



The Digital Omnipresence: Expanding the Horizons of Private Hospital Units in India

Dissertation Presentation

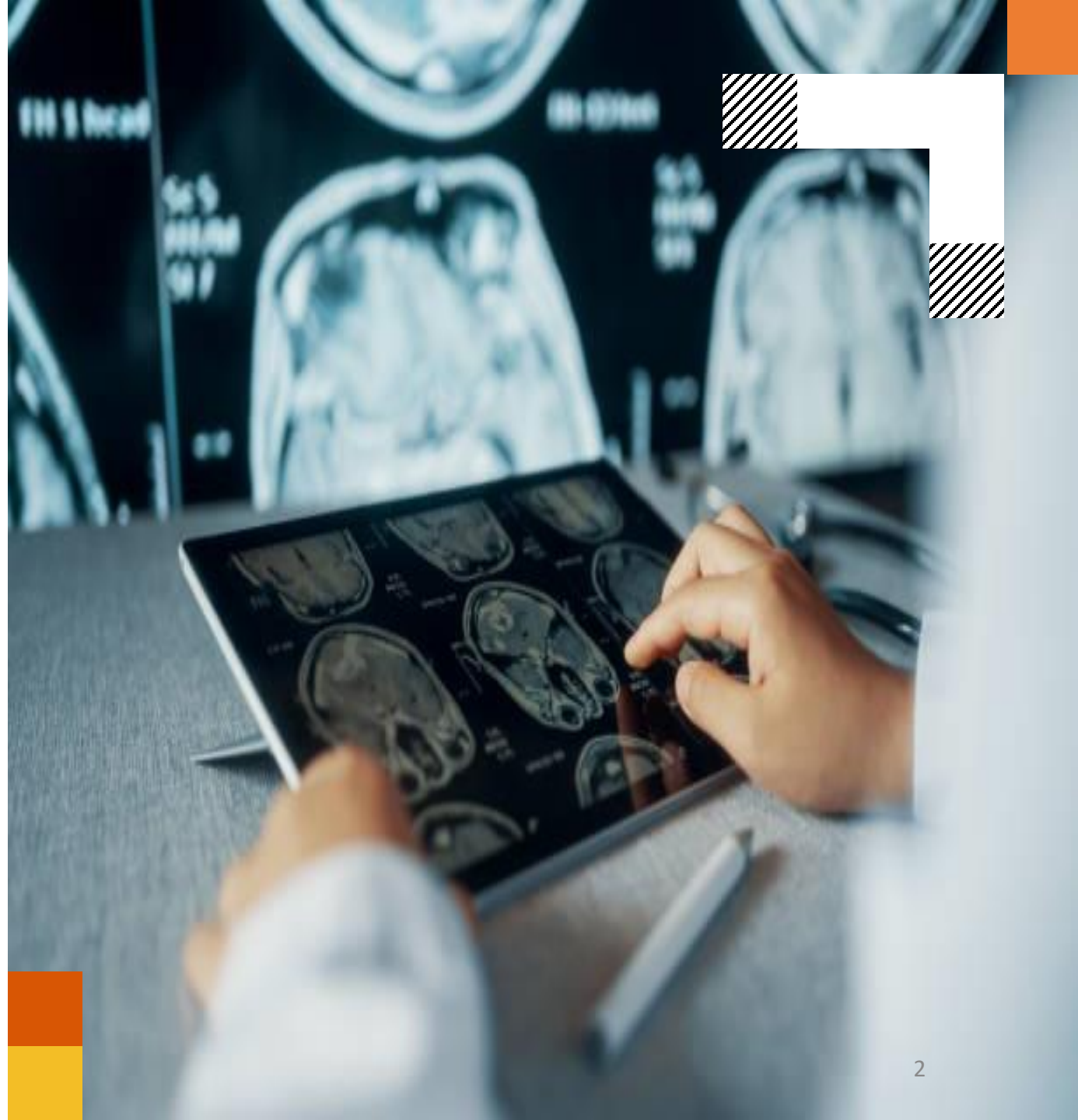
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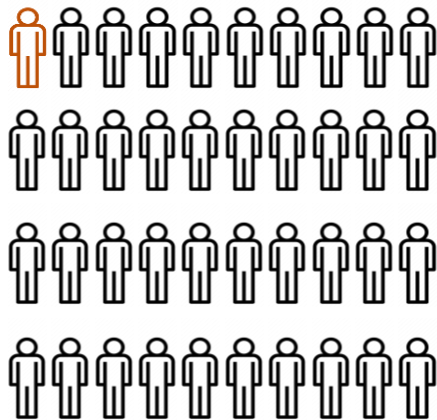
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Introduction

Can current healthcare modalities meet the burgeoning demands despite the sector's inherent challenges?

Key Insights



Healthcare in India, one of the country's largest sectors by revenue and employment, employs over 7 million individuals, with projections from the IBEF 2024 report indicating the creation of nearly 3 million new jobs by 2028 through AI integration. Despite significant technological advancements, service delivery remains disproportionate, necessitating a reevaluation of network agencies



70% of the urban and 63% of the rural population are directly or indirectly depended on the private healthcare system. As insurance costs drop, India's reliance on private healthcare surges. However, despite growing demand, inadequate provider support leaves care delivery disproportionate and fragmented, hindering equitable access to quality health services

Setting the Context Right



The private sector in India, by leveraging digital interventions and modern technology, promises a platter that aims at elevating patient care standards and pressures.



Digital health solutions, such as AI-led risk assessments and mobile-based diagnostics, position private providers to offer cutting-edge services that complement public health efforts³



However, the adoption rate lags behind other industries, impacting patient access, operational efficiency, cost reduction, and outcomes.



Post-pandemic, operational excellence in private healthcare systems is critical than ever, involving streamlining processes, reducing inefficiencies, and ensuring timely, appropriate care



This transformative power of digital technology in India's private hospitals promises to revolutionize patient care and operational excellence

What are we Expecting ?

This thesis explores how holistic digital interventions can enhance patient outcomes, revamp services in private healthcare, and redefine structures through digitalization, using a hypothetical multispecialty hospital as a case study for significant operational and experiential changes.

Review of Literature

STUDY	BACKGROUND OF THE STUDY	GAPS IDENTIFIED	RESULTS
PwC. Next in Health 2024 (2024)	This study explores future trends and predictions in the healthcare industry, focusing on technological advancements and their potential impact. It emphasizes the role of digital health solutions, AI, and data analytics in transforming healthcare delivery. The report also discusses the importance of personalized medicine and the shift towards patient-centric care models. Additionally, it highlights the challenges and opportunities faced by healthcare providers in a rapidly evolving landscape.	Lacks detailed implementation strategies for digital interventions. Does not provide specific examples of successful digital interventions in private hospital settings, particularly in India. Limited focus on practical applications in the Indian context.	Emphasizes future healthcare trends, particularly the integration of AI and digital health solutions. Highlights the potential of data analytics to enhance patient care and operational efficiency. Discusses the importance of personalized medicine and patient-centric care models. Identifies challenges such as regulatory barriers and the need for workforce training. Provides insights into the evolving roles of healthcare providers in a digital era.
Gjellebak et al. (2020)	This study examines the management challenges associated with the future digitalization of healthcare services. It analyses the strategic, operational, and technological hurdles that healthcare organizations face. The study also explores the need for effective stakeholder engagement and alignment of digital initiatives with organizational goals. Furthermore, it highlights the potential benefits of digital transformation in healthcare.	Need for strategic alignment and effective stakeholder engagement. Lacks detailed examples of successful digital transformation initiatives in private hospital units, especially in India. Does not address specific challenges and solutions relevant to the Indian healthcare context.	Highlights the necessity for comprehensive digital strategies in healthcare. Emphasizes the importance of effective management practices and stakeholder engagement. Discusses potential benefits such as improved patient outcomes and operational efficiency. Identifies challenges related to technological integration and change management. Suggests ways to align digital initiatives with organizational goals.

STUDY	BACKGROUND OF THE STUDY	GAPS IDENTIFIED	RESULTS
Eden et al. (2018)	This study synthesizes current literature on the impact of eHealth technologies on hospital practices. It examines how digital tools and electronic health records influence hospital workflows and patient care. The study also explores the benefits and challenges associated with eHealth adoption.	Limited integration of eHealth systems and lack of comprehensive evaluation metrics.	Provides a thorough synthesis of existing research on eHealth impacts. Highlights the benefits of eHealth tools in improving hospital workflows and patient care. Discusses the challenges faced by hospitals in integrating eHealth systems. Identifies the need for standardized evaluation metrics for digital health interventions. Suggests areas for future research and development in eHealth.
Marques and Ferreira (2020)	This systematic review covers 45 years of evolution in digital transformation within the healthcare sector. It explores the adoption and impact of various digital technologies, such as telemedicine, electronic health records, and AI. The study also examines the barriers to digital transformation and proposes strategies for overcoming them. It aims to provide a historical perspective and identify key trends in digital health.	Insufficient focus on recent technological advancements and their practical applications. Lacks specific examples of successful digital transformations in private hospitals in India.	Provides a historical overview of digital transformation in healthcare. Identifies key trends and milestones in digital health adoption. Discusses the barriers to digital transformation and proposes strategies for overcoming them. Highlights the potential benefits of telemedicine, EHRs, and AI in healthcare. Suggests areas for future research and practical applications of digital technologies.

Review of Literature

STUDY	BACKGROUND OF THE STUDY	GAPS IDENTIFIED	RESULTS
Kruk et al. (2018)	This study calls for a revolution in high-quality health systems in the Sustainable Development Goals (SDG) era. It emphasizes the need for equitable access to healthcare and improved health outcomes. The study examines the role of digital technologies in achieving these goals. It also explores the challenges and opportunities associated with implementing high-quality health systems.	Lack of practical applications and case studies demonstrating the effectiveness of high-quality health systems. Does not provide specific examples of digital health interventions in private hospitals in India.	Emphasizes the need for equitable access to high-quality healthcare. Highlights the role of digital technologies in improving health outcomes. Discusses the challenges and opportunities associated with implementing high-quality health systems. Identifies the importance of data-driven decision-making in healthcare. Suggests policy recommendations for achieving the SDGs in healthcare.
PwC. Digital Healthcare (2024)	This report focuses on the role of digital healthcare in modern medicine. It examines how digital tools and technologies can enhance healthcare delivery and patient outcomes. The study also explores the challenges faced by healthcare providers in adopting digital solutions. It aims to provide insights into the benefits and limitations of digital healthcare.	Broad recommendations without specific case studies to illustrate practical applications. Lacks focus on private hospital settings in India.	Highlights the potential benefits of digital healthcare solutions in improving patient outcomes. Discusses the challenges faced by healthcare providers in adopting digital tools. Emphasizes the importance of integrating digital technologies into healthcare workflows. Identifies the need for workforce training and education in digital health. Suggests areas for future research and development in digital healthcare.

STUDY	BACKGROUND OF THE STUDY	GAPS IDENTIFIED	RESULTS
Maraju et al. (2023)	This narrative review explores the role of telemedicine and digital technology in public health in India. It examines the benefits and challenges of telemedicine in improving healthcare access and quality. The study also discusses the potential of digital health interventions in addressing public health issues. It aims to provide a comprehensive overview of telemedicine and digital health in India.	Lack of longitudinal studies on the impact of telemedicine and digital health interventions. Does not address the specific role of private hospitals in adopting these technologies.	Explores the benefits and challenges of telemedicine in India. Highlights the potential of digital health interventions in improving public health. Discusses the role of telemedicine in addressing healthcare disparities. Identifies the need for more longitudinal studies on the impact of digital health. Suggests policy recommendations for enhancing telemedicine and digital health adoption.
Eden et al. (2019)	This qualitative study analyzes the impacts of digital transformation on staff in an Australian university hospital. It examines the experiences and perceptions of hospital staff regarding the digitization process. The study also explores the challenges and benefits of digital transformation in healthcare settings. It aims to provide insights into the human aspects of digital health adoption.	Need for more empirical data on staff experiences and the impact of digital transformation on healthcare workflows. Does not provide examples of digital transformation in private hospitals in India.	Provides qualitative insights into the experiences of hospital staff with digital transformation. Highlights the challenges and benefits of digitization in healthcare settings. Discusses the impact of digital transformation on hospital workflows and staff morale. Identifies the need for effective change management strategies in digital health adoption. Suggests areas for future research on the human aspects of digital health.

Review of Literature

STUDY	BACKGROUND OF THE STUDY	GAPS IDENTIFIED	RESULTS
Raj A. (2022)	This study discusses healthcare innovation in India, addressing challenges, progress, and opportunities. It examines the role of digital health technologies in driving healthcare innovation. The study also explores the barriers to innovation and proposes strategies for overcoming them. It aims to provide a comprehensive understanding of healthcare innovation in India.	Insufficient data on the effectiveness of healthcare innovations. Lacks specific examples of successful digital health innovations in private hospitals.	Discusses the progress and challenges of healthcare innovation in India. Highlights the role of digital health technologies in driving innovation. Identifies barriers to healthcare innovation and proposes strategies for overcoming them. Emphasizes the importance of collaboration between public and private sectors in healthcare innovation. Suggests policy recommendations for fostering healthcare innovation in India.
Sfantou et al. (2017)	This systematic review examines the importance of leadership styles in healthcare settings. It explores how different leadership styles impact quality-of-care measures and patient outcomes. The study also discusses the role of leadership in driving digital transformation in healthcare. It aims to provide a comprehensive understanding of the relationship between leadership and healthcare quality.	Limited exploration of leadership in digital healthcare environments. Does not address how leadership can drive digital transformation in private hospitals in India.	Reviews the importance of leadership styles in healthcare quality. Highlights the impact of different leadership styles on patient outcomes. Discusses the role of leadership in driving digital transformation in healthcare. Identifies the need for leadership training and development in digital health. Suggests areas for future research on the relationship between leadership and healthcare quality.

STUDY	BACKGROUND OF THE STUDY	GAPS IDENTIFIED	RESULTS
Basu et al. (2012)	This systematic review compares the performance of private and public healthcare systems in low- and middle-income countries. It examines the quality of care, efficiency, and patient outcomes in both sectors. The study also explores the role of digital health interventions in improving healthcare performance. It aims to provide a comprehensive understanding of the differences between private and public healthcare systems.	Limited recent data and evolving healthcare landscapes. Does not provide examples of successful digital health interventions in private hospitals in India.	Provides a thorough comparison of private and public healthcare systems. Highlights the differences in quality of care, efficiency, and patient outcomes. Discusses the role of digital health interventions in improving healthcare performance. Identifies the need for more recent data on healthcare performance in low- and middle-income countries. Suggests policy recommendations for enhancing healthcare delivery in both sectors.
Statista. Share of Government Health Expenditure (2024)	This report analyzes government health spending trends. It examines the allocation of health resources and their impact on health outcomes. The study also explores the challenges and opportunities associated with government health expenditure. It aims to provide insights into the financial aspects of healthcare systems.	Lack of insights on spending efficiency and outcomes. Does not explore the impact of government spending on private hospitals in India.	Provides comprehensive data on government health expenditure trends. Highlights the impact of government spending on health outcomes. Discusses the challenges and opportunities associated with health expenditure. Identifies the need for more insights into spending efficiency and outcomes. Suggests policy recommendations for improving government health expenditure efficiency.

Objectives



To analyze the current state and relevance of private healthcare units in India:

This aims to highlighting their role in the healthcare system and their impact on patient outcomes



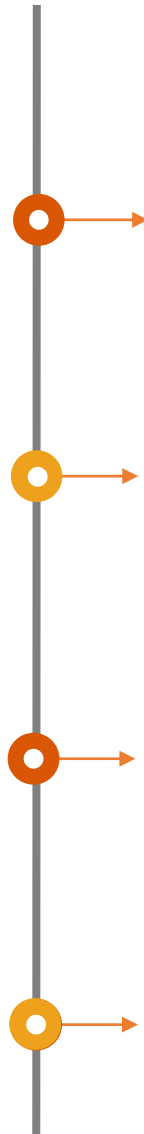
To identify operational inefficiencies and systemic laggards in private hospitals: Aiming to highlight areas needed for improvement and potential solutions for enhancing efficiency and patient care.



To investigate potential areas for integrating digital health technologies within private hospital units and plan their implementation: Aiming to enhance overall efficiency and patient care.



To evaluate the impact of digital health solutions on patient experience and operational efficiency post implementation and develop a phased implementation plan for digital transformation in private hospitals in four selected depts.



What are we trying to accomplish ?

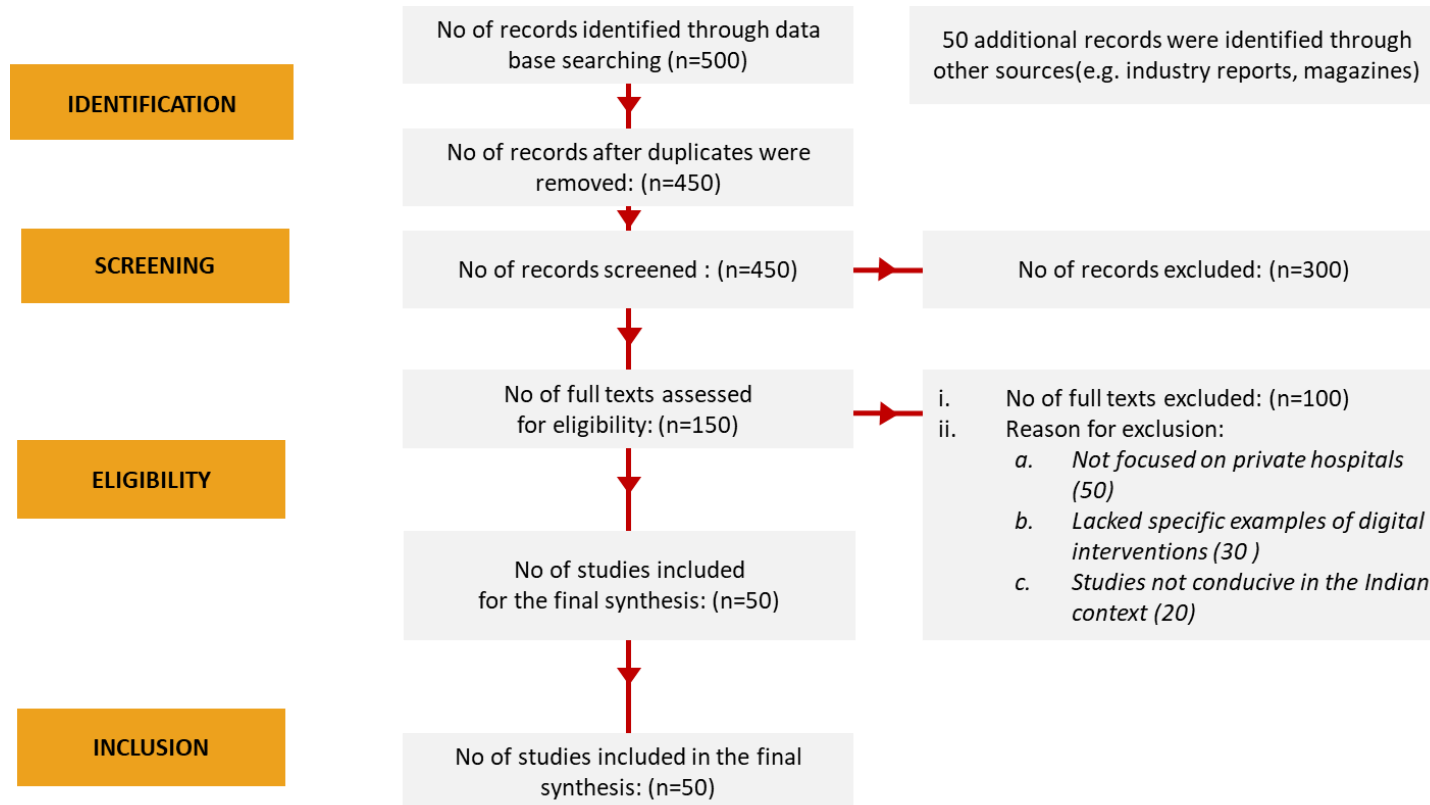
The study aims to **provide a comprehensive assessment** of the **current landscape and significance of private healthcare units in India**, establishing a **baseline for understanding their role and performance** within the broader healthcare system. This is crucial for **contextualizing the need for revamping private healthcare units**.

By pinpointing **operational inefficiencies and systemic laggards**, this **objectives seeks to uncover the underlying issues that hinder optimal performance** in private hospitals. Identifying these gaps is essential for **developing targeted strategies** to enhance efficiency and service quality **laying the baseline for their digital facelift**.

This study furthers the focus on **investigating the key potential areas** where digital health technologies can be integrated within private hospitals and **how would the phasal integration take place against the existing laggards**. By identifying these areas, **the study aims to propose innovative solutions that can transform healthcare delivery**, making it more efficient and patient-centric.

Further the **departmental evaluation** of the **impact of digital health solutions** (against their **existing laggards and use cases**) post-implementation is critical for understanding their effectiveness. This objective also includes **developing a phased implementation plan** for digital transformation **in four selected departments, ensuring a structured and systematic approach to adopting new technologies**.

Methodology



How was it accomplished ?

- This study employed a **systematic review approach** to synthesize **existing literature and empirical studies** on the **impact of digital interventions in private hospital settings in India**. We took into consideration the fundamental aspects of how the private healthcare **landscape functions to understand the nuances of the available services and their distribution patterns in India**
- The articles were synthesized and searched based on the **keywords** involving but not limited to **“Digital Health Interventions”, “Healthcare Technology Adoption”, “Operational Efficiency in Hospitals”, “Cost Optimization in Healthcare”, “Patient Care Management”, “Automation”**.
- The timeline decided was on published data from **January 1st, 2017, to March 31st, 2024**. The study period was chosen based on recent social, technological, and political developments in the last decade regarding revamping healthcare institutional structures.
- Although the wave of such **developments resounded** much earlier worldwide, **the cracks within the system** were highlighted much later in India. We carried out literature searches between **April 1st, 2024, up until 20th May 2024**.

Key Findings: What do we deliberate on ?



Telemedicine: Impact on Patient Access and Satisfaction: Telemedicine has substantially enhanced patient access to healthcare services, particularly in remote and underserved regions. By bridging the gap between patients and healthcare providers, telemedicine has reduced travel time and associated costs. Studies show high levels of patient satisfaction due to the convenience and timely consultations telemedicine offers.



Electronic Health Records (EHRs): Improvements in Data Management and Continuity of Care
The implementation of EHRs has transformed data management in healthcare by providing a centralized, digital repository for patient information. This centralization has led to improvements in the accuracy, accessibility, and security of patient records..



Existing Gaps in Literature: *The literature highlights challenges in integrating new digital health technologies with existing hospital systems, requiring significant investment and training. **Regulatory and privacy concerns are common**, necessitating robust data protection. There is a **notable gap in longitudinal studies assessing the long-term impact of digital health interventions, with a focus primarily on short-term outcomes**. Additionally, the lack of standardized metrics for evaluating digital health effectiveness complicates result comparisons. Future research should **focus on improving interoperability, enhancing adoption strategies, and developing regulatory frameworks that balance innovation with data privacy and security**.*



AI and Data Analytics: Predictive Capabilities and Preventive Care: AI and data analytics have introduced advanced predictive capabilities that aid in the early detection of diseases and potential health risks, thereby facilitating proactive and preventive care. These technologies enable the development of personalized treatment plans based on individual patient data, leading to more effective and tailored healthcare solutions.



Operational Efficiency: Cost Reductions and Process Improvements: Digital health interventions have led to significant cost reductions in private hospitals by automating administrative tasks, improving resource management, and reducing unnecessary diagnostic tests.



The need to improve the overall patient experience: Enhancing the patient experience is a critical finding across the studies reviewed. While digital health interventions have made significant strides in improving access and efficiency, patient experience still requires focused attention. Studies indicate that patients often face challenges related to navigating digital platforms, understanding health information, and engaging with technology due to varying levels of digital literacy.



Discussion: Recurring themes to Ponder upon



Digital Transformation in Indian Private Healthcare The digital omnipresence within India's private hospital sector is revolutionizing healthcare by addressing unique system challenges. This study emphasizes the importance of understanding and navigating digital transformation in Indian private healthcare to reshape patient care, operational efficiencies, and cost management.



Impact of Digital Health Technologies: Integration of digital health technologies, such as telemedicine, AI, and data analytics, is improving healthcare access and quality in India. Telemedicine enhances accessibility in remote areas, reducing travel time and improving patient experiences, mirroring global advancements in healthcare.



Global Comparisons and Local Initiatives: Countries like the US and UK lead in integrating AI and data analytics for predictive healthcare and personalized treatments. India is in the early stages, with promising initiatives like Chennai's AI-driven diabetes management project showcasing potential benefits and efficiency gains similar to global standards.



Challenges in Digital Integration: Significant investment and training are required for integrating digital technologies, posing challenges. Regulatory and privacy concerns are critical, necessitating robust data protection measures to maintain patient trust and legal compliance.



Policy and Stakeholder Recommendations: Healthcare policymakers need to create supportive regulatory frameworks and incentives for digital infrastructure investment. Enhancing digital literacy among healthcare professionals and patients is crucial. Stakeholders should focus on scalable solutions tailored to India's healthcare challenges.



Future Research and Implementation Strategies: Continued research is needed to address challenges and leverage digital health technologies for better healthcare delivery. The study highlights the importance of developing phased implementation plans for digital transformation in private hospitals to ensure strategic alignment with the Indian healthcare system's needs.



01

Reimagining India's Contentious Healthcare System: A ride through the "Private Lens"

The Questionable Boom: Did we miss the Mark ?

The Waltz of Supply vs Demand

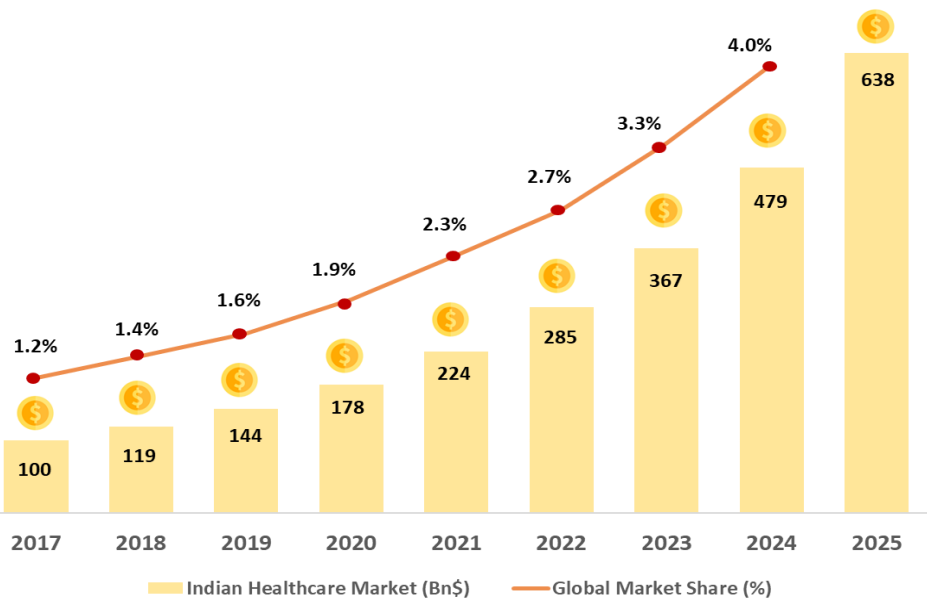


Fig: The growth of Indian Healthcare Market (Bn\$) in the last decade against the Global Market Share | OECD Analysis

In 2022, the healthcare sector in India was valued at approximately ₹29.76 lakh crores, with hospitals comprising 80% of the industry's net worth. The sector has witnessed a rise from a modest \$45 billion in 2008, reflecting an impressive 700% surge over the past decade. In FY 2023, the private hospital sector in India was valued at ₹11.67 lakh crores and is projected to escalate to ₹26 lakh crores in the coming years, expanding at a compound annual growth rate (CAGR) of 18.6%. This paradox underscores the urgent need for strategic interventions to ensure the equitable distribution of the benefits arising from this growth.

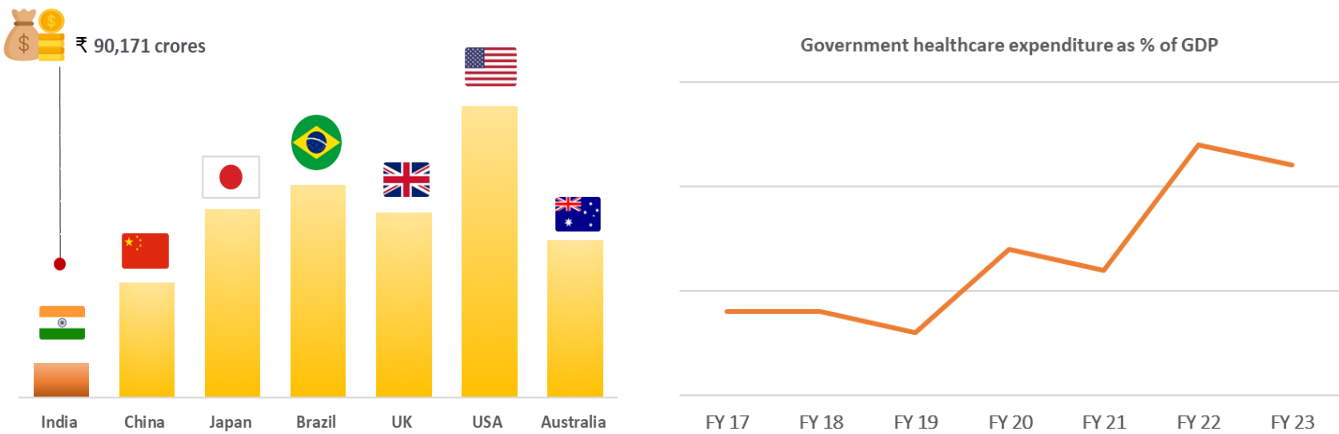


Fig: India's healthcare expenditure as % of its GDP, comparison to the developing and developed countries | WHO

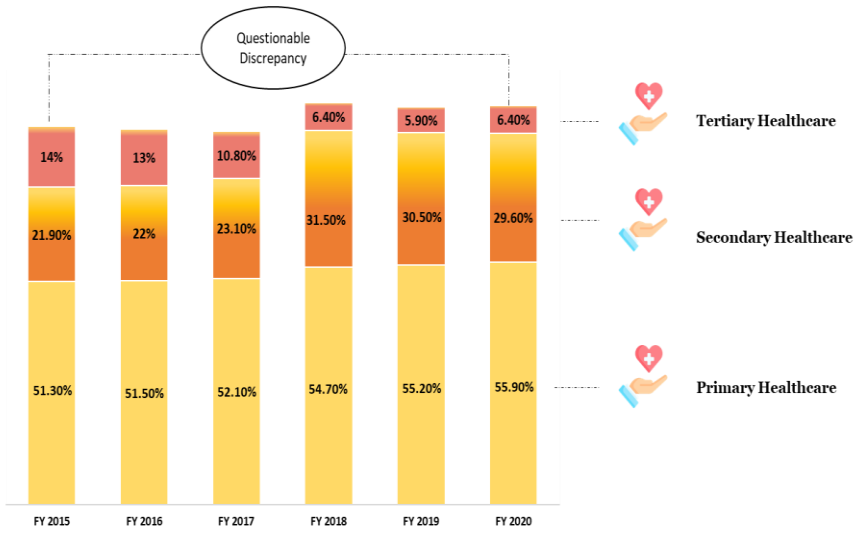


Fig: Distribution of Government Health Expenditure in India from FY 2015 to 2020 | Source Statista

Picture a country wrestling with its questionable increase in disease burden, how would it ever sustain itself against the market dominance of low resource allocation. These equations further strain the public healthcare institutions to revamp any of its current modalities against the expected tenants of service delivery.

Leveraging Strengths, Sharing The Burden: Private Healthcare

Is it the right move to make healthcare more “Democratic” ?

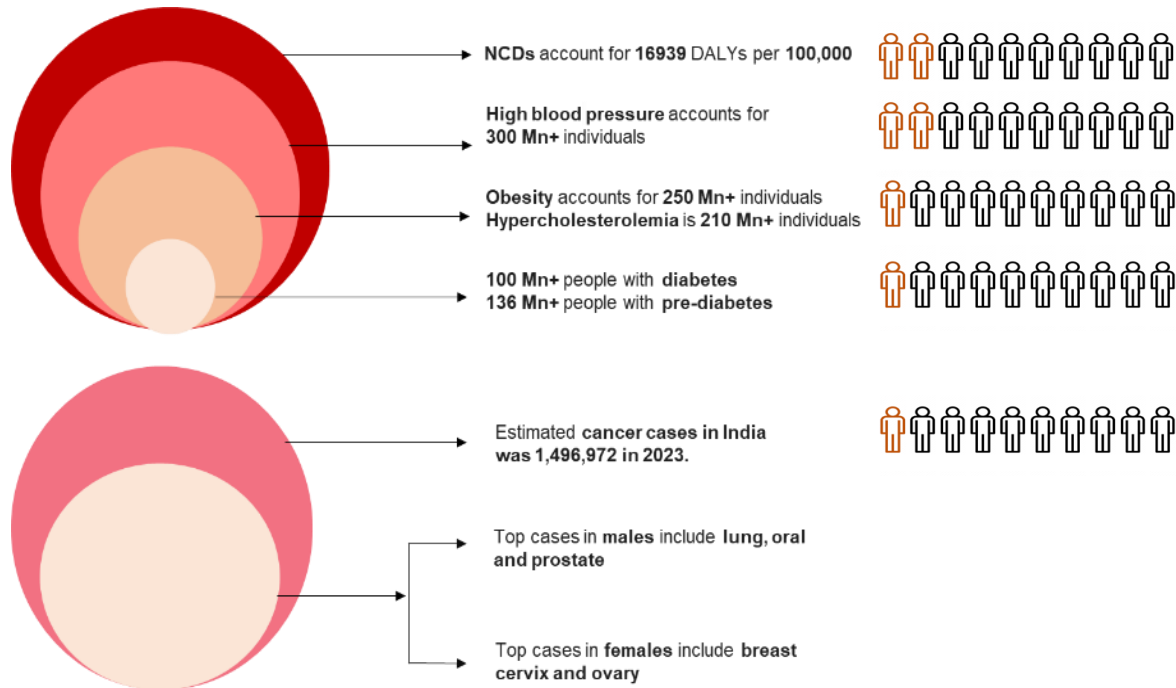


Fig : Healthcare burden prevalent in India | Source: IHME: Global Healthcare Burden

Reports, such as those from the Boston Consulting Group (BCG), indicate that while the **acute disease burden is expanding by 5%**, **chronic diseases are proliferating at a rate of 9%**. In 2014, the chronic disease burden eclipsed the acute disease burden, signifying a pivotal shift in the healthcare landscape. The kingpin has shifted from **communicable and infectious diseases** to **non- communicable diseases**. This transition has brought India into the spotlight where the term “**dual disease burden**”.

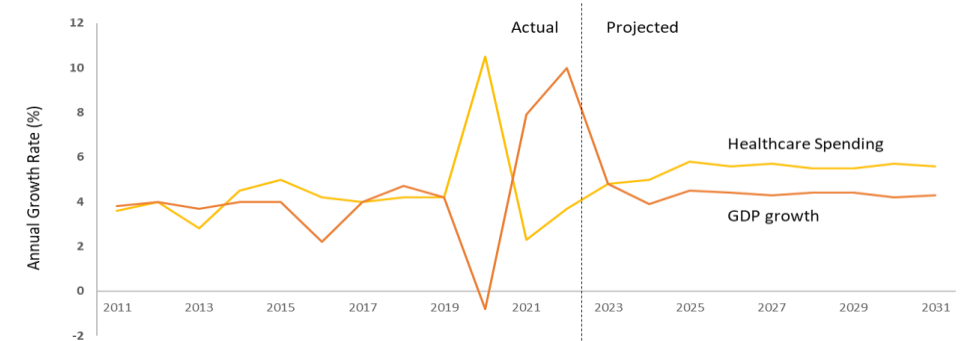
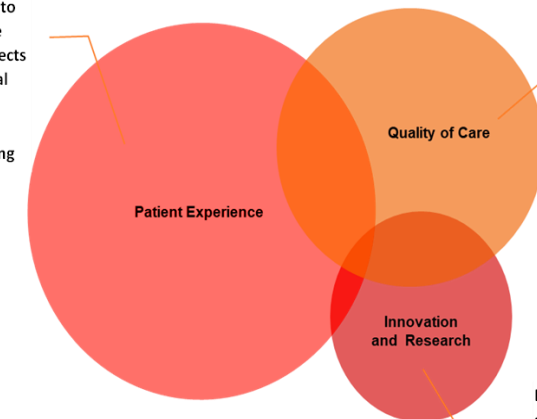


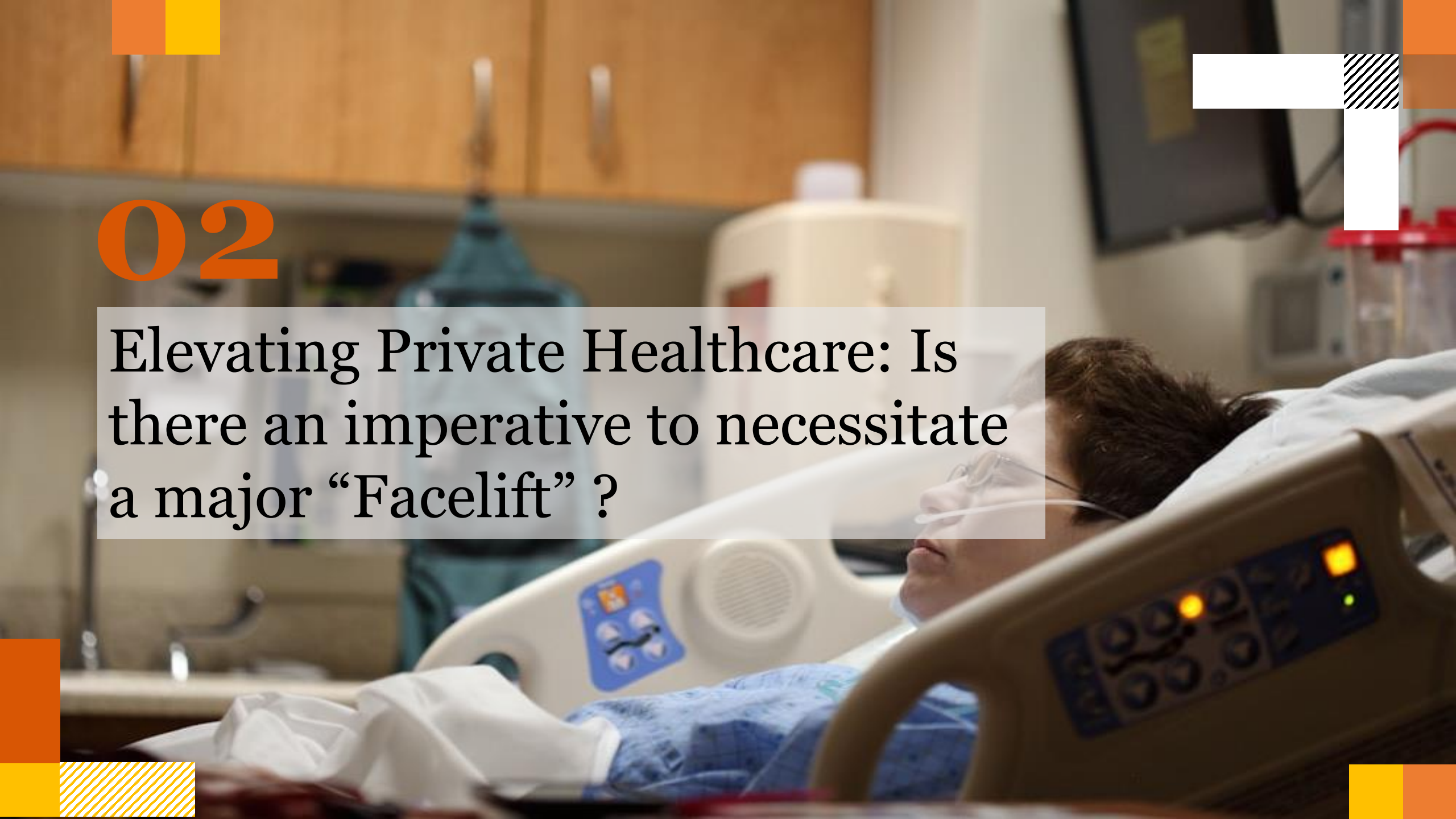
Fig : Healthcare spending will be one-fifth of economy within decade | Centre of Medicaid & Medicaid

To make services more sustainable it is imperative to improve patient experience universally by reducing aspects of care such as better virtual care, enhanced follow-up, improved appointment management and TAT among



Intervening to standardize and invest in better technology paves way to ensure equitable access to healthcare all while reducing the idea of exclusivity and advancing inclusivity.

Encouraging widespread idea of R&D and strategizing ways to implement these research opportunities reduce operational and digital backlog further democratizing medical advancement.

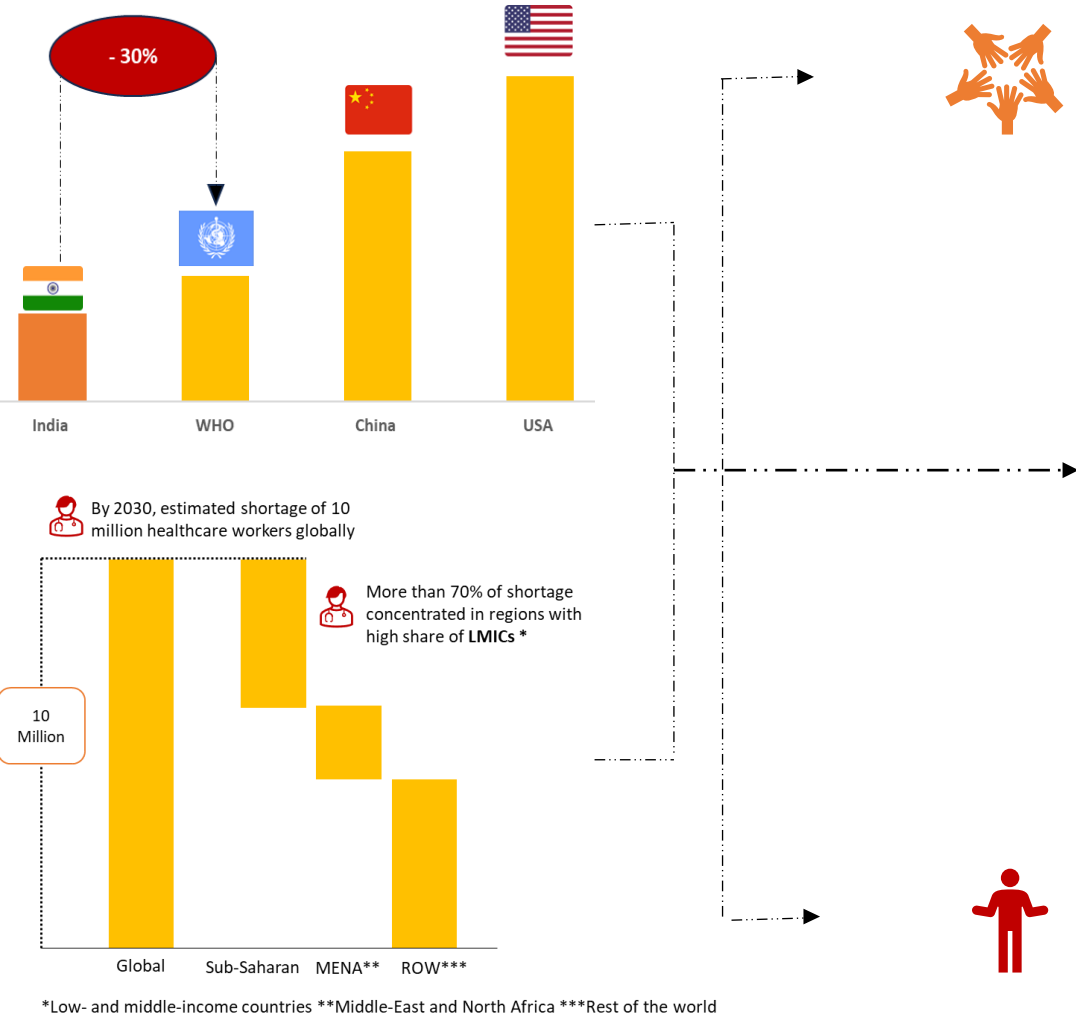
A blurred background image of a hospital room. A patient is lying in a hospital bed, wearing a blue gown and a nasal cannula. Medical equipment, including a monitor and IV stands, is visible in the background. The image is framed by orange and yellow decorative elements in the corners and a white cross-like graphic in the top right.

02

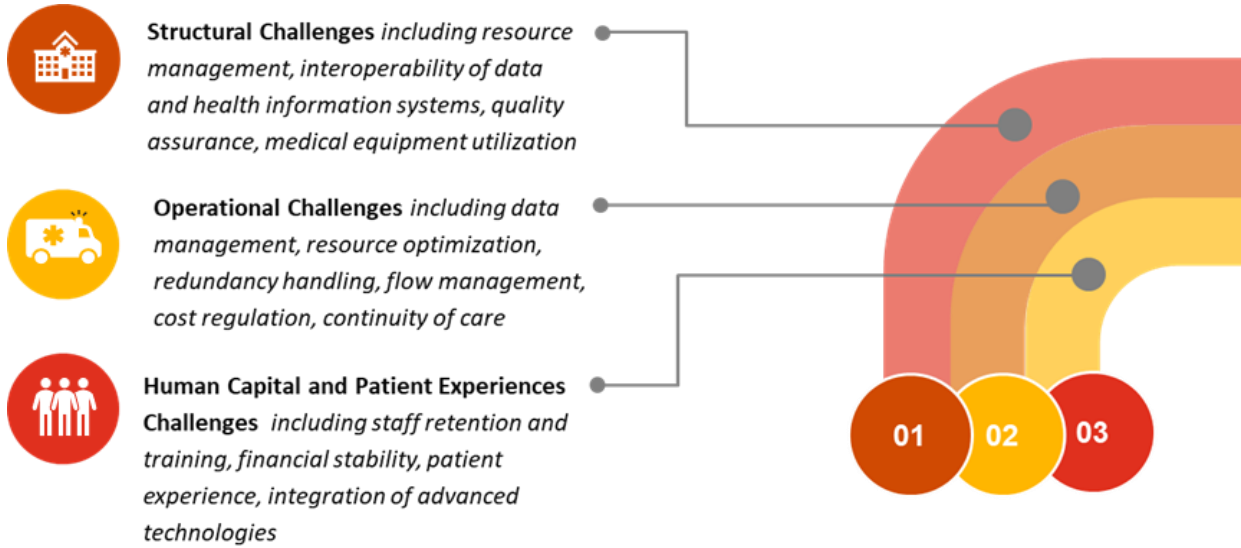
Elevating Private Healthcare: Is there an imperative to necessitate a major “Facelift” ?

Is it Time for the Private Hospital Units to go beyond “Legacy Systems” ?

Conjuring the Hidden Cracks and Resource Constraints



The **burgeoning strain on the working capabilities** within India’s private healthcare sector is poised to **disproportionately impact developing and underdeveloped regions** in the coming years. Moreover, **acute shortage of healthcare professionals**, compounded by **inefficient resource allocation**, creates a volatile environment **where the quality and accessibility of healthcare are severely compromised**.



As demand for healthcare services escalates, **this imbalance threatens to widen the chasm between healthcare needs and the available resources**, exacerbating the **already stark disparities between urban and rural healthcare provisions**. In this context, the **private healthcare sector in India faces the peril** of devolving into a system where **only the affluent have access to timely and high-quality medical care**, leaving vast swathes of the population in a perpetual state of medical neglect.

Embracing practices 2.0, time to embrace value based Digital Healthcare (1/2)

Championing developing thematic areas pushing the “Digital Ideologies”

Digital ideologies coming into picture how ?

- **Going beyond the myopic idea of Digital Health:** When someone thinks of transformative change within healthcare delivery corridors, they focus on the prefaced ideas of analytics, digital training, and improved clinical decision-making abilities; however, one must investigate digital health beyond the myopic ideologies of just IT systems, it must strive to create from within its interventional strategies for a perfect value-based healthcare setting.
- **Comprehensive integration of digital health practices:** This shift involves adopting technologies that streamline operations, enhance patient engagement, and improve clinical outcomes. By transitioning from a reactive, volume-based model to a proactive, value-based care system, private hospitals can achieve sustainable growth. This transformation ensures that the foundations of healthcare delivery are solid, resilient, and capable of withstanding the pressures of demand.
- **Synergizing Digital Health to focus on Business related Knowledge Management:** Studies believe that digital transformation have a vital role to play in optimizing not only the operational abilities of the hospital but also its strategic business side of the table, which in turn can lead to betterments in ultimately improving quality of care and efficiency within the spectrum of patient experience
- **The Transformative change 2.0:** Picture shifting from a convoluted paper trail to a streamlined digital pathway where data is available in real-time, allowing healthcare providers to make swift, informed decisions. This integration not only optimizes resource allocation but also reduces redundancies and errors, resulting in better patient outcomes and enhanced operational efficiency. Digital tools can augment human capabilities, providing support through telemedicine platforms, AI-driven diagnostics, and remote monitoring systems. These technologies act as force multipliers, extending the reach and impact of healthcare professionals



Rapid tech penetration and rising consumer preference for online healthcare delivery will catalyze adoption of digital health	Digital healthcare adoption has continued to grow strongly post the pandemic, irreversibly changing consumer behavior	Government leading digital health initiatives to ensure healthcare accessibility and affordability in India	Indian Healthcare value pools to expand to \$450Bn+ by 2030. Total size of health-tech market to increase to ~\$358Bn by 2030
In-patient care players are delivering significant value for multiple stakeholders in the healthcare ecosystem, while tele-diagnostics players are expanding services across diagnostics value chain	Specialty care models have emerged which enable continuous monitoring of patients' wellness. Many have scaled into a holistic platforms addressing multiple consumer pain points	Successful global teleconsultation platforms have moved across the care spectrum to offer comprehensive solutions; they now cater to a robust clientele across the varied healthcare spectrum	E-diagnostic players transitioning from marketplace model to captive labs to drive favorable economics. Newer teleconsultation players like Eka Care are adopting a B2B-focused GTM approach
Multiple player archetype emerging in the Indian market. Funding environment remains robust even post the pandemic surge; \$18Bn+ flowing in 2022.	As the health-tech market matures, we are seeing horizontal expansion and vertical integration across the digital health ecosystem	Increased horizontal expansion of E-Pharma into adjacencies such as diagnostics and vertical integration into B2B distribution and private label	E-Pharmacies are adopting multi-channel approach to expand addressable market by servicing acute Rx customers

Embracing practices 2.0, time to embrace value based Digital Healthcare (2/2)

Is there a need to change or are we only chasing the rabbit?

Operationally we need to “evolve”: Changing Trends

- The **operational value chain** in hospitals is undergoing a profound transformation, **driven by the shift towards value-based healthcare, advanced patient care models, decentralized and integrated care delivery, and data-driven decision-making**. This evolution is akin to the metamorphosis of a caterpillar into a butterfly, where each stage of growth brings new capabilities and efficiencies. **In value-based healthcare, the focus has transitioned from volume to value, emphasizing patient outcomes and cost-effectiveness.**
- Patient care models are also evolving, **moving towards a more personalized and holistic approach**. Just as a bespoke tailor crafts a suit to fit an individual perfectly, modern hospitals must tailor their services to meet the unique needs of each patient. This involves **leveraging digital health records, telemedicine, and remote monitoring to provide continuous and personalized care.**
- Decentralized and integrated care delivery models** break down the **traditional silos** within healthcare systems, much like a **well-coordinated team working seamlessly across different functions to achieve a common goal**. Advanced analytics and AI-driven insights empower hospital administrators to make informed decisions, predict patient inflows, **manage supply chains efficiently, and allocate resources where they are needed most.**

HEALTH CARE IS BECOMING

OPERATIONALLY THIS WOULD REQUIRE THE HOSPITAL UNITS TO DIGITALLY REDEFINE THE FOLLOWING USE CASES



Value Based

- Electronic Health Records
- Performance Analytics
- Outcome-Based Incentives
- Telehealth Services
- Predictive Modeling
- Patient Feedback Systems
- Care Coordination Tools
- Chronic Disease Management
- Risk Stratification
- Value-Based Contracts



Patient Centric Care Models

- Mobile Health Apps
- AI-Driven Insights
- Patient Portals
- Remote Monitoring
- Telemedicine
- Patient Education Tools
- Personalized Treatment Plans
- Wearable Technology
- Behavioral Health Analytics
- Genomic Data Integration



Decentralized & Integrated Care delivery

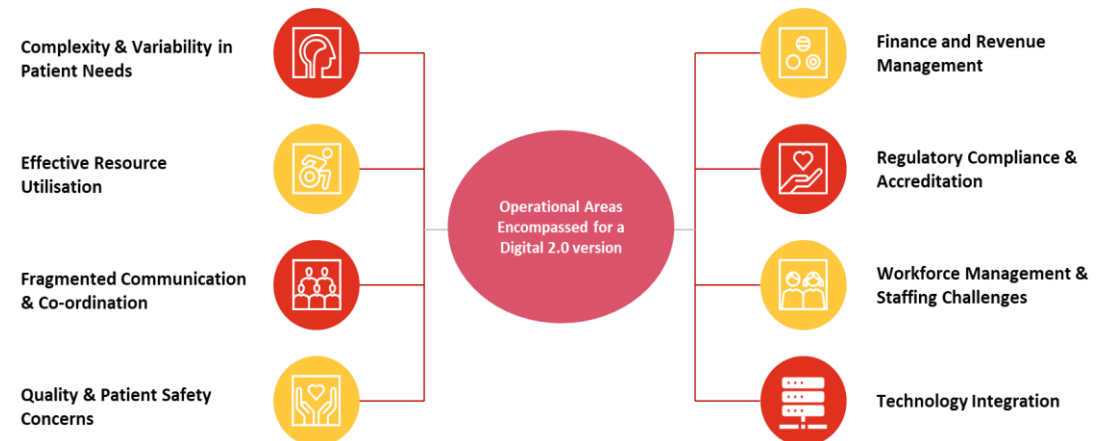
- Telehealth Infrastructure
- Interoperable EHR Systems
- Regional Information Exchanges
- Home Health Monitoring
- Mobile Clinics
- Integrated Care Pathways
- Cross-Provider Collaboration Tools
- Virtual Health Teams
- Remote Diagnostic Tools
- Community Health Platforms



Data Driven Decision Making

- Real-Time Dashboards
- Predictive Analytics
- Business Intelligence Tools
- Clinical Decision Support Systems
- Patient Outcome Tracking
- Operational Analytics
- Data Integration Platforms
- Population Health Management
- Machine Learning Models
- Performance Benchmarking

● Integration with High Relevance ● Integration with Medium Relevance ● Integration with low Relevance



03

From Judicious Adoption to Strategic Implementation: Mapping “Smart Hospitals” of “Tomorrow”



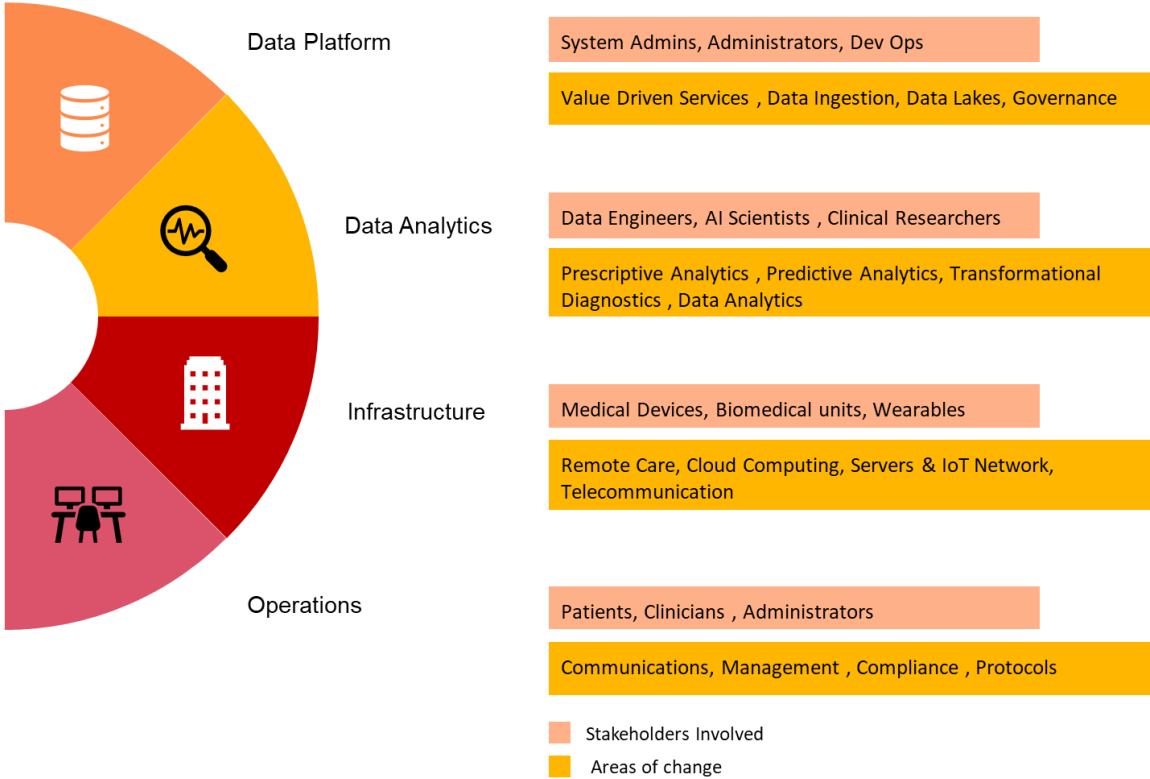
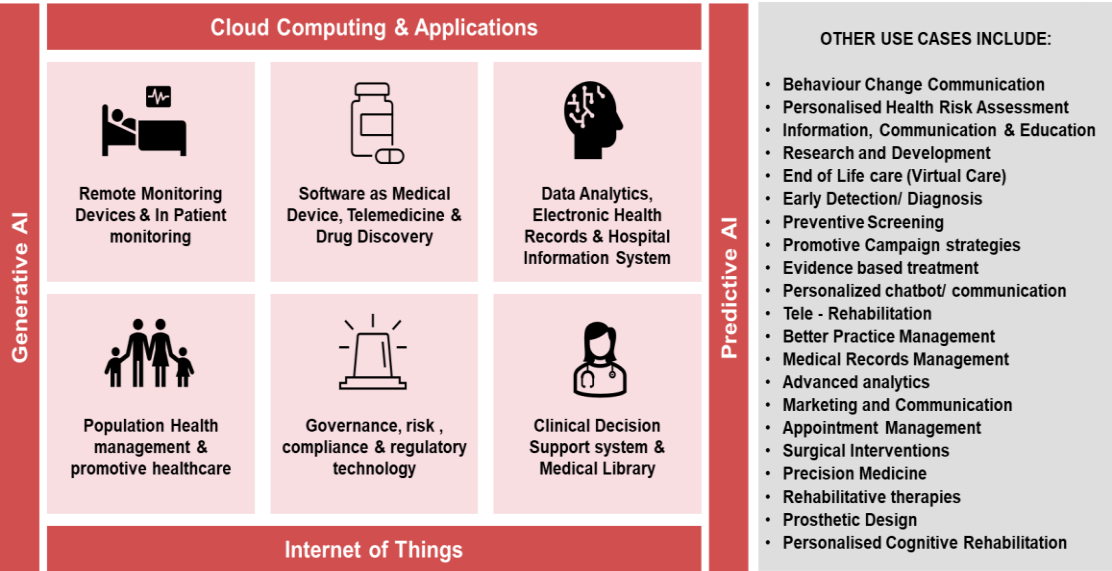
Scaling The Adoption Strategies: Evolution Of “Smart Hospitals”

What is it bringing to the table ?

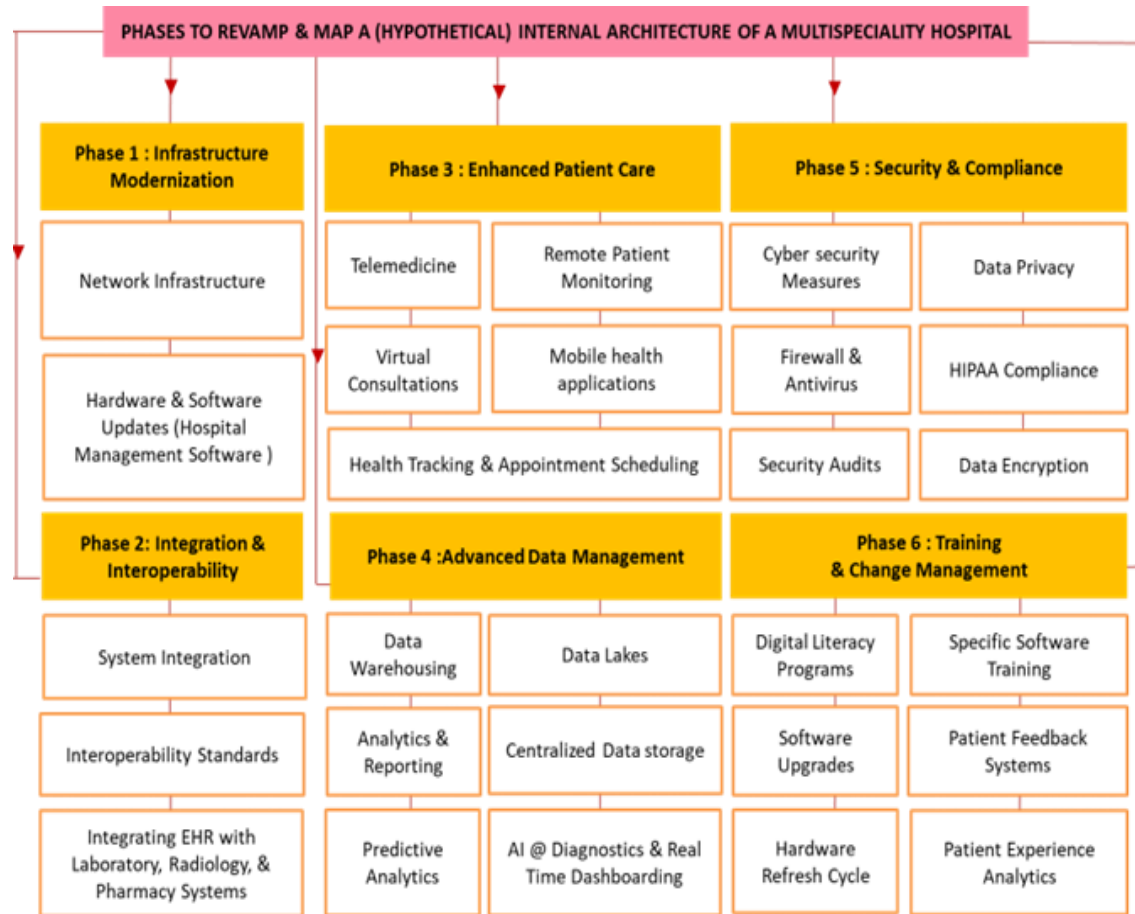
What is a “Smart Hospital”, the functional domains it differentiates ?

A "smart hospital" **efficiently utilizes data and technology** to enhance operations, management, and clinical care, unlike traditional private healthcare institutions where **data is often unstructured and scattered across various records**. Smart hospitals **centralize and analyze data using AI** to improve **clinical decision-making, forecasting, surgical interventions, and early diagnosis**. This transformation addresses challenges like **resource scarcity and workforce shortages, improving care quality, sustainability, and resilience**, making it a crucial advancement for private hospitals facing modern healthcare demands.

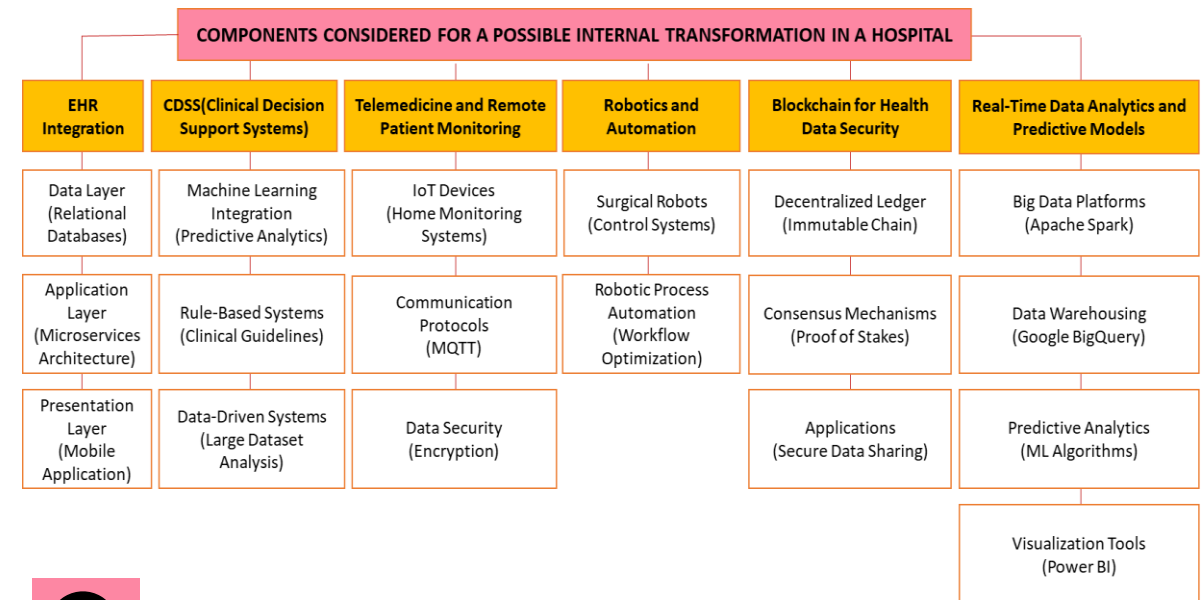
The “Application Suite” and the “Use Cases” impacted in the given setting



Mapping The Framework and Developing the Infrastructure (1/2)

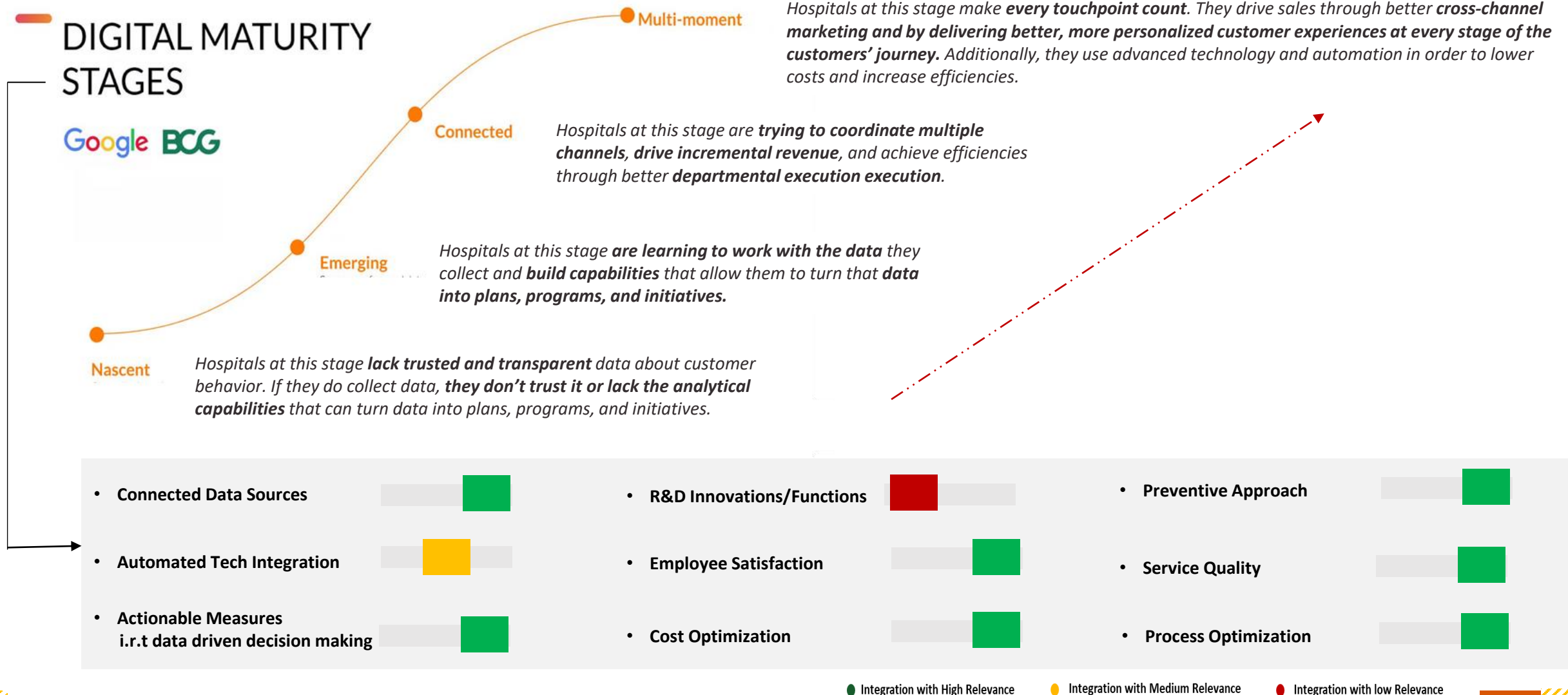


The above given flowchart for the digital transformation of a multispecialty hospital (though hypothetical in nature) is organized into the following essential phases: **Infrastructure Modernization, Integration and Interoperability, Enhanced Patient Care, Advanced Data Management, Security and Compliance and Training and Change Management**. Each phase encompasses specific tasks that are critical to achieving the overall transformation goals.

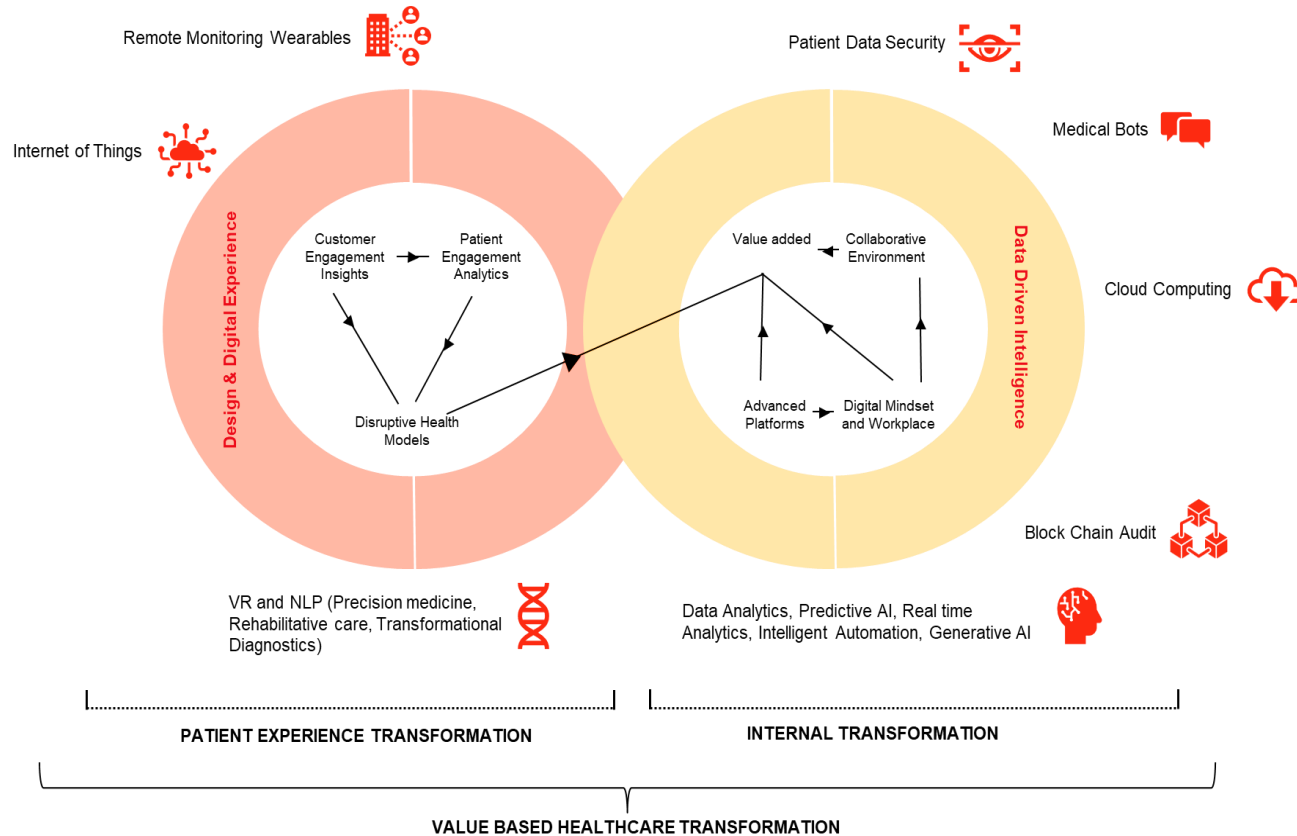


The **internal transformation of a hospital's digital infrastructure** is crucial in **promoting the care modality of value-based care**. By integrating **digital health solutions into their operations**, hospitals can **streamline administrative processes, reduce errors, and enhance efficiency**. Automated systems for scheduling, billing, and inventory management free up healthcare professionals to focus more on patient care. **Real-time data sharing across departments improves coordination and reduces redundant tests and procedures**, ultimately lowering healthcare costs and improving patient outcomes. This transformation creates a more responsive and efficient healthcare environment, where the emphasis is on delivering high-quality, patient-centered care.

Mapping The Framework and Developing the Infrastructure (2/2)



From Internal Transformation to Sustaining a Value Based Care Ecosystem



Through the lens of Value Based Healthcare Transformation Network

- **Value-based care is a healthcare delivery model that prioritizes the quality of care over the quantity of services provided.** Unlike the traditional fee-for-service model, which incentivizes high volumes of procedures and consultations, **value-based care emphasizes improved patient outcomes, enhanced care efficiency, and cost-effectiveness.**
- This approach is crucial in addressing the **challenges of escalating healthcare costs, suboptimal patient outcomes, and inefficiencies in healthcare delivery.** By focusing on preventive care, effective treatments, and patient-centric approaches, value-based care ensures that patients receive comprehensive and coordinated care, leading to higher satisfaction levels and better health results.
- Digital health, **encompassing tools such as electronic health records, telemedicine, mobile health apps, and data analytics,** is instrumental in the successful implementation of value-based care models, particularly in the context of Indian private hospitals. For instance, **telemedicine services allow patients to consult healthcare providers remotely, ensuring timely access to care, especially in remote and underserved areas.**
- However, the functionality of the ecosystem isn't as easy as it seems; it requires a **carefully branched diversification** within the hospital itself to create a cohesive environment for the transformational journey to base itself upon. Moreover, **being multichannel in nature it needs careful planning and a host of security measures to safeguard the functioning of the main process.**

In the context of Indian private hospitals, adopting digital health is essential for realizing the full potential of value-based care. By enhancing accessibility, improving care coordination, and empowering patients, digital health not only improves clinical outcomes but also significantly enhances the patient experience. The internal transformation of a hospital's digital infrastructure is crucial in promoting this care modality, creating a more responsive and efficient healthcare environment.

Sustaining Knowledge Management: Contribution to business decision making

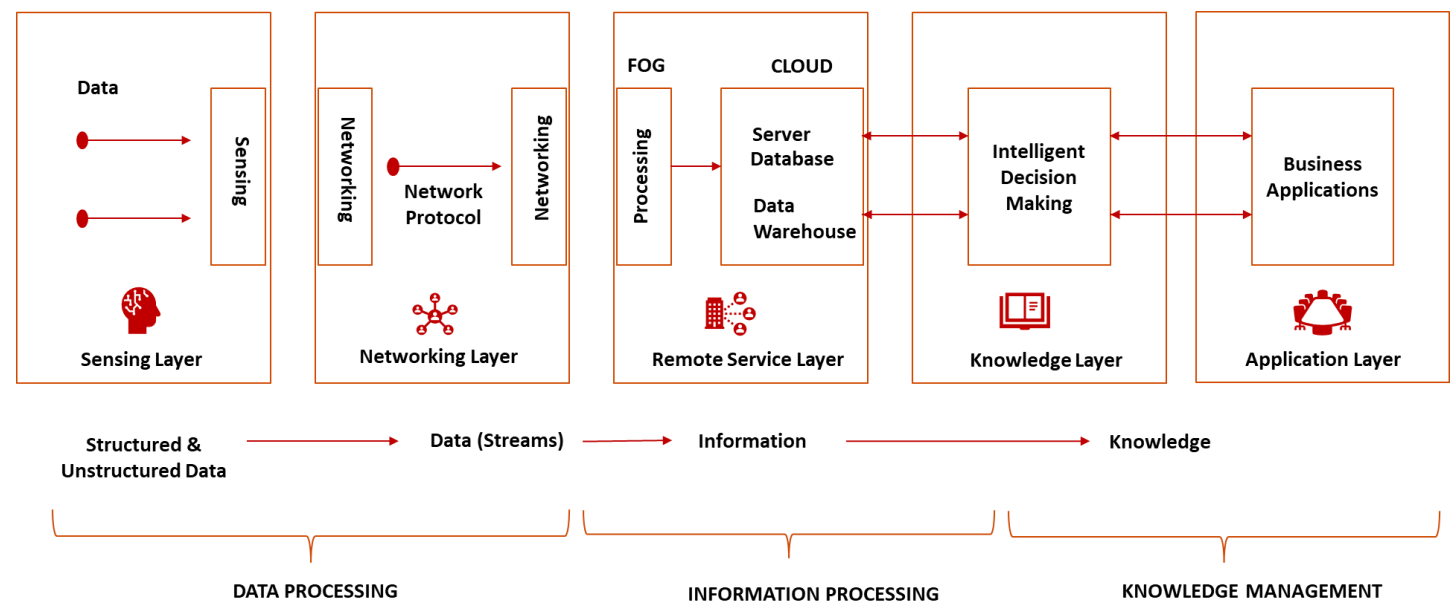
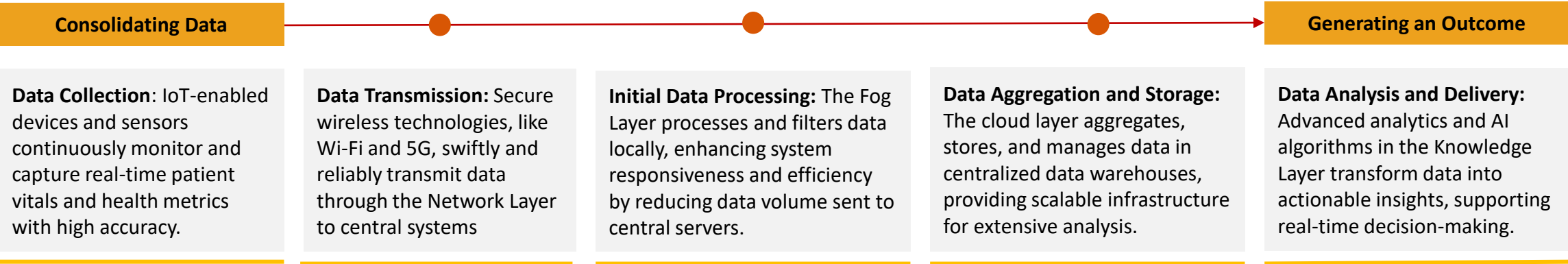
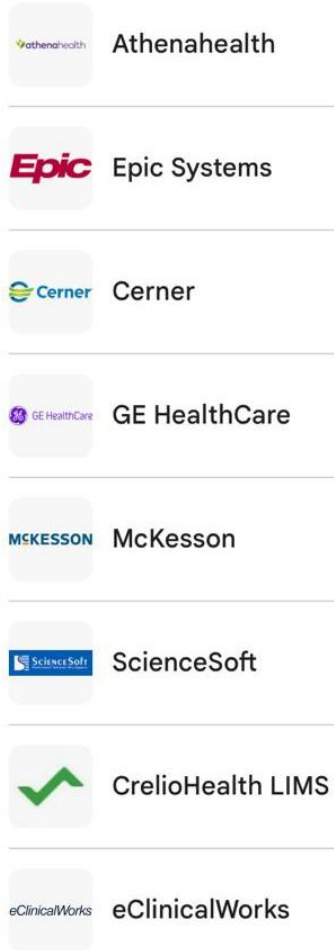


Fig : IoT-based smart hospital design | Source: Journal of Cloud Computing (2020)



Sustaining Knowledge Management: Contribution to business decision making

Major Companies within the Space



Hospitals and their Collaborators



Other Member Companies

- 1.Enli Health Intelligence:** Focuses on population health management solutions
- 2.Allscripts:** Provides open, integrated health information technology solutions for healthcare providers, including electronic health records (EHR), practice management, and revenue cycle management services.
- 3.Curaspan Health Group (now part of Navi Health):** Specializes in care transition tools for hospitals and healthcare providers, helping to manage patient transitions across different care settings efficiently.
- 4.Athenahealth Inc.:** Offers cloud-based services for healthcare systems, including medical billing, practice management, and EHR, aimed at streamlining administrative and clinical workflows.
- 5.Cerner Corporation:** One of the leading suppliers of health information technology solutions, services, devices, and hardware, specializing in EHRs and health information exchange technologies.
- 6.Computer Programs and Systems Inc. (CPSI):** Provides healthcare information technology solutions for community hospitals and post-acute care facilities, including EHR systems, patient management, and financial management software.
- 7.IBM Watson Health:** Leverages advanced AI and machine learning to provide data-driven insights for healthcare organizations, improving outcomes and operational efficiency.



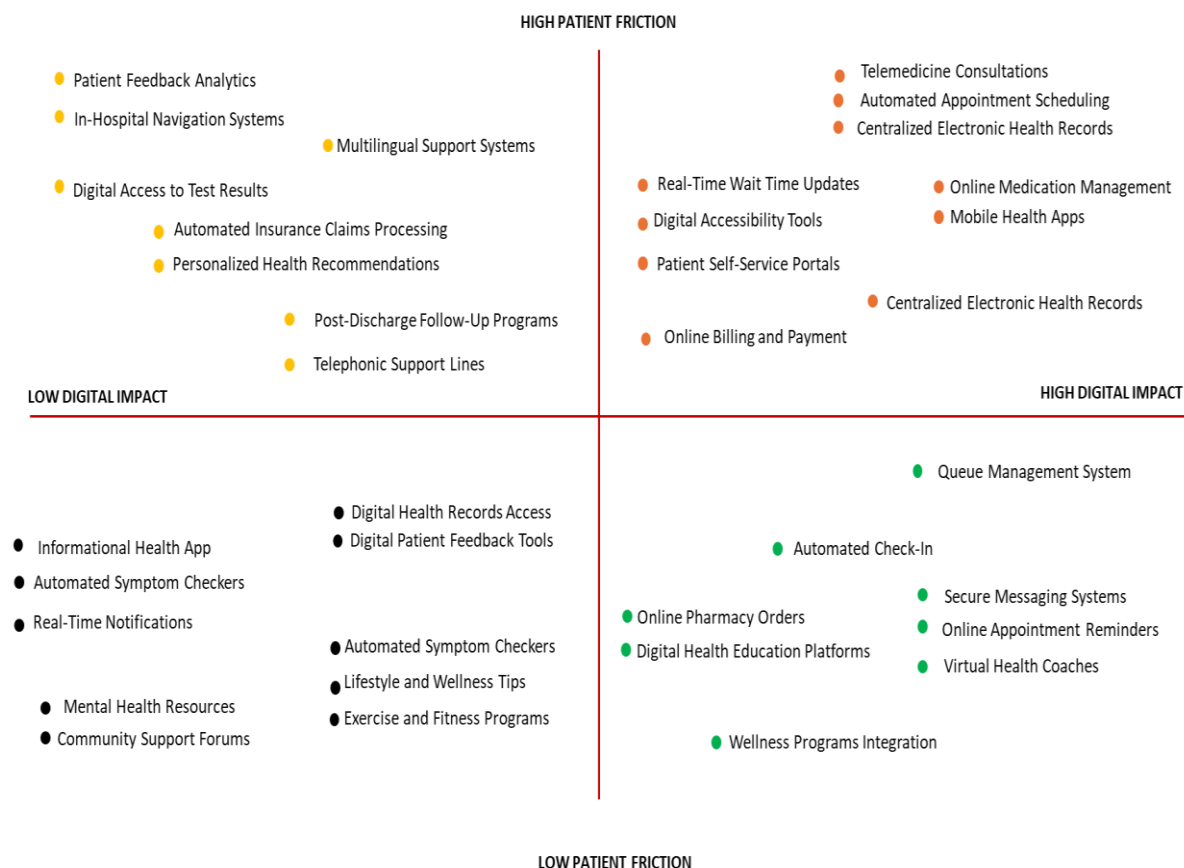
04

Case In-Point: From Waiting Room to Clicks, “Digitising Patient Front End”

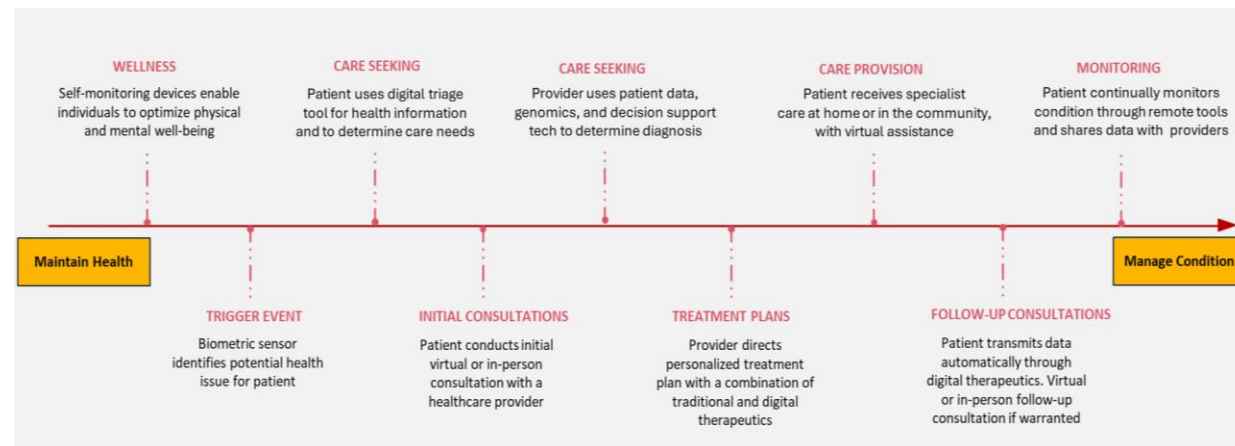
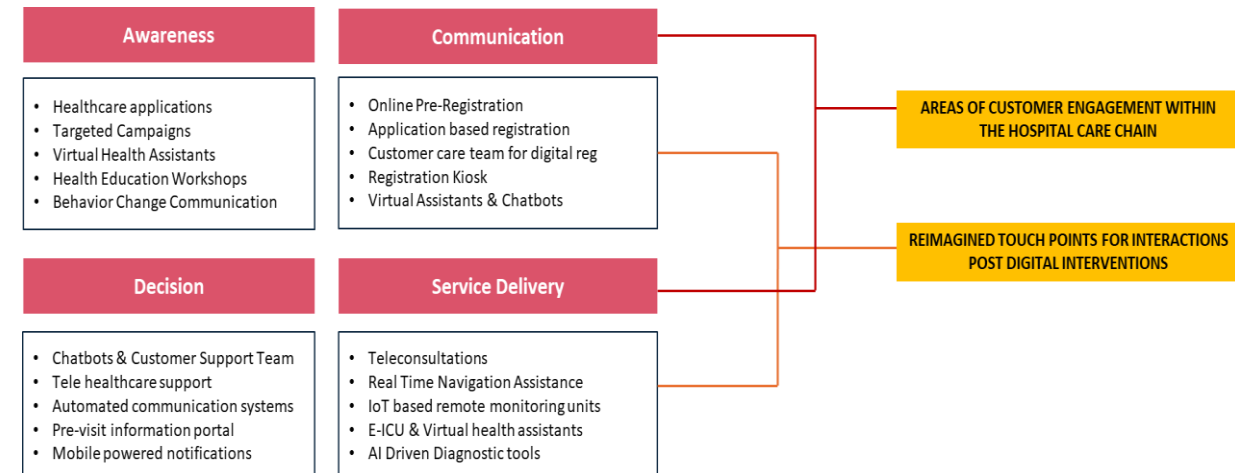
From Waiting Room To Clicks: Digitally Elevating Patient Experience (1/4)

Developing a change to redefine the touch

Understanding the “Laggards” in the Process

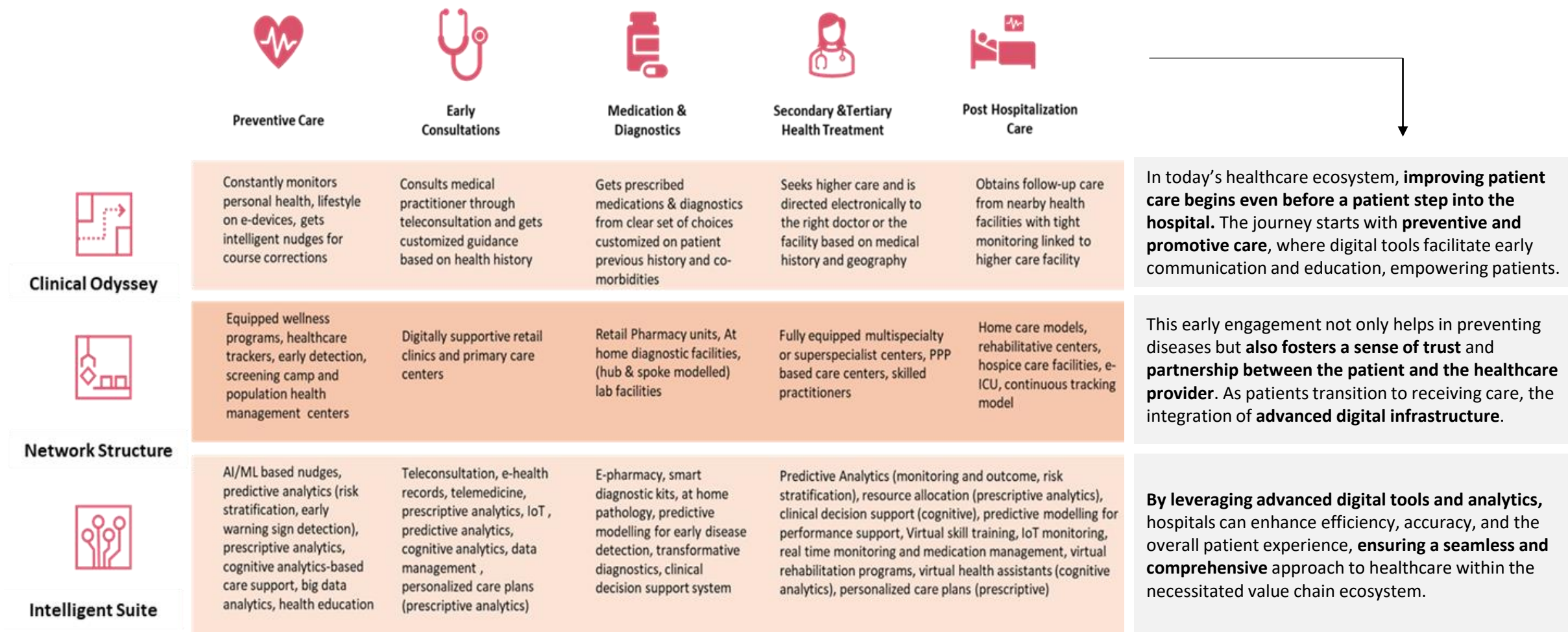


Elevating “Touch Points” Dynamics and Redefining Pathways



Waiting Room To Clicks: Digitally Elevating Patient Experience (2/4)

Understanding the transitional flow



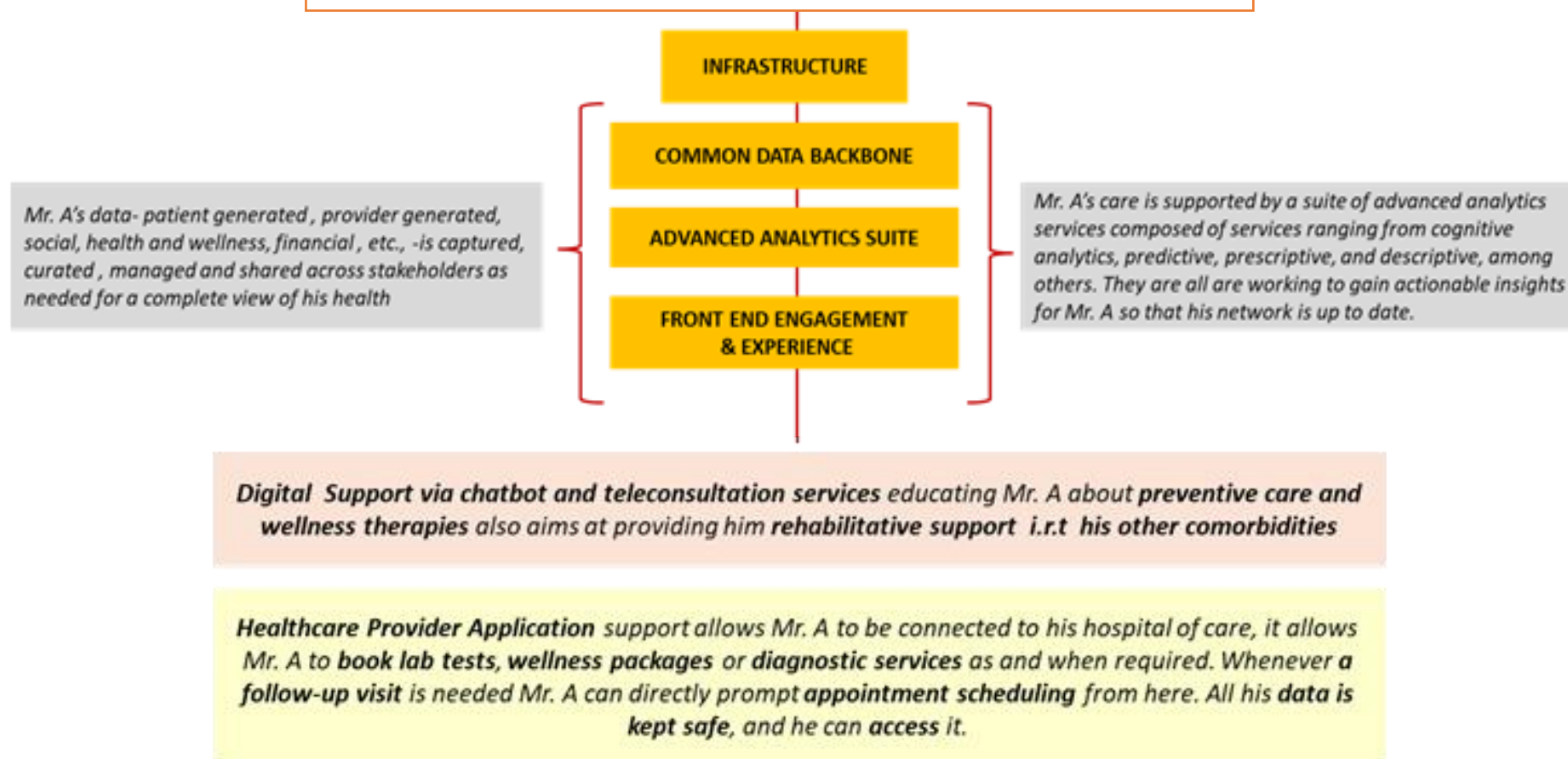
Use Case Prioritization Framework: Across Channels



Waiting Room To Clicks: Digitally Elevating Patient Experience (3/4)

Patient Experience Reimagined through a Hypothetical Case Study

In a **patient centric ecosystem** incumbent by a private healthcare system, **Mr. A middle-aged individual with multiple chronic condition** is poised to bring forth a **frictionless experience**, here we focus on his **front-end experience with a care modality that begins even before he steps foot into the healthcare center.**



Waiting Room To Clicks: Digitally Elevating Patient Experience (4/4)

Patient Experience Reimagined through a Hypothetical Case Study

Community Resource Group allows Mr. A to monitor his signs and symptoms and encourages for curated promotive screening for acute conditions prevailing in the surrounding areas . It also provides personalized recommendations w.r.t preventive care based on the current communicable conditions via population analytics of the area.

Automatic prior authorization and prescription delivery, Mr. A when he needs a refill for his current prescriptions, the prior authorization platform enables real time approval, and the medication request is sent directly to Mr. A's pharmacist

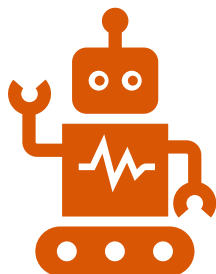
Whenever Mr. A arrives at his visit to the healthcare center he is already confirmed for the follow-up call and if the doctor is expecting him all he needs to do is a face scan to verify his identity. His details and case studies updated in the electronic health records have already reached to the doctor

With the healthcare provider the vital tracker provides a dashboard of the past records since Mr. A's last visit and informs doctor of the predictive trend that could be analyzed. The doctor would have been connected to Mr. A since his last visit through the IoT based remote tracking unit promising a better clinical decision ability.

Further based on the **Clinical Support System** of his doctor he has advised and looked into and scheduled for his next follow up visit ..."everything seems fine"...he would eventually get the **updated appointment message** and the processes would again start as mentioned in the steps above , till then his visit data is **fed directly into his health records** ready to be **perceived by the pharmacy dept** for medications, the health caretaker for furthering the care giving protocols and **laboratory manager** to make sure that the remainder of the tests are taken care of at the same time the details are also transcribed to his insurance company updating his records about the status of his comorbidities. **Overall Mr. A's journey to his healthcare center was not only successful but also worth it in every which way**

Conclusion

The stakes are high, but the rewards are higher !



Necessity of Digital Transformation: As private hospitals in India face modern healthcare challenges, embracing digital transformation is essential. The potential rewards—enhanced patient satisfaction, operational excellence, and a stronger position in the healthcare value chain—make this transformation imperative.

Current Inefficiencies in Private Hospitals: Private healthcare units often struggle with outdated operational workflows and systemic inefficiencies. Critical areas such as the supply chain, laboratory operations, patient experience, and pharmacy services require a digital overhaul to improve efficiency and effectiveness.

Strategic Integration of Digital Health: Identifying strategic points for digital health integration, the study highlights the potential of advanced inventory management systems, AI-driven personalized care, and automated diagnostic tools. These technologies can streamline operations and enhance patient care.

Enhancing Patient Experience: Digital interfaces can significantly improve patient experience by streamlining appointment scheduling, reducing wait times, and facilitating seamless communication between patients and healthcare providers. This focus on patient-centric care is crucial for modern healthcare delivery.

Phased Implementation of Digital Transformation: The transformation should be implemented in phases, ensuring a structured and systematic approach. This phased strategy allows for gradual integration of digital health technologies, enabling private hospitals to adapt and optimize their operations effectively.

Thank You

