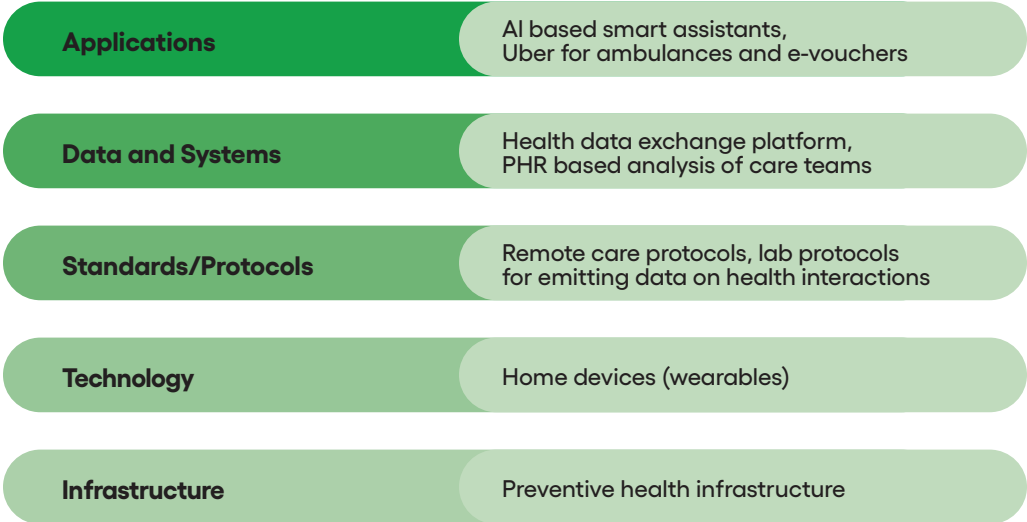
in China , and was successful in drawing attention to the problem of air pollution, motivating action to address it. Similarly, if we are able to accurately diagnose issues and make them visible, we empower those seeking health care, those responsible for providing health care and interest groups to take the action that needs to be taken in a context appropriate manner.

Building a Resource Stack to Enlist the Necessary Resources in the System

Reforming India’s health system not only requires a vision of what to aim for, but also an articulation of the necessary resources to achieve this aim. However, from context-to-context and expert-to-expert, this list of resources is bound to differ. Thus,

instead of incrementally adding one resource on another, it is more helpful to build a foundation of necessary, context-independent resources which are universally available, on which further specialized, context-intensive resources can be added in the form of a Health Resource Stack:

Each distinct layer built upon the previous foundational layer



Health Resource Stack Layout

Source: Societal Thinking

Here, four resources stand out as critical building blocks which must be prioritized:

1 Personal Health Records: A personal health record (PHR) refers to the collection of an individual’s medical documentation maintained in an interoperable manner by the individual themselves, or a caregiver, in cases where citizens are unable to do so themselves. This personal information includes details such as medical history, applicable diagnoses, historical and ongoing medications, past medical and surgical interventions, among others¹⁷.

2 Open Data: Information regarding the healthcare status of every citizen should be recorded and made easily accessible to relevant stakeholders while ensuring privacy and confidentiality. Making citizen data discoverable as well as valuable government data available to the public can drive better health outcomes for all. This is critical to enabling observability, and motivating change based on the data collected and insights gathered from it.

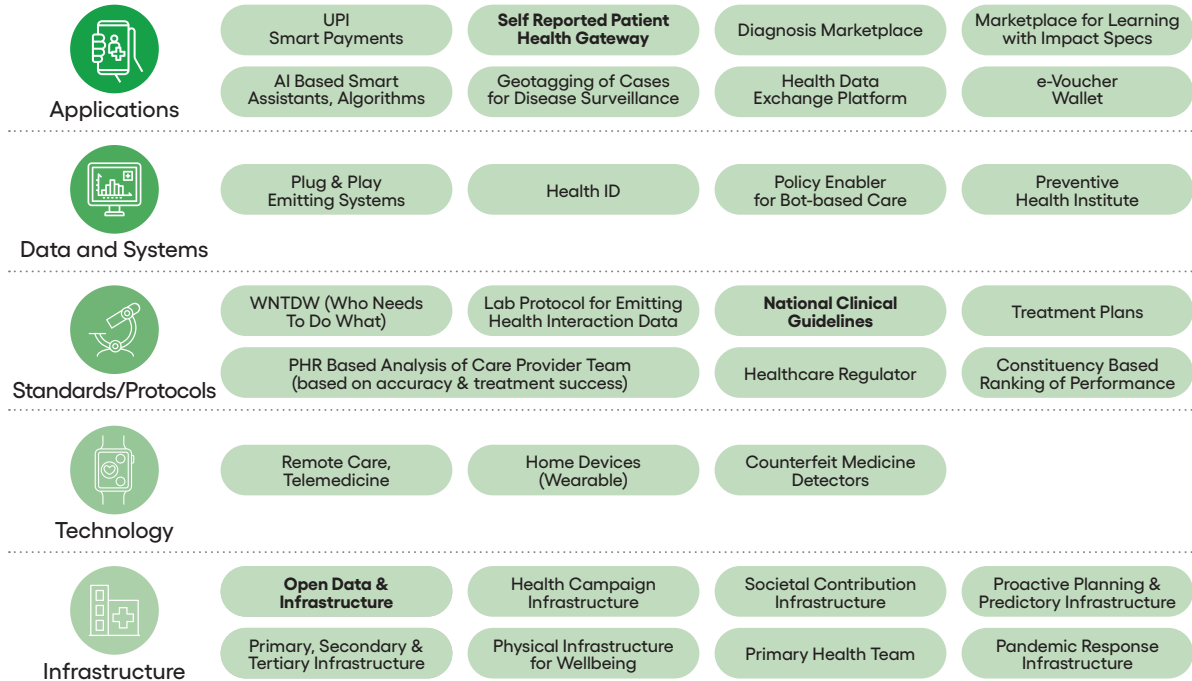
3 Preventive Healthcare Infrastructure: It is estimated that nearly 80% of Indian households will be middle-income by 2030¹⁸. When affected by non-communicable diseases, the system may be overwhelmed with catering to their needs. Thus, focusing on preventive healthcare becomes crucial. Financial incentives such as payments and vouchers to encourage citizens to undergo preventive care such as screenings, vaccinations, and other brief interventions will be helpful.

4 Community Care Navigators: These are trained community workers who handhold citizens through their healthcare journeys. The role of the community care worker is to help the citizen navigate the healthcare system, solving the care coordination challenges by traiging, directing them to appropriate resources, medical facilities, and following up on their care. They form the care coordinating mechanism to predict and ensure that 'denial of service' does not occur.

Borrowing from full-stack thinking¹⁹ that looks at benefits in the form of measurable improvements, such a focus on building a strong foundational stack of universally available resources ensures that the fundamental resources will get across to everyone, while others might get unlocked due to unique socio-economic structures of different geographical locations.

The role of the community care worker is to help the citizen navigate the healthcare system and solving the care coordination challenges.

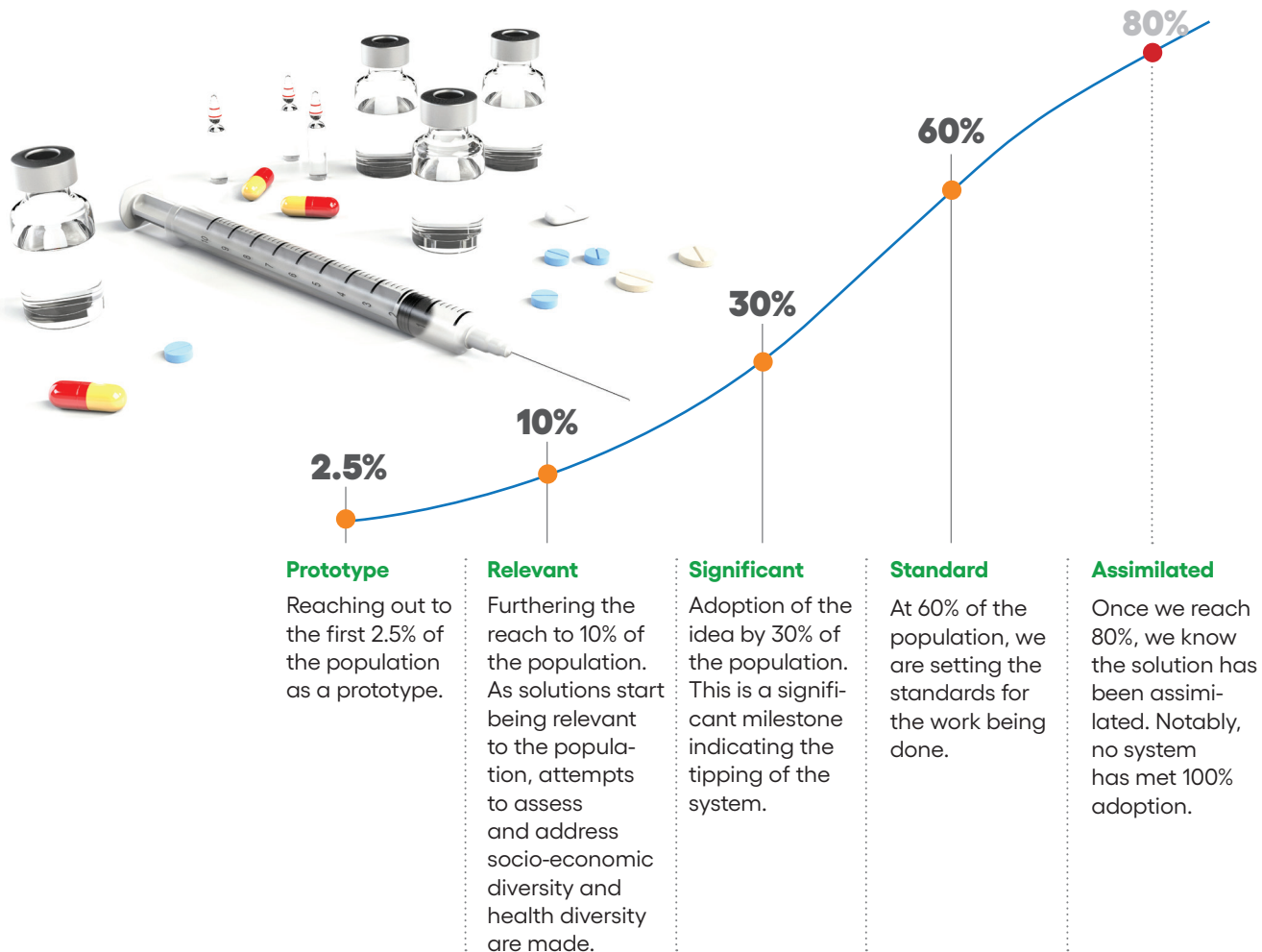
The resource stack could be visualized as comprising the resources outlined below:



For example, context-specific resources could be unlocked through the resource stack to assist Nirmala, the aforementioned 24-year old woman from Nainital who lost her child due to lack of coordination of care. She would be able to access primary care (**infrastructure**), availing services from the provider of her choice, supplemented by telemedicine (**technology**) to address ongoing concerns. Her health interactions would be guided by **standardized protocols**, whereby **data** regarding denial of service to her would be captured by the system, creating a negative reinforcement for discrimination and allowing her to access care. Some of these resources may come from the government, some from markets, and some from civil society. Enlisting them within the resource stack aims to help visualize how they fit in with the entire puzzle.

Key Milestones & Potential Challenges in the Adoption Journey

Enabling systems change comes with the prerequisite of working at scale. As we put together the vision and resources for a reimagined Indian healthcare system, it is helpful to brace oneself with a sense of the pathway in the journey towards its adoption. A useful way to envision this journey is through marking the milestones to work towards:



A working knowledge of the milestones and pathways to change puts forth a clear picture of the long-term nature of change we are working towards. Marking these steps also provides an opportunity to step back, reflect, and revise to build a stronger version of the system at each point. For example, if a solution stagnates at adoption by 15% of the population, this indicates that while it is relevant, it has not yet achieved significance among the majority of the population. Pausing to reflect why the solution has not become significant at this stage provides an avenue to rethink and build a better solution and increase further adoption.

As we outline a vision to reimagine India's healthcare system, it is critical to account for the barriers to adoption. It is only by recognizing these risks that we will be able to identify paths to mitigate them and move forward.

An indicative non-exhaustive list of barriers/challenges to adoption are as follows:



Social & Environmental

- Assumption of health as a priority for all
- Role of social inequalities & stigma
- Limited understanding of aforementioned solutions by majority of healthcare experts
- Lack of trust in new systems
- Rising middle class population
- Over medicalisation of care
- Exponential healthcare repercussions of climate change



Political

- Fear of taxmen and peers among doctors
- Resistance to change and fear of mistakes by policymakers limiting innovation
- Political denial of existence of diseases
- Inaction due to low priority of health
- Lack of state capacity due to siloed responses, bureaucratic inertia, and limited human resources
- Fake news derailing interventions



Technological & Economic

- Inadequacy of available funding
- Poor market incentives hindering innovation in health
- Inappropriate business models in hospitals and insurance
- Monopolisation/consolidation resulting in high costs and concentration of resources
- Automation might fail to deliver on its promise



Legal

- Lack of proper regulation
- Weak data privacy law and consent architecture
- Lack of policy making on preventive healthcare
- Government ownership of data
- Punitive action on providers
- Privacy concerns derailing innovation

Conclusion

This Vision Document used a context-independent lens to outline the drivers, resources, and adoption journey to enable health systems change in India. In doing so, it presented three big ideas by answering these critical questions:

1

What is the **driver** of the reimagined system that will trigger a chain of positive effects?

2

What are the necessary **resources** in the system?

3

What are the **realities** one needs to navigate in the journey towards **adoption**?

This paper indicated that by collecting data centrally from posing the fundamental question of, 'Did everyone have the resources to improve their health and wellbeing?' we are able to both enable systems change and individual change as per the context.

Similarly, on the supply side, one could similarly ask, 'Did everyone have the means, motives, and opportunities to do what was expected of them so that their individual actions could collectively produce good public health outcomes?' Second, the resources required to enable system change can be envisioned in the form of a context independent Health Resource stack, which can be unlocked based on context-specificities by relevant actors. Here, four resources are critical- Personal Health Records, Open Data, Financial Incentives for Preventive Health, and Community Care Navigators. Lastly, it outlined how the journey towards adoption can be marked by critical milestones of the solution being a prototype, relevant, significant, standard, and



assimilated. Through this journey, several potential barriers may emerge, which can be categorized as social and environmental challenges, technological and economic challenges, political challenges, and legal challenges. In our journey to reform India's health system, it is crucial to recognize these risks and identify paths to mitigate them.

Today, we have an unprecedented opportunity to enable change, where the code base and experience for solving all problems in delivering quality health care are readily available. What we need is the imagination (which this paper has aimed to provide) and technological integration to realize it so that geography by geography, we are able to show how good public health care can be delivered²¹.

In our journey to reform India's health system, it is crucial to recognize the risks and identify paths to mitigate them.

Case Studies

These use cases describe the primary experience of an Indian citizen, based on real case studies. They articulate a reimagined version of their healthcare experience ten years down the line, solving for current challenges by testing the aforementioned vision statement and nuancing the systemic change required.

CASE 01 Priya²²

Primary Experience

STEP 01

Woman moves to urban slum

Priya is a mother of three who has recently moved to Annapurna Thana slum. She works as a domestic help. Her husband is an alcoholic, and his habit often eats away at her savings.

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STEP 02

Poor experience with facility-based delivery

For the delivery of her daughter, however, Priya goes to a hospital. She is left alone, as her mother in-law and husband are made to wait outside. The hospital attendants are very rude. No one is there to reassure her or give moral support in her pain. She feels miserable and misses her parents and at the time wishes she would die.

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STEP 03

Prefers at-home birth

Her poor delivery experience results in her preferring at-home births. She believes that the money would be better spent on getting decent food for the mother.

Reimagined Journey

STEP 01

Priya moves to an urban slum

Priya is a mother of three who has recently moved to Annapurna Thana slum. She works as a domestic help. Her husband is an alcoholic, and his habit often eats away at her savings. Despite moving from Ratlam to Annapurna Thana, Priya has to fill in no new forms to change her PDS account and avail ration. All relevant information is already immediately available in the system as she moves, and all she has to do is update her location. Her details are automatically transferred within the new jurisdiction as soon as she updates her location.

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STEP 02

Connected to Integrated Automated Health App

Priya has been geotagged within an integrated automated health app that centrally recognizes 'blue dots' or vulnerable populations based on socio-economic factors and medical histories. It has in-built, partially automated micro plans which include expert reviewed risk analyses of the blue dot. Further, a pattern recognition engine analyzes and takes action before the blue dot enters a vulnerable state. The observability of the blue dot is enabled by Personal Health Records.

In Priya's case, the App connects her to the community care worker. Her blue dot status directs monthly deposits for social protection from societal donations to take care of the underprivileged and vulnerable persons towards her. She also utilizes a mobile wallet to help aid transportation, where vouchers can be made available for use through CSR funding, taking away the middlemen. The app also engages her and builds knowledge about her health. Post Natal Depression can also be diagnosed and counseled for through the app, anonymously, and can also check competency to further engage her into being a community health worker herself.

STEP 03

Community Care Navigator

There is a trained community worker who takes care of the pods and handholds Priya through her pregnancy journey. The role of the community care worker is to help the citizen navigate the healthcare system, solving the care coordination challenges by traiging, directing them to appropriate resources, medical facilities, and following up on their care. They form the care coordinating mechanism to predict and ensure that 'denial of service' does not occur.

The navigator helps deliver medicines to Priya and relays information and treatment to and fro the doctor. An OB/GYN for treatment through video conferencing for Priya is also arranged to answer any doubts or concerns she may have, and ensure her wellbeing. The navigator also carries a 'Lab in a Box' which helps detect any health variations through back-end algorithms, which can be brought to the doctor's attention whenever required.

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STEP 04

Delivery Pods

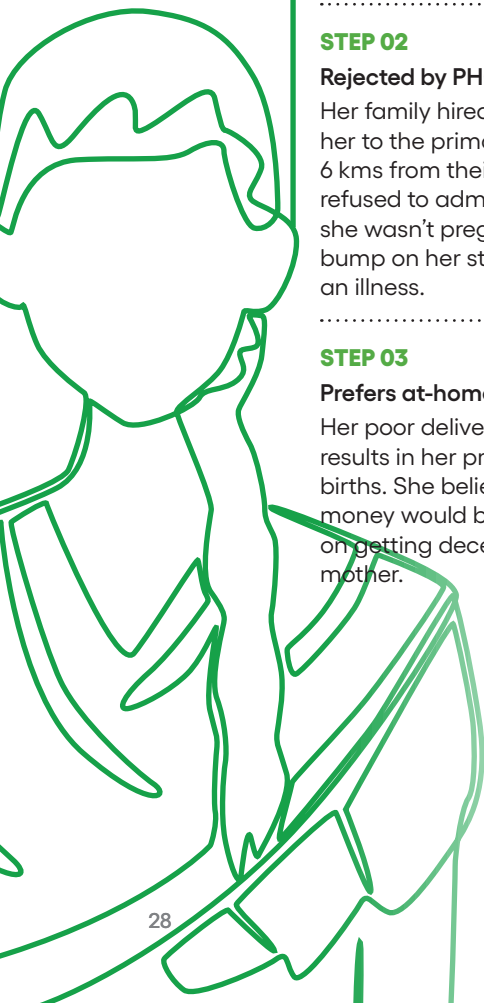
The clinic Priya frequents has 'delivery pods'. These are fully equipped and privately funded. They have been designed and certified by the market, and can be sponsored by CSR funding. Within these pods, she has access to a voice enabled app, where gets voice support from experts assisted by Clinical Decision Support Systems (CDSS) to help guide her through the pregnancy. Her navigator is also present to support her throughout the delivery, and later coordinates postnatal check ups.

Payments and documentation for the pods are linked to PM-JAY and Aadhaar. These details are already available in her Integrated Health App, and can be easily accessed by the facility through the same. Importantly, the navigator helps ensure that denial of service does not occur due to technical glitches regarding verification of identity. Priya's 'blue dot' status has allowed monthly deposits for social protection from societal donations to be diverted to her in case she chooses to avail the same, helping her afford the care she needs.

HEALTH OUTCOMES

Priya's reimagined healthcare experience is marked by trust, safety, and dignity. The integrated automated health app significantly eases her journey, as she is able to navigate the system, from accessing care to paying for it. **Through the delivery pods, the quality of amenities she has access to also improves.** Her past experiences of loneliness and misery are no longer a concern, as the community care navigator handholds her throughout her journey and relay information from doctors not only within the hospital, but also experts through video conferencing wherever required²³.

CASE 02 Lakshima Devi²⁴



Primary Experience

STEP 01

Pregnant Woman

Lakshima Devi is a pregnant woman who belongs to the Musahar community. One of the most marginalised and poorest of Dalit groups in Uttar Pradesh, the Musahars face severe social discrimination.

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STEP 02

Rejected by PHC

Her family hired a tempo to take her to the primary health centre 6 kms from their village. The staff refused to admit her, saying that she wasn't pregnant, and the bump on her stomach was due to an illness.

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STEP 03

Prefers at-home birth

Her poor delivery experience results in her preferring at-home births. She believes that the money would be better spent on getting decent food for the mother.

Reimagined Journey

STEP 01

Lakshima Devi becomes pregnant

Lakshima Devi is a pregnant woman. She belongs to the Musahar community, one of the most marginalised and poorest of Dalit groups in Uttar Pradesh who face severe social discrimination. Musahar women are reluctant to go to a hospital, often needlessly being asked to pay money, or to sit on the floor while others get chairs.

Lakshima uses the Integrated Automated Health App to access care, which allows her to make informed choices, and provides avenues to reduce discrimination. She is also recognized as a 'blue dot' or vulnerable population based on socio-economic factors and medical histories. Her care journey is thus recorded by the system.

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STEP 02

Provider Choice

When it is time for delivery, Lakshima gets access to coupons to avail services from the provider of her choice. Community assessed data models allow her to make an informed decision so that she can choose the provider she feels most comfortable with. This will help remove the power of the gatekeeper to choose whom to give service to, and help demonopolize access to care.

There is one community care-navigator for every 25 people in the population that she is connected to. These are trained health workers who take care of Lakshima and handhold her through her pregnancy journey. They help deliver medicines, triage the patients and relay information/ treatment to/from the doctor, even bringing in an OB/GYN for treatment through video conferencing. They have the agency to coordinate the entire care pathway for those placed in their care regardless of whether it is primary, secondary or tertiary. This is possible because they and the care seeker have access to an operations center that has the Means, Motives, and Opportunities to give appointments, make possible emergency care and ensure that Denial of Service does not happen. The community care navigator could also carry a 'Lab in a Box' which helps detect any health variations through back-end algorithms.

STEP 03

Delivery Pods

Lakshima gives birth in 'delivery pods'. These are fully equipped and privately funded. They have been designed and certified by the market, and can be sponsored by CSR funding. Payments and documentation for the pods could be linked to PM-JAY and Aadhaar. These allow Lakshima to access high quality care without incurring the high out-of-pocket expenditure that traditionally accompanies it.

Each delivery pod gives the patients access to a voice enabled app. Here, Lakshima, gets voice support from experts assisted by Clinical Decision Support Systems (CDSS) to help guide her through the pregnancy, counseling and educating her while also preparing her for the delivery. Further, the Integrated Automated Health App has in-built, partially automated micro plans which include expert reviewed risk analyses given that she has been marked as a 'blue dot'. These facilities help Lakshima receive scientifically appropriate care.

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STEP 04

Auditing and Incentivisation

Lakshima's experience is recorded by the App, and the quality of care she receives is audited. At each step of her pregnancy and delivery journey, she provides feedback via the App. There are linked incentives for providers based on the feedback she provides. The lesser the discrimination, more the incentive for the provider or health centre.

Using technological solutions to introduce observability, accountability and auditability into the care provision process may also have scope to reduce discrimination. All data recording pregnancies and disease can be done through it, and allow for auditing of quality of care. Lakshima's feedback loops back into the system, providing information the next pregnant woman in her position can use to make an informed decision about her provider choice.

HEALTH OUTCOMES

Lakshima Devi's reimagined health experience allows her to access a network of providers, exercise autonomy while choosing among them, and enables **a dignified experience where she does not have to face discrimination while accessing healthcare.** Her experience being observed, recorded, and audited at a central level enables accountability. Further, incentivizing providers who are commonly chosen by citizens provides negative reinforcement to discriminatory attitudes.

CASE 03 Shobha²⁵



Primary Experience

STEP 01

Child has high fever

Shobha lives in Gorakhpur. Her area is often flooded and waterlogged, often mixed with garbage. Her six-year-old Ayush develops a fever, and then complains of a stomach ache.

STEP 02

Treated by multiple care providers

Ayush is first treated at two private hospitals. Then, about a week after the fever had set in, Shobha took Ayush to the community health centre (CHC), there he was referred to Baba Raghav Das Medical College, 50 kilometres away.

STEP 03

Child passes away

Ayush started having seizures after arriving at the hospital. The doctors say he had encephalitis. About five days later, he was dies. However, on his death certificate, it is written that he has acute meningitis and died of cardiopulmonary arrest.

STEP 04

Family unable to receive compensation

The family of an encephalitis patient can't apply for government compensation without the AES number assigned to the case. AES mainly strikes neighbourhoods of poor and marginalised populations. Shobha is now indebted.

Reimagined Journey

STEP 01

Shobha's son falls sick

Shobha is a resident of Brahmasari village in Gorakhpur. Her area is often flooded and waterlogged every time it rains, and the water mixes with cow dung, human faeces and the garbage strewn all over the village. The dirty water enters homes where they cook food where kids play in the water. Her six-year-old Ayush develops a fever, and then complains of a stomach ache.

Due to the common occurrence of floods in the area, there are awareness drives on the dangerous impacts of waterlogging held regularly. Having attended a few of these, Shobha and other residents of the village are quick to recognize Ayush's symptoms, and aware of the steps to be followed in such cases.

STEP 02

Calls toll-free number

She accesses the toll-free number to the state operations center, where using a symptom checker her case is triaged, her PHR updated and because it has been detected as a possible case of AES. An ambulance is rushed to her home while the AES ward, nurses and doctors are prepared for the arrival of this new case, and all that they need to deliver is quality care i.e., expert advice, supplies, and resources made available by the operations center. Her call results in the system recognizing her as a 'blue dot'. These blue dots are vulnerable populations based on socio-economic factors and medical histories. It has in-built, partially automated micro plans which include expert reviewed risk analyses of the blue dot. Further, a pattern recognition engine analyzes and takes action before the blue dot enters a vulnerable state. The observability of the blue dot is enabled by Personal Health Records.

This enables observability of the patients, with protocols to observe the patient before, after and during hospitalization through geotagged reporting within the system. Through this observability, Ayush's hospitalization and treatment plans are reviewed and validated by expert doctors assisted by CDSS in the system.

STEP 03

Community Care Navigators

Telemedicine systems link Shobha and Ayush to their community care navigator. There is one community care-navigator for every 25 people in the population that they are connected to. These are trained health workers who guide her and Ayush through their healthcare journeys. Community care navigators assist citizens in navigating the healthcare system. They triage patients, direct them to appropriate resources and medical facilities, and follow up on their care, thereby solving the care coordination challenges. They predict and ensure that 'denial of service' does not occur by forming the key care coordinating mechanism.

The navigator helps deliver medicines to Ayush and relays information and treatment to and fro the doctor. They become the go-between, providing Information, Education, and Communication (IEC) to the parents and the PHC. They diagnose Ayush even before they reach the hospital via the 'Lab in a Box', which can detect any health variations through back-end algorithms. Additionally, they relay information/treatment to/from the doctor, even connecting them directly to Ayush when required through video conferencing. Ayush is thus correctly diagnosed, and his diagnosis is recorded by the system in real time.

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STEP 04

Access to Compensation

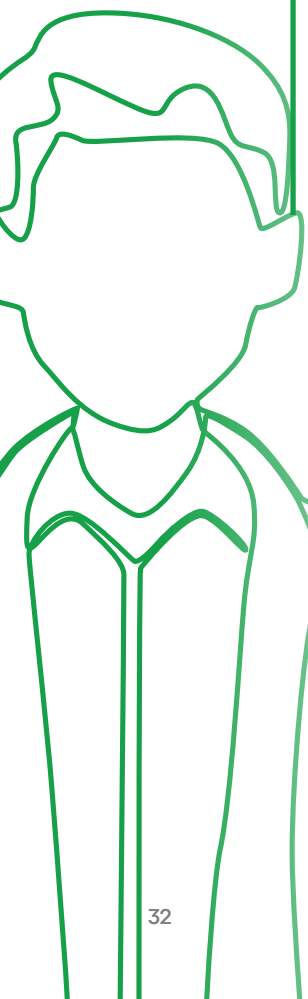
The system recognizes the high risk of the family facing the problem at an early stage as Ayush has already been marked as a blue dot. This systemic observability through the integrated automated health app allows not only easy reimbursement, but also includes a mobile wallet where vouchers can be made available for use through external contributions (individuals, CSR funding, etc). She can also use the system to pay for the treatment. The blue dot status directs monthly deposits for social protection from societal donations to take care of the underprivileged and vulnerable persons towards her. Thus, out of pocket expenditure decreases.

HEALTH OUTCOMES

The reimagined health journey of both Shobha and Ayush involves them accessing a wider network of providers and better quality of care, as a result of which they have a smoother and dignified experience. Shobha is able to easily access Ayush's past medical records and current diagnosis, allowing her to gain knowledge and be well informed.

Ayush is able to access care from a variety of providers including expert doctors who validate his treatment plans, increasing his chances of recovery. Lastly, Shobha no longer has to worry about out of pocket expenses, as she is able to access government compensation with more ease, and also avail contributions from external sources due to Ayush's blue dot status.

CASE 04 Abdul Rehman²⁶



Primary Experience

STEP 01

Diabetic middle-class man

Abdul Rahman is a middle-class man living in Mumbai. He has to go to the hospital every week to get his foot bandaged. He also needs to address other problems arising out of acute diabetes and blocked circulation.

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STEP 02

Recurring surgeries

He notices a small black spot on his toe, which hurt badly. The darkened skin was excised but it didn't help. Within a week, his toe is cut off, and after a month-half his foot. He also gets an angioplasty to remove the blood circulation blockages. Now, his sugar levels are high and his entire foot may be amputated.

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STEP 03

Entire savings spent on healthcare

He has to return to the hospital for another set of scans and tests, and another surgery. He is exhausted and dejected by the day. He is worried that the surgery is consuming his savings, pushing him into a life of debt, and leaving limited prospects for his children.

Reimagined Journey

STEP 01

Abdul Rahman has diabetes

Abdul Rahman is a diabetic middle-class man who lives in Mumbai. He has to go to the hospital every week to address other problems arising out of acute diabetes and blocked circulation, including getting his foot bandaged. The taxi fare to the state-run hospital in Sion, barely five kilometers away from his house, is eating away at his savings which afforded him upward mobility back home.

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STEP 02

Preventive Healthcare Infrastructure

In order to avoid overburdening the healthcare system with health concerns arising from middle-class citizens who are predicted to comprise ~40% of the population, India's investment towards healthcare infrastructure is over indexed to preventive healthcare. The quality and scale of healthcare has improved while cost and concentration has decreased. Preventive healthcare habits dominate the mind of the population.

Abdul takes on a regimen of reducing sugar intake, exercising regularly, and eating nutritious food. He integrates these habits into his daily routine to avoid further escalation of his diabetes. As a result, his insulin levels remain under control, and his visits to the hospital become less frequent. He is also able to access customized IEC to better manage his diabetes through an Integrated Automated Health App which stores his Personal Health Records with his consent.

STEP 03

Reduced Out of Pocket Expenditure

Financial incentives such as payments and vouchers to encourage Abdul Rahman to undergo preventive care such as screenings and vaccinations. The role of health insurance has also evolved to drive change in health-seeking behavior and focussed on promoting preventive healthcare. The Integrated Automated Health App notifies him whenever his appointments are due. The App offers multiple options for payments, each of which allows him to reduce his out-of-pocket expenditure through insurance.

Furthered, powered by the benefits of health affirming habits showcased by the App, out of pocket expenditure decreases. At a systemic level, observability is enabled by a national infrastructure for health and behavior change which anchors research and policymaking on preventative healthcare, ultimately reducing the disease burden on India's health infrastructure.

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The role of health insurance has also evolved to drive change in health-seeking behavior and focussed on promoting preventive healthcare.

HEALTH OUTCOMES

Abdul Rahman's health experience is transformed by preventive healthcare infrastructure. **As he inculcates better habits, reducing sugar intake, exercising regularly, and eating nutritious food, he reduces the frequency of his visits to the hospital.**


Further, escalations in his condition can also be avoided as a result of preventive healthcare habits. Lastly, Abdul Rahman does not have to worry about his treatment and visits to the hospital eating up his savings as financial incentives and preventive health insurance reduce out of pocket expenditure.

References

1. Invest India. (2022). “E-Health Services and Technology Interventions”. Retrieved from <https://www.investindia.gov.in/team-india-blogs/e-health-services-and-technology-interventions>
2. Soni, Y. (2019). “Healthcare Landscape of India: The State of India’s Healthtech Startups”. Retrieved from <https://inc42.com/features/healthtech-startups-landscape-india/>
3. *National Health Authority* (2022)
4. International Labour Organization. (2022). “Accessing Medical Benefits Under ESI Scheme: A Demand-side Perspective”. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-new_delhi/documents/publication/wcms_841438.pdf
5. Please refer to the *Annexure* for a detailed list of contributors.
6. Press Trust of India. (2021). “India Poised to Become \$5-trillion Economy by 2024-25, says Hardeep Puri”. *The Hindu*. Retrieved from <https://www.thehindu.com/business/Economy/india-poised-to-become-5-trillion-economy-by-2024-25-says-hardeep-puri/article37109086.ece>
7. Das, J., et al. (2022). “Two Indias: The Structure of Primary Health Care Markets in Rural Indian Villages with Implications for Policy”. *Social Science and Medicine*. <https://www.sciencedirect.com/science/article/pii/S0277953620300186>
8. Harvard study on health systems assessment in Odisha (Funded by BMGF).
9. Das, J., et al. (2022). “Two Indias: The Structure of Primary Health Care Markets in Rural Indian Villages with Implications for Policy”. *Social Science and Medicine*. <https://www.sciencedirect.com/science/article/pii/S0277953620300186>
10. The World Bank. <https://data.worldbank.org/indicator/SH.XPD.OOPC.CH.ZS?locations=IN>

11. Adapted from: World Health Organization. (2010). "The WHO Health Systems Framework". Retrieved from <https://apps.who.int/iris/bitstream/handle/10665/258734/9789241564052-eng.pdf>
12. Each of these big ideas were also applied to four real life case studies selected from People's Archive of Rural India (PARI) and USAID to understand current failures and outline ideal journeys.
13. Mishra, S. (2022). "Woman Gives Birth on Road". *The Times of India*. <https://timesofindia.indiatimes.com/city/dehradun/woman-gives-birth-on-road-while-waiting-for-ambulance-baby-girl-dies-hours-later-in-hosp/articleshow/89064508.cms>. (Accessed July 2022)
14. Mishra, S. (2022). "Woman Gives Birth on Road". *The Times of India*. <https://timesofindia.indiatimes.com/city/dehradun/woman-gives-birth-on-road-while-waiting-for-ambulance-baby-girl-dies-hours-later-in-hosp/articleshow/89064508.cms>. (Accessed July 2022)
15. M.N., Parth (2022). "People like us are never treated well". People's Archive of Rural India. <https://ruralindiaonline.org/en/articles/people-like-us-are-never-treated-well/>. (Accessed July 2022)
16. Roberts, D. (2015). Opinion: How the US Embassy Tweeted to Clear Beijing's Air. *Wired*. Retrieved from <https://www.wired.com/2015/03/opinion-us-embassy-beijing-tweeted-clear-air/>
17. Sarwal, D., & Gupta, V. (2022). 'Personal Health Record'. National Library of Medicine. <https://www.ncbi.nlm.nih.gov/books/NBK557757/#:~:text=A%20personal%20health%20record%20>. (Accessed August 2022)
18. Ojha, N. P. (2019). How India will consume in 2030: 10 mega trends. World Economic Forum. Retrieved 14 October 2022, from <https://www.weforum.org/agenda/2019/01/10-mega-trends-for-india-in-2030-the-future-of-consumption-in-one-of-the-fastest-growing-consumer-markets/>
19. Davies, J. (2021). The Many Benefits of Full Stack Thinking. Retrieved 14 October 2022, from <https://medium.com/curious/the-many-benefits-of-full-stack-thinking-46831f65e768>

20. In statistics, a power law is a functional relationship between two quantities, where a relative change in one quantity results in a proportional relative change in the other quantity, independent of the initial size of those quantities: one quantity varies as a power of another.
21. If you are a policymaker, a philanthropist, an entrepreneur, a part of our health workforce or an interested citizen working at the intersection of digital technology and healthcare solutions, we would love to hear from you. Please write to us at aaditya.shetty@sattva.co.in or anshita.kasal@sattva.co.in to provide your feedback.
22. Islam, M. et al. (2006). 'Urban Health and Care-Seeking Behavior: A Case Study of Slums in India and the Philippines'. USAID. <https://urban-links.org/wp-content/uploads/PNADI063.pdf>. (Accessed July 2022)
23. The 10 bed ICU model already has the code base for this and can be expanded further.
24. M.N., Parth (2022). "People like us are never treated well". People's Archive of Rural India. <https://ruralindiaonline.org/en/articles/people-like-us-are-never-treated-well/>. (Accessed July 2022)
25. M.N., Parth. (2022). 'Fevers, Fears and Missing Figures in Gorakhpur'. People's Archive of Rural India. <https://ruralindiaonline.org/en/articles/fevers-fears-and-missing-figures-in-gorakhpur/>. (Accessed July 2022)
26. Inspired by Joshi, Sharmila. (2022). 'Driver Abdul Rahman now in the wrong lane'. People's Archive of Rural India. <https://ruralindiaonline.org/en/articles/driver-abdul-rahman-now-in-the-wrong-lane/>. (Accessed July 2022)



This Vision Document used a context-independent lens to outline the drivers, resources, and adoption journey to enable health systems change in India.

