







Patient Centricity In the Digital Age Transforming Healthcare Through Al



30th June 2023 | Radisson Blu, Bengaluru





Foreword

The Honorable Health Minister of Karnataka, Shri Dinesh Gundu Rao, reiterated the government's commitment to healthcare as a fundamental responsibility. He expressed a keen interest in collaborating with the healthcare community, emphasizing his office's open-door policy for idea exchange and proactive responses. He highlighted key healthcare challenges, such as rising costs and limited access to specialized care, while underscoring the vital role of digital technology. The honorable minister also discussed the potential of AI in predictive analysis, stressing Karnataka's role as a leader in healthcare innovation.

In conclusion, he affirmed the government's dedication to develop a robust healthcare policy over the next five years, with a focus on embracing innovative solutions.

"As a Health Minister, I consider healthcare a fundamental duty of any responsible government, alongside education. Karnataka has made strides, though there's room for growth. Transparent and user-friendly insurance policies, powered by digital technology, can transform accessibility. My priority is to enhance primary and secondary care, ensuring swift crisis responses, especially in remote areas. We need a well-connected hub-and-spoke model, and Bangalore, being a hub of innovation, should lead the charge. With a roadmap for the future, my office remains open for collaboration, innovation, and progress towards a better healthcare system for Karnataka and the entire nation."



Shri Dinesh Gundu Rao Minister of Health and Family Welfare, Govt. of Karnataka





Foreword

Mr. S Gopalakrishnan, CEO of National Health Agency and Special Secretary of MoHFW, India, stressed the inevitability of digital transformation in healthcare. He highlighted the need for a unified national digital platform similar to Aadhaar, emphasizing the importance of breaking down data silos for healthcare information portability. He outlined key components of the Ayushman Bharat Digital Mission (ABDM), including health facility registries, professional registries, labs, and drug registries. ABDM's goal of seamless health data sharing among providers was emphasized, along with the importance of data privacy and citizens' data ownership.

Mr. Gopalakrishnan acknowledged that ABDM requires collective efforts from governments, public, and private hospitals. He expressed confidence in ABDM's uniqueness and its potential to enhance the healthcare experience, urging collaboration for its success.

"Healthcare is going to be provided by the public and the private players. In India, users can have many different IDs with different depths of biometric technologies. The ABHA number (Ayushman Bharat Health Account), there has to be an identifier for any individual from the first time, even before the child is born, the ABHA number of the individual has to be created and used. Moreover, privacy is a very fundamental rights of the citizen and only the citizen owns his data, but at the same time with suitable technologies if we have a data at national level from coming from a medium, it will also be a very fantastic public health policy input and help in understanding about what's happening where and how the health systems will respond. For the citizen to make healthcare a comfortable experience with public and private digital paperless Ayushman Bharat Digital Mission is a fantastic solution and we will soon reach the total coverage of Ayushman Bharat Digital Mission across the country."



Mr. S. Gopalkrishnan Spl. Secretary, MoHFW, Gol CEO, NHA



Executive Summary

Traditionally, healthcare has consisted of disparate systems with the provider at the centre but now the sector is witnessing a shift towards patient centricity. Technology is a big enabler for this paradigm shift and AI and IoT particularly emerge as the leading technologies in this space.

The eleventh edition of Lifesciences & Healthcare Innovation Forum (#LHIF11), themed on "Patient centricity in the Digital Age: Transforming Healthcare through Al" was hosted at Bengaluru on 30th June 2023. It saw the participation of leaders from the Industry and the Government. This report talks about the thoughts and experiences of the Industry leaders about the adoption of technology led innovations and how it is transforming the grassroots and the industry.

Transforming the work processes and digitalization can pose its own challenges and risks. We cater these challenges and de-risk the adoption of curated digital technology solutions by providing the carefully vetted and tested solutions under Healthcare Innovation Challenge (HIC).

This report also focuses on the current digital health landscape in the country and how the care would look like in near future with the support of pro-patient centric government policies. It also highlights some of the real world – on ground case studies that demonstrates how the emerging technologies like AI is being or can be leveraged to make the care more patient centric.

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About LHIF

Lifesciences and Healthcare Innovation Forum (LHIF) is the largest collaborative platform to bring together key stakeholders from Industry, Government, Innovation and Technology to drive thought leadership to address the industry challenges and defining the future of the healthcare and life sciences sectors.

PAST THEMES OF LHIF:

- Equitable Access to Value-Based Healthcare
- Vaccine Trails
- The Fourth Dimension Deciphering TeleHealth
- Recalibrating the Care Continuum with Technology
- Universal Healthcare Digital Propulsion

About HIC

While Healthcare sector has started experimenting with digital technology solutions, the adoption has been at the periphery. Healthcare Innovation Challenge is a program in that helps mitigating the risks of digital technology adoption through the unique use case-based framework, deep curation of solutions and agile deployment support.

The solutions that emerge from the HIC program meet the following characteristics:

- Right fitment of solution
- Cost of Implementation
- Ease of Use
- Interoperability with existing & legacy systems
- Adherence to Regulatory Compliances



Lifesciences & Healthcare Innovation Forum

Patient Centricity in Digital Age: Transforming Healthcare through AI





Quotes from the Key Spokespersons



Achim Burkart, Consul General, German Consulate General Bengaluru

Role of Smart Devices in Addressing HealthCare Challenges

"The healthcare industry is going through a tremendous transformation to such an extent that two years from now we will only be able to recognise the healthcare system we have today. However, with technology catering to opportunities, there are many drawbacks that are too concerning to be overlooked. The country is in a very transient point in terms of digital transformation and in few years positive outcomes will be certainly seen."

Girish Raghavan, Vice President Of Engineering, GE Healthcare

Leveraging digital twin for patient centric healthcare

"The innovative technologies are going to be exciting for us to really look at the future but only when these technologies must get the right kind of data, that can be impactful and that's where Siemens Healthineers come in. We are working with the Government of India to see the biggest revolution on the digital transformation. And, in next few years, I am certain that we will be able to make a huge difference in terms of creating a digital impact."

Dileep Mangsuli, Executive Director, Siemens Healthineers





Quotes from the Key Spokespersons



"5g is transforming healthcare and quality communications as we invest in foundational system level research that result in thousands of cutting-edge innovations, revealing new cellular technology generation such as 5g and advanced chipsets, software and services on multiple markets including cellular computing, networking, automotive and IoT."

Sudeepto Roy, VP Engineering, Qualcomm Technology Licensing

Digital Technology Transforming Primary Healthcare Delivery

"The healthcare sector generates vast" unstructured data. Unlike other sectors. shifting towards patient-centricity in healthcare poses significant challenges. Simply adopting digital solutions won't transform healthcare: we must rethink processes. We created DiNC. centralizing cancer hospitals and reducing care time by half. The Bridgital model extends this success to primary healthcare, enabling connected care. Working with Karnataka's government, we aim to replicate this nationwide.

Girish Krishnamurthy, CEO & MD, Tata Medical

"Incorporating patient views drives transformation. benefiting both companies and individuals. Our focus is on enhancing healthcare efficiency and financial aspects, while also embracing differential healthcare. Patient-centricity is paramount, reflecting experiences of care providers and recipients. As we navigate complexity and data growth, pinpointing specific issues becomes essential. Human-centric AI design is crucial, and the quest for longitudinal data continues. Embracing AI, digital transformation, and patient-centricity defines our industry's path to impactful healthcare change."

Arvind Vaishnav, Vice President, Head of Philips Innovation Campus

Nasscom Center of Excellence-IoT & AI A Meity Initiative with Govt. of Karnataka, Haryana, Gujarat & AP





(L-R): Mr Ashwin Raghuram, Co-Founder and Partner, Bharat Innovation Fund; Krishnan Neelakantan, Partner, Ankur Capital; Madhurima Agarwal, Managing Director - Microsoft for Startups and Naveen Kashyap - VP- Digital Innovation & Services, Yokogawa Electric Japan

Panel 2: Role of AI in Drug Discovery & Repurposing

Drug Development is a resource & capital-intensive process. However, in recent time AI based tools have made the drug discovery process faster & cheaper. AI based solutions are capable of analysing large volumes of life sciences data and automating the tedious processes to save time & costs. AI helps in accelerating the drug discovery process, from target identification to lead optimization.

Panel 1: Enabling Innovation Ecosystem in Healthcare

Startups & Innovators have to face a lot of challenges like funding, go-to-market, IP protection, regulatory compliances, team building etc. The Innovation support panel had the participation from Innovation enablers highlighting the role they're playing in mitigating some of those challenges.



(TL-R): Adrian Freeman, Sr. Director Indication Discovery, AstraZeneca; Dr. Kavita Lamror, Head - RWE, Sanofi; Dr Sunil Kumar Panigrahi, Aurigene; Mr Harish Thimme Gowda, Director & Head of Automation Strategy, Merck Group and Mr Prasanna Kumar Subbanna







Panel 3 (L-R): Nandkishor Dhomne, CIO, Manipal Health; J P Dwivedi, CIO, Rajiv Gandhi Cancer Institute and Research Center; Arun Goyal, CIO, Sir Ganga Ram Hospital, Sudeep Dey, CIO, HCG and Raghav Radhakrishnan, Vice President & India BusinessHead

Panel 4: Digital Impact in Primary Healthcare

Digital technology is driving transformative changes in primary care, bridging healthcare gaps and improving accessibility. The panel discussed its role in enhancing care delivery and sharing success stories. Challenges in adoption and scaling, along with mitigation strategies, were addressed. NGOs, nonprofits, and CSR institutions were recognized for their vital support in nationwide digital health implementations.

Panel 3: Digital Adoption by Hospitals

Healthcare providers in today's world are increasingly looking forward to the adoption of digital technology solutions for enhancing the quality & accessibility of care delivery. However, there are various challenges associate with the same. The CIOs of leading hospitals of the nation joined the LHIF platform for an engaging panel discussion on Digital Adoption by Hospitals to discuss their digital transformation journey.



(L-R): Ashutosh Shrotriya, Head – Digital, Religare (Care Health); Girish Krishnamurthy, CEO, Tata Medical; Neeraj Jain, Country Director India, PATH and Dr Subhankar Bhasak, Lead - India Health Innovation Hub, AstraZeneca





Roundtable @ LHIF 2023

Roundtable on the policy issues in implementation of digital in Healthcare, Lifesciences and MedTech sector

The roundtable was chaired by Mr. Dinesh Gundu Rao, Hon'ble Minister of Health & Family Welfare, Govt. of Karnataka.







Solution Showcase Booths

Startups like KareXpert, Hidentity, Autoyos, ExpandMyBusiness, I am beside you, Leucine BioTech, Helyxon, Vyli, AIVolved, IgnoImagine sponsored the showcase booths and got an opportunity to promote their solutions, live presentations and brand association.

It was my pleasure to share with you that the event was so well organized with a concise agenda and very accessible venue. The line of speakers were excellent and the takeaway knowledge from the event was quite impressive.

Thanks so much for everyone involved in organizing the event and a special thanks to you for coordinating with the startups participants who showcased their company during the event.

Shanthi Raju, Founder & CEO, Hidentity

Had the privilege of attending the Nasscom Health Tech Conference, and I must say, it was an extraordinary event that left a profound impact on me and my vision for the future.

The summit provided a comprehensive understanding of the current trends and advancements in the health tech space, encouraging us to address the unique challenges our healthcare ecosystem grapples with.

Today, innovation in health tech is more critical than ever before, and the Nasscom Health Tech Conference was the ideal platform to share disruptive ideas. Learning about how startups and established companies alike are making a tangible difference in healthcare delivery, patient outcomes, and accessibility was truly inspiring.





We had some great interactions there and got the chance to connect with industry leaders from all fractions.

The use of case-based awards was the highlight of the event where companies like ours got the chance to showcase their expertise directly to the hospital, which is a great value addition.

Kudos to the Nasscom team and keep on organizing these events in the future as well.

Vandita Sheoran, Deputy General Manager-Marketing, KareXpert Technologies



Healthcare Innovation Challenge 4 Your Partner in Digital Transformation





Use Case Sponsor



Use Case

Indoor patient navigation

The solution should create a mesh within the hospital with specific signal points that will indicate important service points. These signal points will work as lamp posts for navigation. Patient will see current location on this app and will have an option to choose destination location. While walking, the app will track the movement of the patient and will tell how well the patient is navigating on the path and how far is the destination location. Indicative important destinations are:

- 1. Ground Floor Billing Station, OPD Area Ground Floor, OPD Area First Floor
- 2. Lab Sample Collection Station
- 3. Radiology Station Ground Floor & Radiology Station First Floor
 - Minor OT
 - Day Care
 - OT Complex 3rd Floor
 - OT Complex 9th Floor

Expected Outcomes:

A mobile App downloadable on patient's mobile phone to assist the navigation of the patient within the hospital premises.

Realtime **indoor positioning APIs,** using bluetooth beacon, WIFI network and AR markers for providing real-time location-based services



Iwayplus

Dsense.io







Use Case Integrated with Legacy EHR and Automated coding

Intelligent Digital assistant integrating with Legacy EHR having and AI based automated coding with the following capabilities.

- 0 Translating unstructured Data from Legacy EMR into structured data using SNOMED CT & ICD-10
- The solution helps the clinician by auto-suggesting SNOMED codes using NLP and AI and to enable better coding and make EMR records use for better analysis.
- O Develop Visual analytics of the Structured data
- O API based integration with a legacy EHR / EMR
- Must be compatible with the current tool sets published in the CDAC website: https://www.cdac.in/index.aspx?id=hi hs medinfo csno overview
- O Software Development Kits (SDKs) for EHR standards: https://www.nrces.in/services/tools-and-technologies
- 0 Choice of Models of Implementation On Prem / Cloud

Expected Outcomes:

An intelligent digital assistant having AI based automated coding which is easy to use and can co-exist and integrate with Legacy EHR.



Buddi.Al

Augnito & Simbo.Al

nasscom Center of Excellence-IoT & Al





Use Case

OP & IP Automation

A solution for a hospital and having the following capabilities:

- Required to automate registration process through Aadhar card or other government ID with self/OTP consent
- A QR code will be generated which will the UHID for the patient. The QR code can be used to launch the requisite details for the patient
- Payment integration for OPD consultation and other charges
- Integration of lab service, radiology service: Book the test and fetch the report from HIMS/LIS5) Digital Delivery of investigation reports

Platform:

Android based Tablet for Hospital and Patient App for digital delivery of services

Expected Outcomes:

The Patient registration time and waiting time should get reduced

Integration:

Should integrate with HIMS and Billing system (PIs mention the softwares used currently)



MyHealthcare

KareXpert & Bestdoc









Use Case Patient data analytics for better community health

The hospital chain has patient demographic, clinical, and health data for around 1.2 million patients across 16 districts of our medical operations. They wish to create:

- 0 Analytics from the data to better serve the community.
- A data structure and analytics system which can regularly capture that data from their HIMS or through another interface at hospitals whichever is better, create a safe repository of data with adequate data security measures, and analyze that data to help their clinicians and patient for better clinical outcomes.
- Utilize statistical and analytics tools which can inform us from our patient data about our business and help us reach our patients better. Apart from clinical data, various operational data and business marketing data are captured or available but not captured during their operations. A method or a system that can capture and utilize the captured clinical data for better business modeling and analysis.

Expected Outcomes: Business Dashboards, Clinical outcome Dashboards, Operational Dashboards.

Tredence





Use Case Sponsor Healthineers

Use Case Point-of-Care Diagnostic tools

The global medical imaging company is looking for Point-of-Care screening solution with the following capabilities:

- Cancer, Diabetes, Kidney diseases and infectious diseases:
 - The solution will be used in outreach areas, primary healthcare centers, clinics to screen population for various diseases both in urban and rural settings
 - Ready to market, existing deployments/ presence in India, Africa, SEA
 - Deployment will be along with clinical partner
- PoC or Lab based HbA1C test:
 - The solution should be leveraging enzymatic, High performance liquid chromatography or Immuno assay
 - Substantial Performance of test compared to standard devices
 - CDSCO approval / NGSP certification
 - Deployment will be along with clinical partner

Expected Outcomes: A Point-of-Care screening or a diagnostic tool



(Not yet disclosed)



Past HIC Use Cases

Al based risk scoring to aid Underwriting	Al based Claims Automation & Fraud detection	Al based Customer Churn analysis & retention	OPD Automation
Prescription Digitalisation and Voice based EMR	AI based automated SNOMED/ICD coding	Integration of Multiple data sources to create a Data Lake	Remote Patient Monitoring
IP volume prediction based on OP volume	AR/VR based Digital Training	OPD Automation	IPD Automation
Centralized Tele- radiology reporting	Digitising Pathology slides	Al based Pulmonary Diagnosis	Al based Cancer Diagnosis
Al based Surgical Video Recording & Reporting	Early detection of Microbes and Infection	Point-of-Care diagnostics	Indoor Patient Navigation





Digital Trailblazer Awards



Healthcare Innovation Challenge, HIC, is a use case led flagship initiative by NASSCOM CoE to enable the Digital Transformation of Healthcare, by derisking the adoption of curated digital technology solutions. Now, in its 4th edition, various hospitals, diagnostic chains, medtech enterprises and insurance companies have sponsored use cases under this program. Shri Dinesh Gundu Rao, Hon'ble Minister of Health & Family Welfare, Govt. of Karnataka gave away awards to the following: (TL) Mr Arun Goyal, CIO, Sir Ganga Ram Hospital; (TR) Mr Shyamnath Harinath, Siemens Healthineers; (BL) Vikas Upadhyay, Iwayplus; (BR) Ms Vandita Sheoran, KareXpert; (Center) Mr J.P. Dwivedi, CIO, Rajiv Gandhi Cancer Institute



Indian Digital Healthcare Market: Emerging Tech Integration





Overview of the Indian Healthcare Industry



US\$ 6.06 billion

Indian digital healthcare market by 2024, growing at 27.41% CAGR (<u>1</u>)



US\$ 10.76 billion

Budget allocated to MoHFW under the Union Budget 2023-24 which is an increase of 3.43% from 2021-22. (<u>2</u>)



US\$ 870 million

Funds allocated to the newly announced PM-ABHIM to strengthen India's health infrastructure and improve the country's primary, secondary and tertiary care services. (3)



India

healthtech sector. (4)

US\$ 4.44 billion

As of 2021, no. of active Startups operating in

3500+ Health Tech Startups in

Funds allocated for country's premier digital healthcare initiative, National Digital Health Mission (NDHM)(<u>5</u>)



70.51% increase

In the funds allocated for NDHM/ ABDM under Union Budget 2023-24 from the previous year's budget.

(Source: <u>https://kpmg.com/in/en/home/insights/2021/11/healthcare-digitalisation-opportunity-data-mantra.html</u>; <u>https://www.ibef.org/download/1682315060</u> <u>Healthcare-Feb-2023.pdf</u>; <u>https://www.ibef.org/download/1682315060</u> <u>Healthcare-Feb-2023.pdf</u>; <u>https://www.ibef.org/download/1682315060</u> <u>Healthcare-Feb-2023.pdf</u>; <u>https://www.ibef.org/download/1682315060</u> <u>Healthcare-Feb-2023.pdf</u>; <u>https://www.ibef.org/download/1682315060</u> <u>Healthcare-Feb-2023.pdf</u>; <u>https://www.aninews.in/news/business/business/make-ai-in-india-government-startups-and-doctors-unite-to-build-a-more-patient-centric-healthcare-system20230706184731/; <u>https://www.ibef.org/download/1682315060</u> <u>Healthcare-Feb-2023.pdf</u>;)</u>





Current Healthcare Landscape of India

US\$ 132 Bn

Hospital industry in India by 2023, growing at a CAGR of 16%-17%.

US\$ 130 billion

Indian pharmaceutical market by the end of 2030.

US\$ 11 Bn

Current size of the MedTech industry in India and is estimated to reach US\$ 50 by 2030.

US\$ 5.4 Bn

Telemedicine market in India by 2025, growing at a CAGR of 31%.

3rd

Rank for the pharmaceutical production by volume and 14th by value.

US\$ 4 Bn

Current size of the Diagnostics industry in India

US\$ 200 Bn

Incremental economic value will be unlocked by the National Digital Health Blueprint for the healthcare industry in India, over the next 10 years.

4th

Largest Asian medical devices market among the top 20 medical devices markets globally.

(Source: https://www.investindia.gov.in/sector/healthcare; https://www.ibef.org/download/1683619832_Pharmaceuticals-February-2023.pdf; https://www.ibef.org/industry/medical-devices#)





Key Challenges in transforming Indian Healthcare



30% population lack eligibility for

Insurance Coverage

Since GoI subsidized schemes are expected to eventually cover the eligible population, India has a potential health insurance coverage of 70% based on the existing landscape.

48.2% OOPE

Healthcare expenditure in India is predominantly out-of-pocket as of 2019.



2.1% of GDP

Public health expenditure in India, against the world average of 6%.

- Shortage of healthcare professionals
- Urban-rural disparities
- Financial constraints and health insurance
- Fragmented healthcare system and inequity in access to care
- Growing burden of non-communicable and communicable diseases
- Inadequate infrastructure

(Source: https://www.niti.gov.in/sites/default/files/2021-10/HealthInsurance-forIndiasMissingMiddle_28-10-2021.pdf (Pg7); https://www.indiabudget.gov.in/economicsurvey/doc/echapter.pdf (Pg 148 Section6.7); https://www.indiabudget.gov.in/economicsurvey/doc/echapter.pdf (Pg 188 section6.85))



The Ayushman Bharat Digital Mission (ABDM)

In the month of May and June 2023, 7 new integrators have been successfully integrated and received the production

keys. 876 integrators are

actively working on ABDM sandbox to provide digital health solutions to citizens, healthcare professionals and facilities.

Digital Health Incentive Scheme

(DHIS) was introduced to motivate the players of healthcare ecosystem. In the

month of June, 684 new

entities were registered, making it a month with highest registration as on 30th June 2023. The total number of entities

registered till 30th June 2023 are **1056** (1032 health facilities and 24 Digital Solution Companies). The Ayushman Bharat Digital Mission (ABDM) aims to develop the backbone necessary to support the integrated digital health infrastructure of the country. It will bridge the existing gap amongst different stakeholders of Healthcare ecosystem through digital highways. Current status of ABDM Components:

Ayushman Bharat Health Account (ABHA) A/c created 41 Crore (as of June 2023)	Health Professional Registry (HPR) 1.9 Lakhs (as of June 2023)
Health Facility Registry (HFR)	Health Records linked
2.1 Lakhs	28 Crore
(as of June 2023)	(as of June 2023)
ABHA App downloads	Unified Health Interface (UHI)
1M+	enables interoperability of health
(as of 7 th July 2023)	services in India.

NHA is in process of evaluating and comparing the ABDM enabled Digital Solutions in line with MVP guidelines to help the States, Facilities & Providers to make an informed choice about deployment of any solution. 20 digital solutions were evaluated during May and June functional in Hospitals, Clinics, Polyclinics and Laboratories. The objective is to understand the gaps and strengthen the existing health information systems.



Indian Health Sector: An Ocean of Opportunities

Growing Demand **Rising income and affordability** 70+ Mn 2032 | Additions in Middle Class Growing elderly population. changing disease patterns 16% Senior Citizen (% age share in India's population) by 2041 **Rise in medical tourism** 10th/46 The Medical Tourism Index 2020-21 | Medical Tourism Association

Better awareness of wellness, preventive care and diagnosis

Policy

Policy Support

- 1. Life-saving Equipment & Drugs are **Exempted** of Customs Duty
- Services at Ayushman Bharat Health and Wellness Centres (AB-HWCs) are free and universal to all individuals residing in the service area.
- 3. Affordable Medicines and Reliable Implants for Treatment (AMRIT): drugs and implants for Cardiovascular Diseases (CVDs), Cancer and Diabetes at **discounted prices**
- **4.** Financial assistance to patients living below poverty line for life threatening diseases under the schemes:
 - Rashtriya Arogya Nidhi (RAN),
 - Health Minister's Cancer Patient Fund (HMCPF)
 - Health Minister's Discretionary Grant (HMDG)



Focus

Rise of preventive care The growth of AI Remote healthcare Wearable devices Personalised healthcare Subscription-based home healthcare

Additional 1.54 million doctors and 2.4 million nurses will be required to meet the growing demand for healthcare. 58,000 job opportunities are expected to be generated in the healthcare sector by 2025.

(Source: https://www.ibef.org/industry/healthcare-presentation: Nasscom report: Healthcare in India- Transforming through Innovation;



AI Healthcare Market & its Integration

Indian AI Healthcare Market is growing at a rate of 51% CAGR YoY

This will add \$1 trillion to India's economy by 2035.

Data and AI has the potential to contribute \$450-\$500 billion to India's GDP by 2025.



Potential contribution of Data and AI to India's GDPby 2025

Healthcare Sector US\$ 25 – US\$ 30 Bn

Operations	 Marketing & Sales 	Strategy & Corporate Finance	Risk	Corporate Business Function
US\$ 8 – US\$ 10 Bn	< US\$ 8 – US\$ 10 Bn	US\$ 1 – US\$ 2 Bn	< US\$ 1 Bn	< US\$ 1 Bn

(Source: https://www.weforum.org/agenda/2022/10/ai-in-healthcare-india-trillion-dollar/; https://nasscom.in/system/files/publication/How-AI-is-transforming-the-future-of-Healthcare-in-India-July-2021.pdf)





Where AI in Healthcare makes a difference

8.2 Mn Current Healthcare workers' Scenario across Europe **18.2 Mn** Healthcare workers' demand by 2030 across Europe

Posing a huge gap

According to the study, **only 15 percent** of current work hours in healthcare are expected to be automated

Al can help remove or minimize time spent on routine, administrative tasks, which can take up to **70 percent** of a healthcare practitioner's time = **Less admin; more patient care**



According a PHFI-WHO 2020 study, it is observed that the estimated HRH supply is not sufficient and reflects shortage of a large number of health workers to meet 34.5 and 44.5 density of HWs per 10 000 population by the year 2030.



Need by 4.37 Supply 2030 by 2030 3 39 2.74 2.15 1.67 1.51 1.41 prof 1.10 alth Health workers in active Available stock of health Health worker need for Health worker need for health workforce professionals threshold of 34.5 HWs per threshold of 44.5 HWs per 10,000 population 10,000 population Doctors Nurses (/midwives)

Comparison of Human Resources for Health (HRH) supply and need of health worker (In million), by 2030

Most of the rural population is beyond the reach of modern healthcare facilities. This disparity can be countered by leveraging the power of AI. AI can augment the ability of healthcare providers to improve patient care, provide accurate diagnoses, optimize treatment plans, support pandemic preparedness and response, inform the decisions of health policy-makers or allocate resources within health systems.

(Source: McKinnsey Global Institute; https://nasscom.in/knowledge-center/publications/healthcare-india-transforming-through-innovation; https://cdn.who.int/media/docs/defaultsource/searo/india/publications/health-workforce-in-india-where-to-invest--how-much-and-



Understanding AI opportunities in Healthcare

Category	Challenges	AI solutions	AI Use Case Category
Product & Design Development	 (A) Changing regulatory and compliance requirements (H) Patient journey issues (P, MDE) Slow pace of product development 	 (P) Using ML to speed up drug discovery process (H) Using Al to intervene at critical junctures and move patients efficiently through hospital systems (P, MDE) Al engine detects, pre-classifies types of genomic variants and fusions 	 Drug Development Clinical Pathophysiology Research Data Aggregator Population Health Insights Genome Analyzer Drug Response Prediction
Care & Medical Management Challenges	 (H) Lack of openness to digitization (H, D) Preventable human errors during diagnosis 	 (H) Al-enabled detection of anomalies through deep learning using patient data (H, D) Al systems analyse huge data in real time that lead to timely intervention and accurate care for the patient 	 Medical Image Analysis Telemedicine Critical Illness Diagnostics Personalized Treatment Disease Prediction Robotic Assisted Surgery Prognosis Assistant Clinical Decision Support
Marketing, Sales & Distribution Challenges	 (P) Increasingly crowded marketplace (P, MDE) Data is often fragmented or missing (H) Lack of tailored healthcare plans 	 (P, H) Al algorithms to analyse diagnostic reports, clinical outcomes and drive personalized marketing for healthcare providers (H) Al-powered personalized healthcare plans using health record data & administrative data 	 Patient Centric Marketing Automated Patient Feedback Analyzer Healthcare Provider Performance Benchmarking Smart POS for Pharma Retail
Support & Patient Services Challenges	 (A) Pressure to improve patient experience (H) Lack of trained support staff that can understand and resolve patient queries rapidly 	 Virtual agents using conversational AI to help in answering patient queries (H) Remote delivery of care, using AI based video diagnostics, medical image analysis to enable continuous care 	 Personalized Health Education Smart Wearable Sensors Appointment Assistant Personalized Insurance Recommendation Patient Assistance Chatbot

(Source: <u>https://nasscom.in/knowledge-center/publications/how-ai-transforming-future-healthcare-india</u>)

(H) - Hospitals, (D) - Diagnostics, (P) - Pharma & Life sciences, (MDE) - Medical Devices & Equipment, (A) - All or multiple sub-sectors



Healthcare Industry 2023: Shift to Patient Centric Care





Patient Centricity: Transforming Care for Improved Outcomes



(Source: https://www.wipro.com/engineering/patient-centricity/;)





Direct & Indirect Impact of Technology: Enhancing Patient Centric Care

Direct Impact				
	Personalized Treatment Plans	Advanced technologies		
	Early Disease Detection	will enable better understanding of one's	97%	
	Remote Monitoring	health		
	Virtual Health Assistants			
	Drug Discovery & Development	Interest in Al-enabled	95%	
	Reduction in healthcare costs	service for predicting and diagnosing medical		
Indirect Impact		concerns		
	Reduced Diagnosis Time or Turn Around Time (TAT)			
	Enhanced Clinical Decision Support		66%	
	Efficient Resource Allocation	Willing to pay for the Al- enabled service		
	Cost Savings	5		
	Patient Engagement and Education			
	More Transparent processes	<i>Percentage Acceptance</i> According to a survey study performed by PWC showing there is high interest in the patient fraternity for adopting AI in Healthcare.		
	Efficient hospital & Treatment management			





The ten patient-centric ethical principles for AI applications

The ten ethical principles by ICMR addresses issues specific to AI for health.

These principles are patient-centric and are expected to guide all the stakeholders in the development and deployment of responsible and reliable Al for health.





Case Studies



TATA MD

Primary & Secondary Healthcare Transformation: Tata Bridgital Healthcare Model

Product/ Solution Brief

Tata has developed and implemented the Bridgital healthcare model, which is centered around providing patient-centric care that is conveniently located near the patient's home. This model incorporates strong processes, platforms, a network, and a people-driven approach to deliver healthcare programs. A key element of this model is the Digital Nerve Centre (DiNC), which was introduced in Kolar.

Features

The DiNC serves as a digitally-driven and connected healthcare model that combines existing infrastructure with innovative digital technologies. It acts as a service-led platform, facilitating the redesign of processes and the creation of digitally-enabled care pathways. These pathways make it easier for caregivers to treat patients by enabling real-time communication across various channels between care seekers, healthcare facilities, and doctors, regardless of their physical location.

Impact

An important aspect of the Bridgital healthcare model is the establishment of a Bridgital workforce. This workforce assists and guides patients while performing certain non-clinical tasks. By doing so, they allow doctors to focus on clinical queries and increase the efficiency and productivity of the healthcare system. Additionally, the model places a strong emphasis on the progressive digitization of patient health data, including both structured and unstructured data. This intervention aims to leverage technology to collect, store, and analyze patient health information, enabling improved healthcare delivery and decision-making.

In summary, Tata's Bridgital healthcare model aims to provide continuous, connected, proactive, and patient-centric care by leveraging digital technologies, optimizing processes, and empowering healthcare providers and patients alike.



SIEMENS Healthineers

Immersive reality applications for sales, training and education - Siemens Healthineers

Problem

Customers typically require a demo of C-arm before making purchasing decisions, but any C-arm installation requires regulatory approval which makes it difficult to do physical demos within a short timeframe. Surgeons have minimum airtime for sales discussions and planning virtual demos in advance is challenging as surgeon's availability is difficult to predict. These issues exist during post sales training of users & customers for equipment and clinical procedures as well.



Solution features

Immersive reality applications can offer a fully virtual and on-demand mechanism for our salesforce to demo the salient features and benefits of our C-arm products to busy users and customers. Additionally, our users can virtually train on our device and practice clinical procedures at their own convenient place and time. These solutions will be building blocks to our vision to realize Digital Twins of our equipment, patients and customers.

Impact

Increase lead conversion for Siemens Healthineers salesforce. Reduce the dependency on in-person sales meetings, trainings resulting in 25% cost savings to the company. Improve pre-sales experience and post sales training of surgeons and customers.





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Clinical Data Lakes solution for facilitating clinical trial and analytics - Baxter

Problem

The need for a solution around structured data lake end-end solution in clinical data intelligence for infusion pump and similar business for Baxter. The volume of unstructured data is huge and converting such to meaningful data will foster clinical trial and benefit analysis.

Solution features

Algorics is a data focused biometrics service provider specializing in driving efficiencies through data standardisation technology, which can effectively turn unstructured clinical data to intelligence.

DoLoop: Works to accelerate the clinical trial drug development process by providing Automated Clinical Intelligence software solutions to the life sciences industry.

Impact

Total PO value (~28000 USD) – Generating insights for a retrospective dump of data from an infusion pump product line for Baxter DoLoop- Total PO Value (~21000 USD)- Generating insights for a retrospective dump of data from an infusion pump product line for Baxter (Note: DoloopTech has been dropped in between and Baxter has continued to work with Algorics)



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Tech integration in health sector vital: Minister Dinesh Gundu Rao

Since Benealury is the technology and IT hub of India, it sizes Karnataka all the more reasons to lead the country in using high-end AI in the health sector, the minister said.

Y 188 Goode News



By Express News Service

BENGALURU: Integration of technology in the healthcare sector is the only way to improve the quality of services, especially in Tier 2 and Tier 3 cities, Health Minister Dinesh Gundu Rao said.

"We are working towards using artificial intelligence (AI) in improving care analysis and even predictive analysis in Karnataka," the health minister said. He was speaking at the 11th edition of Life Sciences and Healthcare Innovation Forum organised by the National Association of Software and Service Companies (NASSCOM) here on Friday.

Relterating commitment to accessible and affordable healthcare for all, Gundu Rao plans to curate a five-year plan for implementing a comprehensive healthcare policy in the state with AI adoption. He emphasised on the need for better, faster and quicker response to patient

Healthcare Innovation Forum (LHIF) and 4th Edition of Healthcare Innovation Challenge (HIC). The forum is a seven-year-old program supported by the Government of Karnataka. It emphasized the need for technology-driven implementation of digital healthcare solutions to enable patients' better, faster, and quicker access to medical facilities and services, even across remote areas.











What Numbers Have to Say







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