

DIGITAL HEALTH: BUILDING BLOCKS FOR A COVID WORLD

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MANTRA RESEARCH

Beyond The Pandemic:
Delivering Superior Digital
Health Experiences At Home

INTRODUCTION

The COVID-19 Pandemic has been the unlikely catalyst needed to foster a 'digital everything' world. Since March 2020, India has seen a surge in digital-first health deployments.

The challenges of in-person care during a global health crisis has necessitated patients, care providers & regulators to also embrace virtual-based healthcare technology.

Healthcare tele-consultations has risen by 500%, of which over 80% were first-time users mostly from smaller cities, while the average time spent with a doctor online was eight minutes. In fact, more consumers today are getting their prescriptions and medical advice through virtual visits than ever before.

The digitally enabled healthcare consumer is informed, proactive and above all lives in an omni-connected world. In India, the telemedicine and remote care market alone is valued at \$5.4 Bn for 2020.

Over the last 6 years, \$2.3 Bn has been infused into nearly 288 Indian Healthtech startups. Telemedicine is the largest driver fueling the \$21 Bn healthtech market in India.

Today's consumers are showing greater proclivity towards adopting mHealth apps, willingness to share their personal health information as a result of the crisis, receive at-home self-diagnostic and genetic tests.

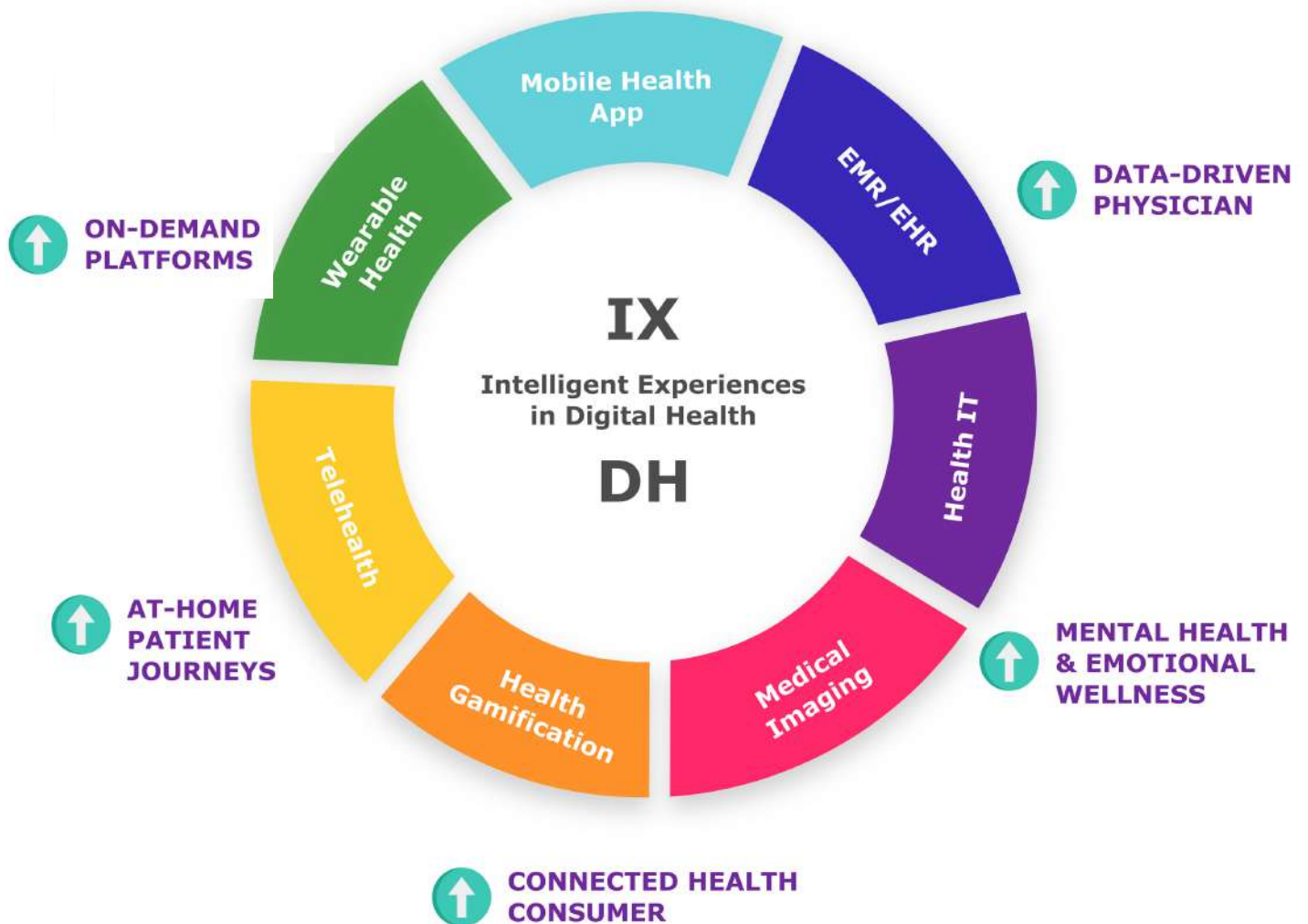
While social distancing measures and remote working may prevail for the foreseeable future, Healthcare providers must rise up to meet the demands posed by a COVID World - **Bringing the hospital to the customer.**

This paper explores the recent trends in the healthcare industry and how Mantra Labs will support healthcare providers on their journey to becoming intelligent enterprises.

THE INTELLIGENT EXPERIENCES FUTURE OF DIGITAL HEALTHCARE

The Internet of Intelligent Experiences is a catalyst that will accelerate the changes necessary for creating an intuitive, patient-centered digital healthcare system.

Five Forces shaping the IX DH Future



Part 1:

ON-DEMAND PLATFORMS

On-demand healthcare services like digital pharmacies, home visits, virtual consultations and ambulance services, among others are fueled by the rising demand for 'in-home' care.

Deploying real-time operations, based on up-to-the-minute pricing and rating, is at the centre of any on-demand health services platform.

By accelerating price & quality transparency - OD platforms like Netflix, Uber and Airbnb have disrupted the 'supply & demand' equation within their industries.

A connected ecosystem of health services will accelerate digital self-

care through new care delivery business models from "virtual first" visits to retail "health hubs".

Health Plans will diversify beyond wellness and healthcare into 'lifecare' that includes wealth and lifestyle management.

So, the question is not can but 'will' health customers download healthcare?

The reality is that a growing number of consumers believe mobile devices and trackers positively impact their health behaviors. There has been a sharp increase in these utilizations of digital health services like doctor

Major Trends driving Changing Consumer Health Behavior



HYPER-LOCALIZATION OF HEALTHCARE

88%



HEALTH TRACKING & DATA-EMPOWERED DECISION MAKING

74%



E-PHARMACY MARKETPLACES

58%



INCREASING 4G SPEEDS & ACCESS

42%



EARLY DIAGNOSIS & PREVENTION INTERVENTIONS

29%



USE & OWNERSHIP OF MEDICAL RECORD DATA

12%

consultations, medicine delivery and consumption of healthcare content.

Many Healthcare organizations are planning for a hybrid business model to capture multiple market segments and create synergies of scale either through OD platforms or hospital-as-a-service mode of care delivery.

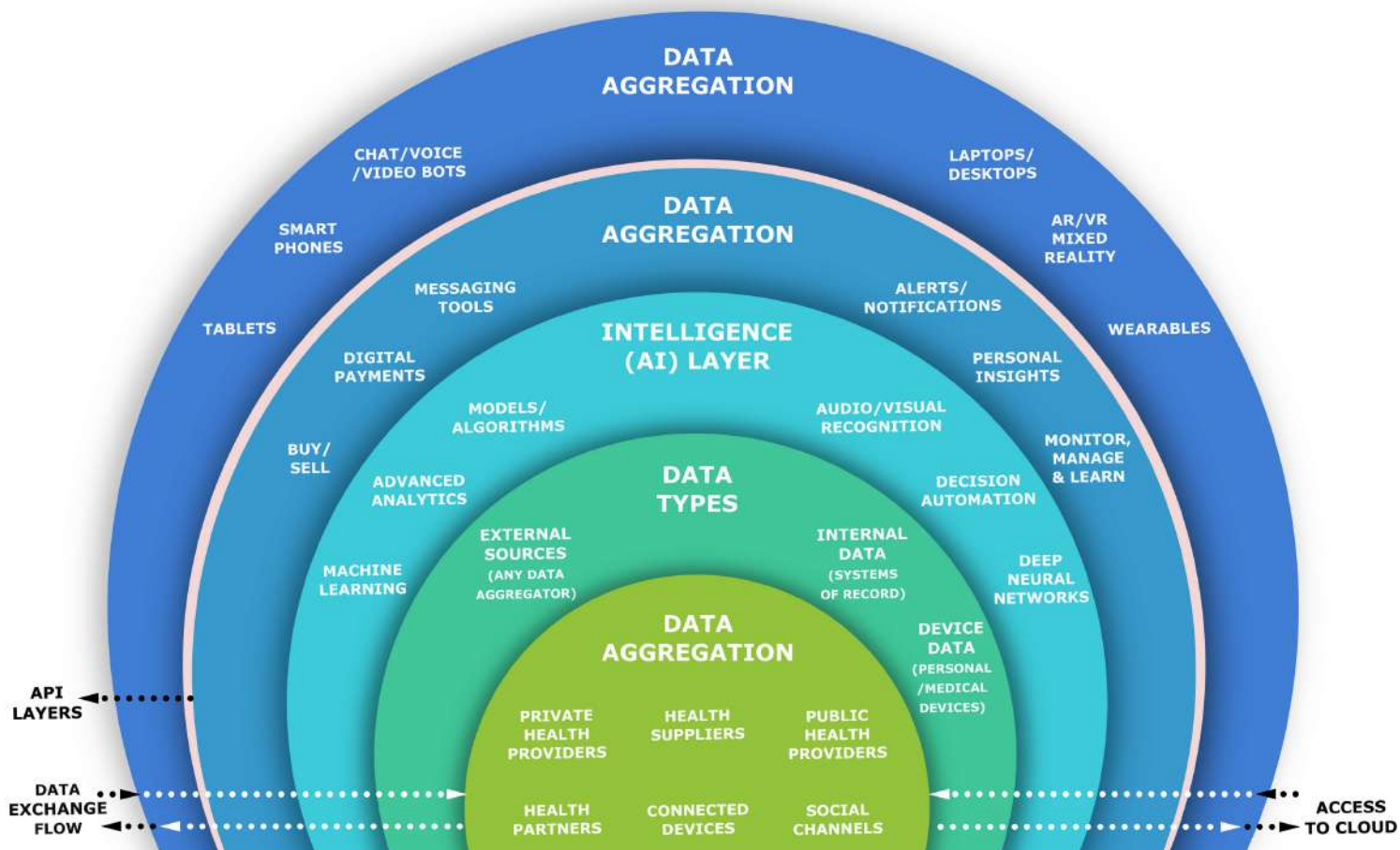
OD Health Platforms like Practo, Doc Prime etc. are growing on the backs of telemedicine, that is removing many infrastructural challenges.

Telemedicine is expected to touch \$5.4 Bn by 2025, at 31% CAGR. The C2B (Consumer-to-Business) OD health platform of tomorrow will be delocalized, guided by AI/ML and will follow a 'customized-to-me' path.

Being disruptive without being *disrupting*.

Data & insights flowing from consumer's devices through On-Demand platforms will shape 'instantaneous action' for healthcare providers.

The Healthcare On-Demand Ecosystem



Part 2:

THE CONNECTED HEALTH CONSUMER

Healthcare journeys often involve multiple specialists and can be fragmented or impersonal for patients. For example, support communications may involve form-filling and countless calls instead of their preferred channels of choice.

Connected devices coupled with sensors can track and capture an ever-expanding range of data for disease diagnosis and management.

Poor experiences exist because organizations have large silos of unstructured data, lack control over content and often don't understand — patient profiles, journeys, and information needs.

According to a recent FICCI-BCG Report, 60% of patients across metros and tier 1 cities will continue using digital platforms for primary care in the post COVID world.

India is home to over 400,000 mobile health apps, that monitor a variety of health data — heart rate, blood pressure, sleep/rest patterns, calorie intake, physical activity, blood glucose, cholesterol levels, etc.

The rise in adoption of mHealth apps is also indicative of stronger engagement levels driving the market towards \$2.4 Bn by 2024.

Top Consumer Uses of Mobile Health Apps



FITNESS & WELLNESS

77%



DIET & NUTRITION

71%



TRACK ACTIVITY & EXERCISE

58%



MENTAL HEALTH

43%



WOMEN'S HEALTH

36%



PERSONAL HEALTH RECORDS

22%

Among at-home consumers, at least —
(Between July - October 2020)



1 in 3 ↑

Used Fitness Apps



1 in 4 ↑

Used Telehealth Services



1 in 5 ↑

Used Virtual Doctors

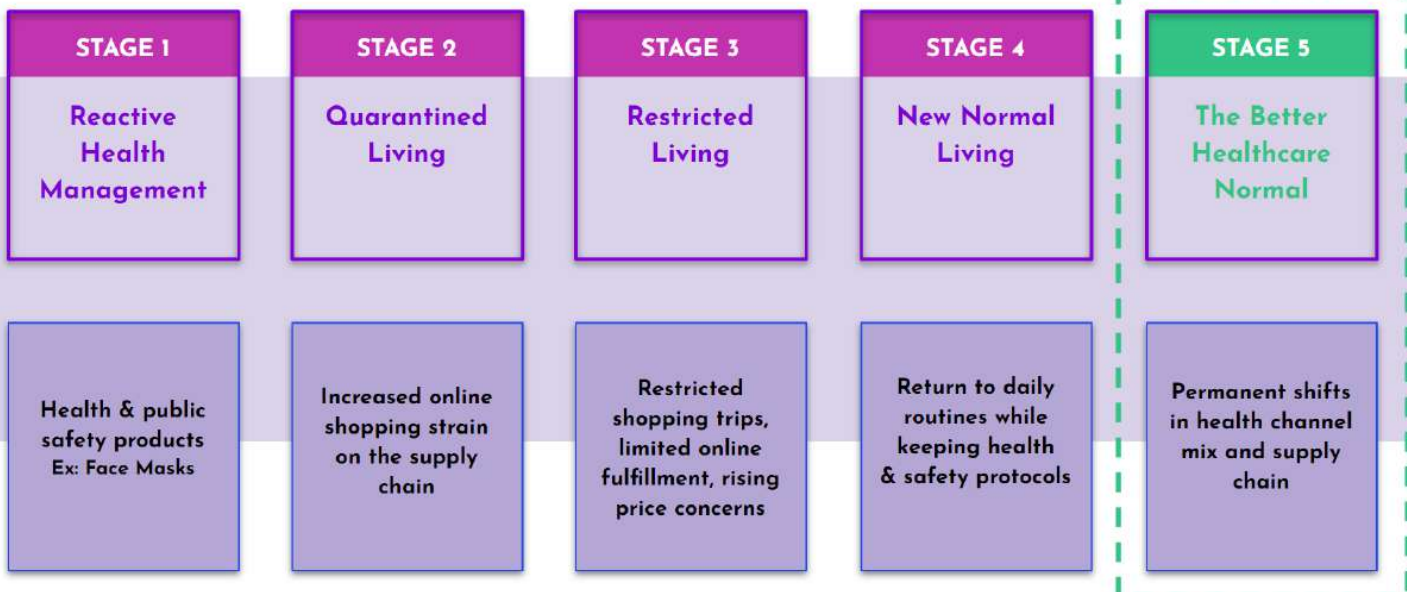
During the lockdown period, tele-consultation services were accessed by over 2000 small towns, of which 80% were first-time users.

Patients also agree that there are fundamental benefits like shorter wait times and easy access to qualified doctors that mattered most to them.

Digital Health is not just cliché, it's better health outcomes.

Consumers want healthcare on their terms and not at the convenience of healthcare providers.

The 'Evolved' Health Consumer



Part 3:

THE DATA-DRIVEN PHYSICIAN

The role of digital has also enabled changes in doctor behavior, such as adopting new tools like digital health records in their practices.

In India, healthcare professionals are finding critical clinical information through apps and engaging with medical reps digitally. At least 70% of acute & chronic disease health problems can be diagnosed and treated online.

According to the FICCI-BCG report, 85% of the clinicians used digital platforms for patient interactions during the lockdown.

As per World Bank estimations, India faces a dearth of an estimated 6 Mn

doctors and 20 Mn nurses. In fact, there is only one government doctor for every 1,139 people.

In rural tier2 and tier 3 cities, only 13% of the people have access to a primary health centre, 33% to a sub-center and 9.6% to a hospital.

Specialist doctors are in greater demand, since more than 90% of specialists practice only in metro cities.

The Pandemic has created a surge in doctor consults through new virtual channels. Vertical e-pharmacies, diagnostics and insurers have been beneficiaries of the doctor-led demand.

Key Factors: Physicians & Virtual Health Tools



FOLLOW-UPS IN CHRONIC CASES

91%



CONNECT WITH NEW PATIENTS

89%



SHORTER IN-CLINIC & HOSPITAL STAYS

69%



CONNECT WITH NEW GEOGRAPHIES

54%



LOWER CLINICIAN BURNOUT

26%



PATIENT HEALTH RECORDS

25%

Platforms like Practo, Tattvan, Lybrate and mFine have increased their doctor base by at least 50%, and has seen around a 3X-5X jump in new tele-consults, since lockdowns began.

With the NDHM (National Digital Health Mission), doctors will be able to collaborate at scale.

The Doctor will now see you, online.

The future physician's toolkit includes: EHRs, Telemedicine, Wearable Monitoring Devices, Personalized Medicine & VR/AR.

This 'Interoperability' is critical to unlocking the power of digital tools to enable a consumer-centric health system.

It will allow data to move from where it is captured to where it is needed, in real time—whether to the consumer or the clinician, or both.

This data can then be transformed using advanced analytics into meaningful knowledge and insights, accessible to both consumers and their provider teams to inform the best decisions focused across their journey of care.

With an interoperable system, each and every person has choices along their journey of care, informed by their personal health data and track progress towards outcomes.

Preferred Use of Digital Tools by Healthcare Professionals



REMOTE CONSULTATIONS



TRIAGE & DIAGNOSIS



POST-CARE/AT-HOME MANAGEMENT



IN-HOSPITAL MANAGEMENT



MENTAL HEALTH SUPPORT



TRACKING & TESTING



Part 4:

'AT-HOME' DIGITAL PATIENT JOURNEYS

1

PREVENTION

Online education of patients on disease prevention.

Curated health content repositories, questionnaires and self-help guides for effective intervention.



2

DIAGNOSIS

Patients are connected with their primary care providers via video consultations.

Book online consults, diagnostic tests and join virtual waiting rooms.



3

TREATMENT

Doctors prescribe drugs/medicines electronically.

Personalized medicine, and targeted therapies based on patient's unique health profile.



4

MEDICINE DELIVERY

Drug delivery services obtain e-prescriptions bringing medication directly to the patient's doorstep.

Auto-scheduling of prescriptions & tracking medicine order history.



5

DISEASE MANAGEMENT

Routine Follow-ups with patients are performed remotely via video, text or call.

Structured chronic care treatment plans; tips & resources to self-care management techniques



6

CONTINUUM OF CARE

Continued access to preferred primary doctors and extended care teams.

Accurate health profiles built on advanced data insights.



Healthcare (Provider)



Insurance (Payer)



Drug Pharmacy



Diagnostic Testing



Delivery Service

India's home healthcare industry is projected to touch \$11 Bn by 2025, growing at 15% CAGR, as per a Redseer consulting report.

In 2020, there are around 100,000 patients being served by home healthcare providers. At-Home care solutions are also expected to be at least 40% less costly than compared to in-hospital visits.

According to a recent FICCI survey, 54% of people preferred laboratory tests, nursing care and delivery of medicines at home.

Patients compare their homecare models with at-home services provided by other on-demand digital platforms such as entertainment, retail and banking.

Designing at-home patient care journeys can be challenging to address the consumer's core pain points, fostering patient dignity through transparency and communication.

Most patients feel confused, uncared for, misinformed and are often in the "last-to-know" on what's happening.

Patients also prefer a personalized healthcare approach based on data, that includes more face-time with doctors, so as to reduce treatment gaps in their home care experience.

Bringing the digital hospital to the consumer.

Home Healthcare-as-a-model can augment low-cost access for the 340 Mn Indians who will be aged 60 and over by 2050.

Home Healthcare Patients Prefer



AI VOICE ASSISTANTS



PERSONAL WEARABLE SENSORS



HOME & ENVIRONMENTAL SENSORS



TELE-MEDICINE & OTHER DIGITAL INTERVENTIONS



CONNECTED MONITORS & DEVICES



ROBO HEALTH ADVISORS



Part 5:

MENTAL HEALTH & EMOTIONAL WELLNESS

In India, over 200 million people suffer from mental disorders, and only 15-25% of them receive any mental health care. Moreover, there is only one psychiatrist for every 1000,000 people in the country.

Online counselling provides significantly less costly, by at least 65%, interventions than face-to-face sessions.

Studies reveal that most male patients that take regular behavioral counselling online are from cities; while most female patients are from smaller towns.

Mental health services also include access to psychologists, career & life

coaches, meditation guides, self-help exercises, 24/7 support via video, chat, audio or face-to-face.

Conversational AI, both chat and voice driven, built on natural language processing and complex learning models mimic empathetic human-like approaches to reducing stress and anxiety in patients.

Virtual therapists can also be modeled to predict depression by analyzing data of consenting users from social media platforms using specific linguistic benchmarks that exhibit mental disease.

Similarly, training models on facial expressions and the tonality of voice can help find predictive indicators to high suicide risk.

The flow of data streams collected from mobile apps, sensors, voice, biomarkers will feed into machine learning systems and make timely recommendations for the patient.

Bots are taking over as *personal therapy coaches*.

The AI Mental Wellness tool includes tracking your mood and behaviors to predict the chances of recurring symptoms.

Mental Health Users value AI-based Therapy for



MOOD & BEHAVIOR TRACKER



THERAPEUTIC TWO-WAY DIALOGUE



ANONYMOUS & ENCRYPTED CONVERSATIONS



CLINICAL EXPERTISE



PERSONALIZED EMOTIONAL WELLNESS



SELF-HELP TOOLS & EXERCISES



Case Highlight



Checking-in with a Personal AI Therapist

Mantra Labs is a co-creator of Wysa - an AI driven "emotionally intelligent" wellness bot which has helped 2.5 Mn people with mental health problems, and has handled over 100 Mn conversations to date.

Using AI/NLP, Wysa is designed to track emotions, develop emotional awareness, and understand one's mood.

It also guides its users through mindfulness meditations, self-care exercises, then measures how you're feeling and creates weekly reports.

Wysa is rated by ORCHA - the World's foremost health app evaluation agency - with an overall rating of 93%, including a 100% for clinical safety. It is also the most recommend app for COVID-19 stress and anxiety.

It is available via mobile app, and is one of the highest rated health & wellness tools in its category. Wysa has also been featured extensively by the BBC, Bloomberg, NHS (UK), Entrepreneur and other leading publications.

Hospital & Clinician Use Cases for Digital Health

- L Health Symptom Checker**
A health engagement tool for customers equipped with a lead generation engine.
- L Appointment Booking**
Doctor or Surgery scheduling using simple interactions to drive more bookings.
- L Heroism Recognition**
A mood checker and feedback capture tool to honor appreciate frontline health workers.
- M Emotional Wellness**
Provide psychological counselling for customer wellness through engaging conversations.
- M Video KYC**
Onboard new customers and authenticate KYC details, capture e-signatures.
- M Operations Automation**
Manage simple workflows in HR, operations & ticket management to reduce dependency on stressed resources.
- H Tele-Consultation**
Scheduling health consultations with doctors via video for remote diagnosis.
- H Medical Test Booking**
Schedule appointments for common pathology tests & blood sample pick-ups from home.
- H One-Stop Customer Mobile App**
Schedule health checkups, homecare visits, virtual consults, access medical records and locate nearby centers.
- H Medical Ordering**
Allow customers to upload their prescription, order medicines and schedule contactless medicine delivery.

Impact Value *measured as increase in potential value*

L < 25% **M** 25%-75% **H** > 75%

Case Highlight

abbvie

AI Powered Research on Genes and their Interconnectivity

AbbVie is a \$33 billion, publicly traded US bio-pharmaceutical company that produces specialty drugs for health issues ranging from life threatening illnesses to chronic conditions.

The pharma major required a way to extract & compile a list of genes with their weighted interconnectivity found in research papers. They also stood in need of a visualization framework for representing genes and proteins.

Mantra Labs built an AI-powered research tool for extracting information about genes and their interconnectivity. An intelligent Text Parsing tool, can comb through multiple research paper document formats.

Along with Frequency Determination (CountVector, nGrams) and Spectral Clustering (Graph Partitioning) - pairs of genes were successfully identified including their location, sentence structure and context.

Diagnostics & Pathology Use Cases for Digital Health

- L AI-powered Health Advisor**
Engagement tool that identifies early patients considering surgery to recommend treatment options.
- M Intelligent Document Parsing**
Automated data extraction from any medical document format, to extract rich semantic information.
- H Medical Image Analysis**
Trained AI models on relevant medical image data from reports that improves diagnostic accuracy.
- H AI-based Pathology**
Pathology tool built on ML models for whole slide imaging & analysis to accurately identify disease progression.

H Self-Service AI

Help customers instantly access reports, book medical tests, pay bills and resolve queries faster.

H Cloud-based Lead Management

Capture, manage & track leads, get detailed reports from a single web-based interface.

H Phlebotomist Mobile App

Enables the field team to manage home sample collection requests, view daily collection schedules, etc.

H Digital Lab

Case-based tracking, schedule appointments, extract diagnostic data from pathology reports, etc.

Impact Value *measured as increase in potential value*

L < 25% **M** 25%-75% **H** > 75%

Case Highlight

ManipalHospitals
LIFE'S ON

Gifting Patients with Healthcare Self-Service

Manipal Hospitals is a multi-national healthcare company based in Bangalore, and is one of India's largest hospital networks serving over 2 million patients each year.

By transforming its digital route for patient care, The Manipal Group looked to expand its World-class services to Bharat.

Their core audience is made of young digital users, under 35, who actively use digital health services. Having a one-stop mobile-based channel for delivery of health services became an urgent priority.

Mantra showcased how a 360° patient management solution over an app can create value for management, the hospital staff & their patients.

Through deep consumer research, competition benchmarking, journey mapping & product differentiation analysis - Mantra provided insights into framing the right product experience for each behavioral archetype.

The end-result is an intuitive, self-service health application that allows users to find doctor's, maintain health profiles & access insightful medical reports on the go.

Health Insurance Provider Use Cases for Digital Health

- L Health Symptom Checker**
A health engagement tool for customers equipped with a lead generation engine.
- L Quote Generation**
Engage, qualify leads and generate quotes for consumer insurance products.
- L Risk Advisor**
Gamified quiz that provides users with their risk persona, and then recommends right set of products.
- M Emotional Wellness**
Provide psychological counselling for customer wellness through engaging conversations.
- M Second Opinion**
Schedule video chat with Second opinion-certified Physicians to diagnose patient concerns.
- M Virtual Agent**
Create service tasks, compare plans, build quotes, answer queries, personalize and up-sell.
- H Video KYC**
Onboard new customers and authenticate KYC details, capture e-signatures.
- H Tele-Consultation**
Scheduling health consultations with doctors via video for remote diagnosis.
- H Operations Automation**
Automate ticket management systems, streamline employee, agent onboarding, integrate chatbot on WhatsApp/FB for raising internal tickets.

Impact Value *measured as increase in potential value*

L < 25% **M** 25%-75% **H** > 75%

DIGITAL HEALTHCARE TRANSFORMATION ROADMAP

This four step checklist can help evolving healthcare enterprises adopt a clear and purposeful digital health strategy for achieving business specific goals.

1. Personalize & Connect

Ask: Can the technology be personalized to each consumer with fine-tuned care plans, engagement strategies, and supports incorporated?

Do: This phase includes fore-sighting, identifying voice of ecosystem, scenario-planning and value-chain analysis.

2. Integrate Solutions

Ask: Does the technology support and allow connection across all aspects of care, and among care teams (i.e. EHR integration)?

Do: Define the business model architecture, platform definitions, partner strategy, investment priorities and program roadmap.

3. The 'Right-fit' Partner

Ask: Does the supporting technology partner have the organization structure, talent, culture, tools and techniques to be aligned with your organization to unlock innovation and transformation?

Do: Collect business model requirements, conduct complex measurement outcomes, and identify outcome trends.

4. Incubate, Measure & Optimize

Ask: Does the technology support optimization of care – including changes in care plans, improvements in outcomes, and the utilization of preventative care?

Do: In this final phase - pilot the launch, monitor & refine the capabilities, and then optimize the commercial approach.

CONCLUSION

Globally, changing health & wellness consumption patterns are shaping 'a better healthcare normal' fueled by intelligent experiences.

Digital Healthcare is shifting towards a patient-centered and outcome-based delivery model.

Telehealth, chatbots (for triage), self-testing services, as well as tracking & tracing solutions were the first in line to be promoted by government institutions.

This has prompted \$4.6 Bn in funding being poured into Indian health startups to address the challenges brought on by the Pandemic.

The next phase of adoption will also bring about new digital accelerants including the rise in on-demand healthcare, greater inclusion of big data in healthcare, virtual reality-based treatment, increase in cloud migration and voice-driven AI health assistants.

By bringing together the major technical and business trends of mobility, automation and data analytics, the next era of digital health can - enable a superior healing experience for patients, improving care and outcomes.

Supporting new care approaches and solutions to make care delivery more intuitive, intelligent and more efficient will enable an optimized care pathway.

Digital health, especially for a COVID or Post-COVID World, has the potential to redefine how people, technology, devices interact and connect in healthcare environments; helping promote better care, reduce costs and **bring the hospital directly to the patient's doorstep.**



RESEARCH METHODOLOGY

The data and insights provided in this document features research collected via an online survey from a sample of 300+ health consumers and 100+ senior healthcare managers & executives responsible for digital customer experience operations and technology related decisions for their company, within India.

The perspectives and insights provided in this report are gleaned from a mix of survey responses and personal interviews conducted with a select panel within the polled group. The survey was carried throughout September & October 2020.

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ABOUT MANTRA LABS

Mantra Labs is an AI-first products & solutions firm with a core team of 200+ digital tinkerers and experimentalists, having delivered 125+ projects around the globe. The company specializes in solving real-world front & back-office challenges faced by digital enterprises using Artificial Intelligence. Mantra has worked with some of the World's leading organizations like Ola, Myntra, Quikr, Alkem, Manipal Hospitals, Abbvie, SBI General Insurance, Care Health, DHFL Pramerica, Aditya Birla Capital and AIA Hong Kong.

Mantra Labs is also a recognized InsurTech100 company deeply involved in developing technology solutions for business-specific problems with several strategic technology partnerships including MongoDB, IBM Watson and Nvidia.

Mantra Research explores evolving market, business & technology tenors shaping the future of work. Our insights examine present and forward-facing opportunities across any industry enterprise through compelling expert opinions & thought leadership.

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