



▶▶ Under the patronage of **H.E. Dr. Abdullah Belhaif Al Nuaimi** - Minister of Infrastructure Development



▶▶ 17th Edition

—
International Operations & Maintenance Conference in the Arab Countries

19, 20, 21 NOV 2019

Le Meridien Dubai Hotel
& Conference Centre
United Arab Emirates

Under the Theme:

**Enhancing Maintenance
Through Big Data Management**

▶▶ **The Future of Digital Health**
Malek El Hussein, M.Eng
UCLA Health
Regional Director, M.E.

Agenda

- Healthcare Challenges today
- Digital Transformation in Healthcare
- Patient and Consumer Perspectives
- Evolution in hospitals
- Improving Health systems
- Sustainable Health

Hospitals & Care Systems face many common challenges

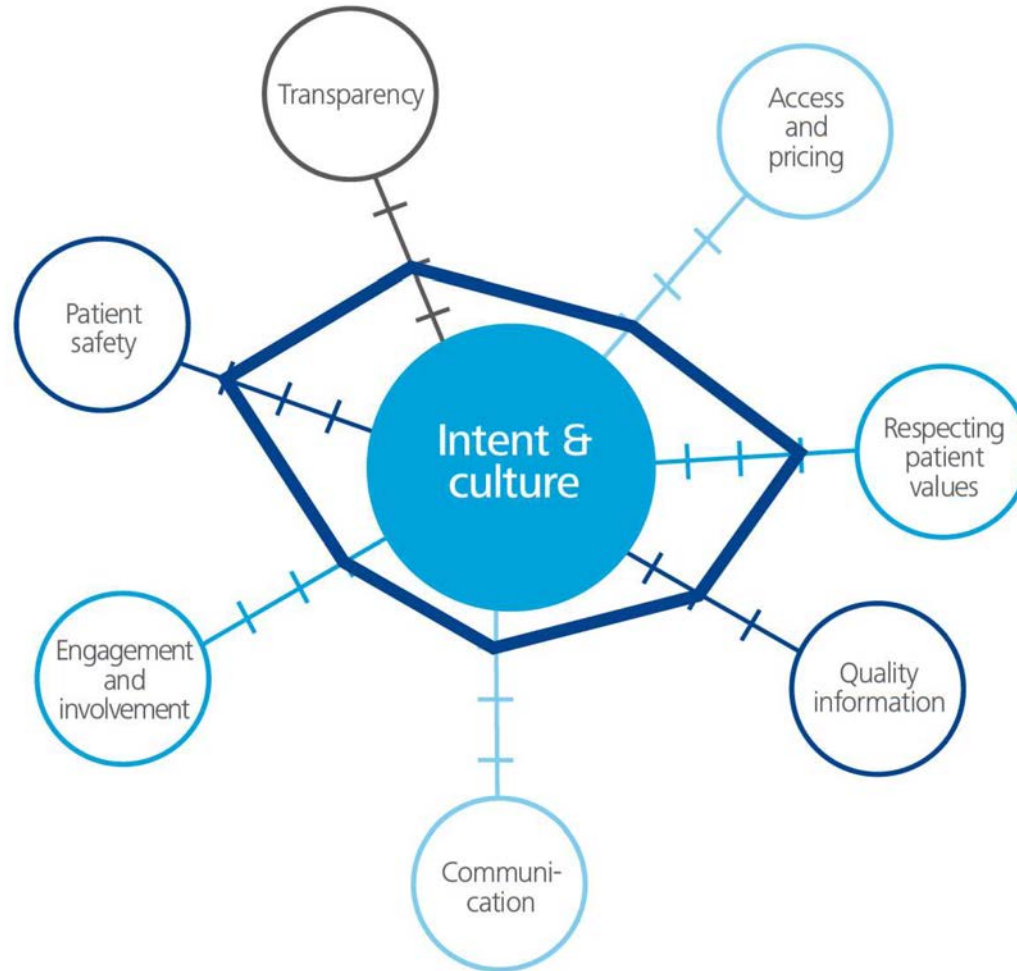
- Shifting **demographics** of patients and the workforce.
- Drive towards **cost efficiency**; access to **capital** for investment needed.
- Continuous **advances in technology** and increasing adoption speed.
- Transition to **value-based reimbursement** focused on **outcomes**.
- Increasing demand for cost and quality **data transparency**.
- Need for **clinical integration** and **care coordination**.
- Growing demand for patient and family **engagement**.
- Challenging **variations** in care.

Hospitals Are Investing in Technology to Lead Digital Transformations



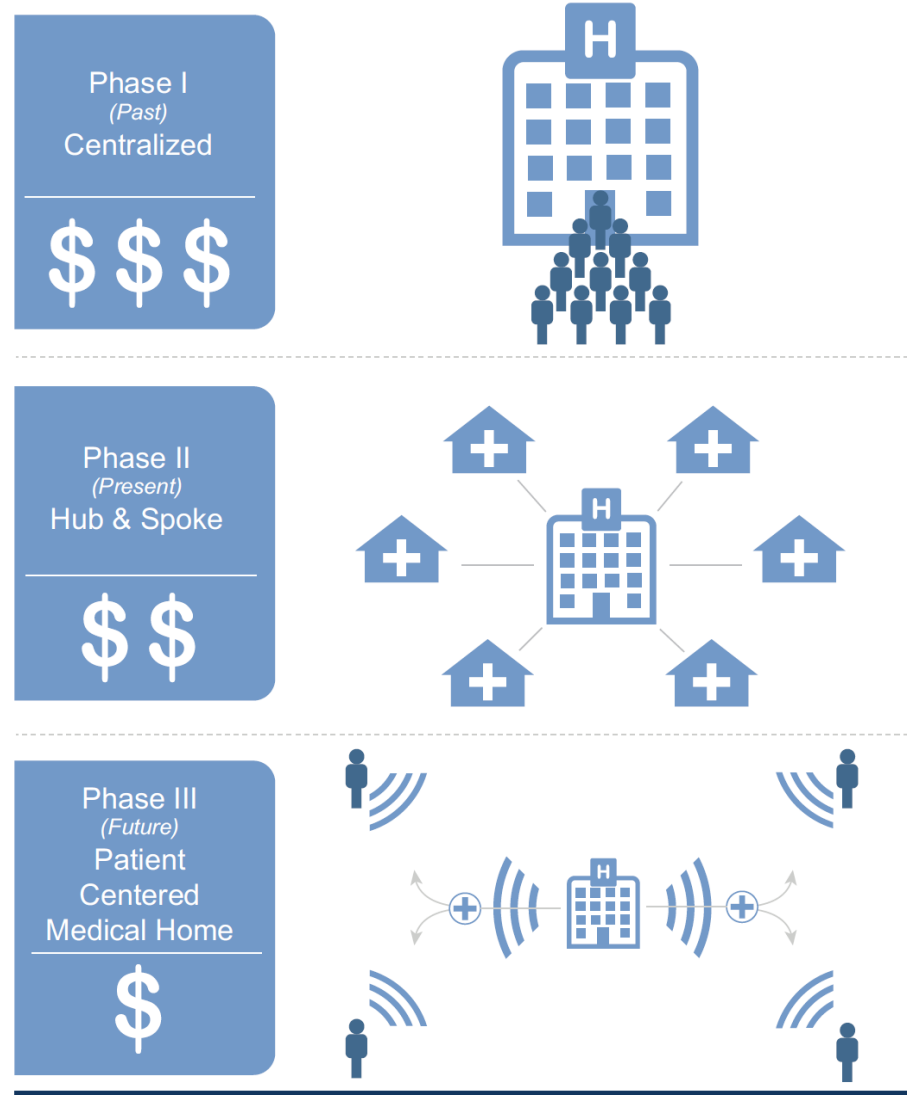
Source: Frost & Sullivan

Patient & Consumer Perspectives



Source: *Benchmarking Strategy for Corporate Patient Centricity*, PatientView, 2013. see also: <http://alexwyke.wordpress.com/2013/09/22/a-benchmarking-strategy-for-corporate-patient-centricity/>

Evolution of the Hospital



Source: Goldman Sachs Global Investment Research

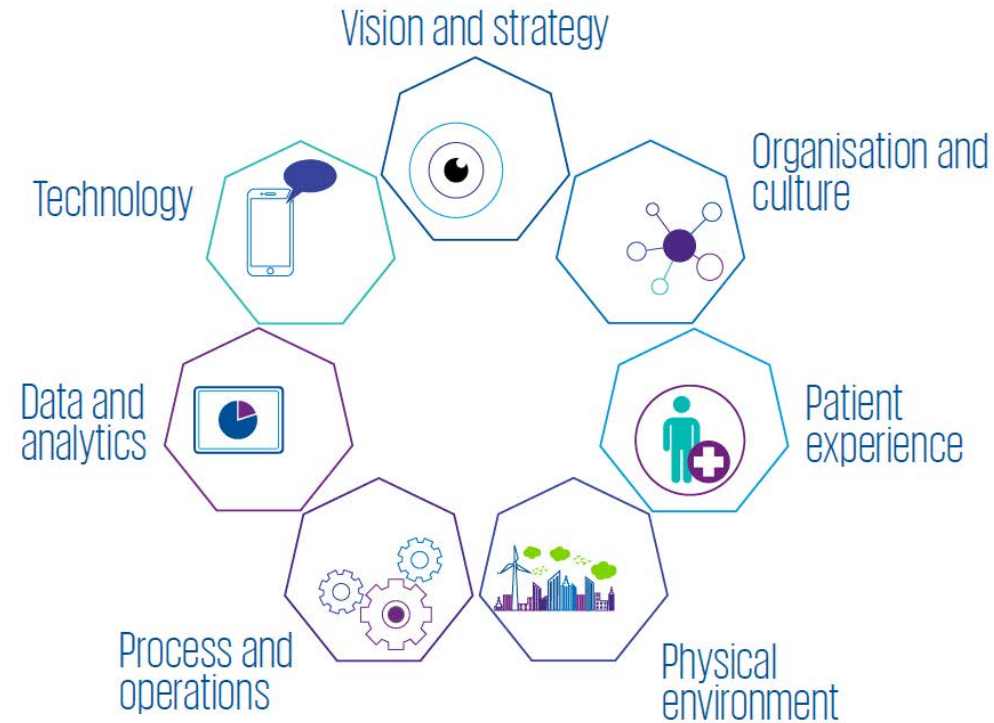
Tomorrow Hospital will use new technologies to integrate the following trends

- We are all connected
- Collaborative care
- Point of care is everywhere
- Big data will drive decision making process
- Patient experiences will avail
- Simplification: less is more
- Home care is better care



The Digital Transformation is leading to

- Dramatic **Savings**.
- Shared **Knowledge**.
- Patient **Participation**.
- Increased **Coordination**.
- Improved **Outcomes**.

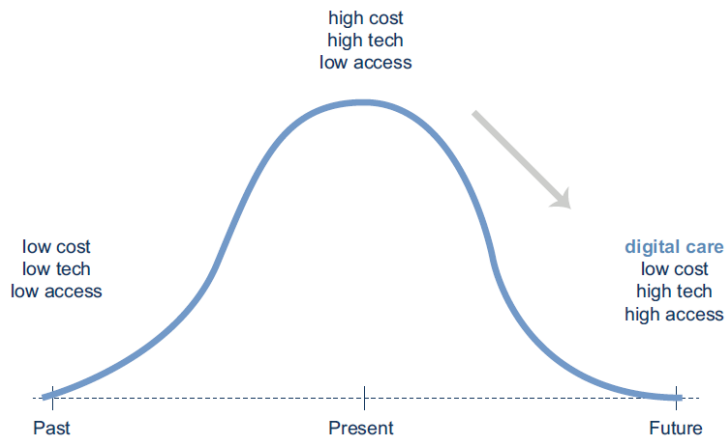


Hospital of the Future

Critical steps to improve clinical outcomes, integrate care, improve safety, and meet challenges of the future today.



The Digital Innovation in Healthcare



Source: Goldman Sachs Global Investment Research

Potential Savings

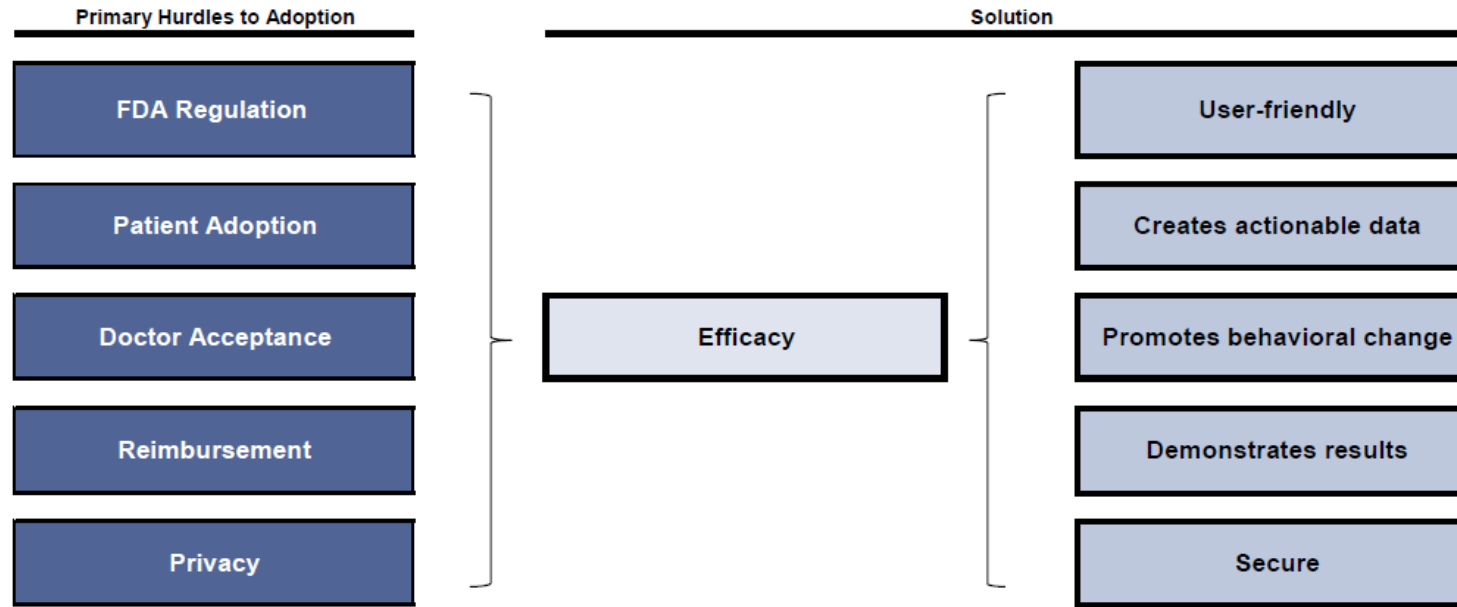
Vertical	Disease State	Total Savings Opportunity	Commercial Opportunity
Remote Patient Monitoring	Heart Disease, COPD/Asthma, Diabetes,	\$200+ billion	~\$15 billion
Telehealth	Routine & Psychological Care	\$100+ billion	~\$12 billion
Behavior Modification	Obesity, smoking cessation, overall lifestyle improvement	Indefinitely large	~\$6 billion

Source: Goldman Sachs Global Investment Research

HCP are leading digital Health Solutions to meet Critical Objectives including:

- **Predicting** and tracking diseases before they become acute.
- **Preventing** recurring health episodes with a focus on positive behavior change.
- **Saving** unnecessary healthcare spending through better chronic condition management.
- **Increasing** patient-clinician data between visits.

Digital Health Development Challenges and Solutions



Source: Goldman Sachs Global Investment Research

Digital Health Case Studies Across Major Verticals

\$ in millions; trial size in number of patients where applicable

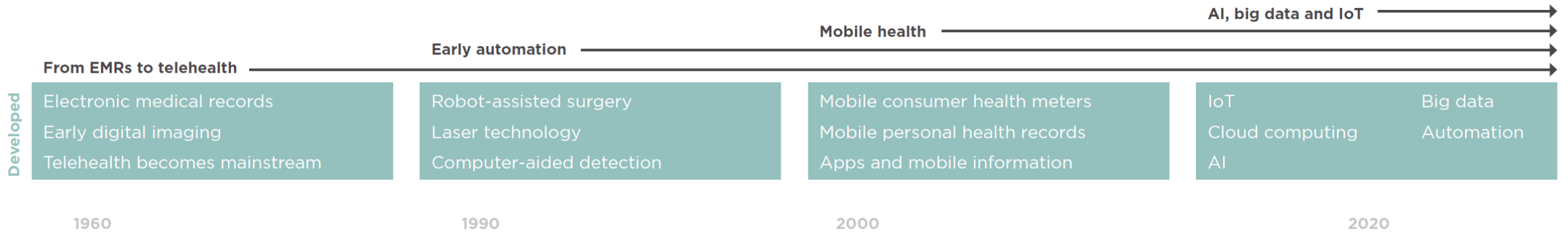
	Company	Description	Results Summary	Pilot Study/ Clinical Trial Size	Addressable Market	Savings Opportunity	Scale	
Remote Patient Monitoring	CardioMEMS	Remote heart failure monitoring and management through an implantable device.	Substantial reduction of inpatient/ER admissions with better direction of outpatient resources.	550	\$3,300	\$17,400		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">↑</div> <div style="margin-right: 10px;">More Tangible</div> <div style="margin-left: 10px;">↓</div> <div style="margin-left: 10px;">Less Tangible</div> </div>
	Vivify	Remote heart failure monitoring and management	Substantial reduction of inpatient/ER admissions with better direction of outpatient resources. Significant cost savings.	13	\$495	\$17,400		
	DexCom	Continuous glucose monitoring connected to a smartphone application and social network.	Easily and discretely check glucose from a smartphone. Social networking component has already saved lives.	n/a	\$6,468	\$11,701		
	Propeller Health	Medication adherence and air-quality tracking for Asthma/COPD patients.	50% improvement in total patients with symptoms 'controlled' (ie no acute events driving hospitalizations).	n/a	\$2,726	\$19,261		
	iRhythm	14- day continuous heart monitoring for arrhythmia diagnosis.	Device delivers 99.1% performance detection accuracy (PDA), demonstrating efficacy and gaining FDA approval.	412	\$2,275	\$5,852		
	AliveCor	ECG on an smartphone for arrhythmia diagnosis and monitoring	Accurate diagnosis of 3 variants of electrophysiological disruption in the heart (primarily Atrial Fibrillation)	381	\$650	\$5,852		
	Biovotion	Arm-band based ICU grade vital signs measurement. Aims at monitoring glucose non-invasively	Accurate diagnosis of 3 variants of electrophysiological disruption in the heart (primarily Atrial Fibrillation)	381	~	~		
Telehealth	Doctor on Demand	Virtual doctors visits (medical, psychiatric, lactation counseling) via a video conferencing platform	Healthcare delivered at ~25% of current costs over teleconference with increased patient satisfaction	n/a	\$12,018	\$103,625		
Behavior Modification	Omada	Weight-loss coaching for diabetes prevention	Sustained weight-loss at a level that is significantly correlated to diabetes reduction	187	\$5,655	\$44,528		

Source: Goldman Sachs Global Investment Research, 2012 MEPS Survey, CMS, Industry Data

Exciting Time in Healthcare

	Old World	New World
Payment	Fee-for-service	Outcome-based
Incentive	Volume	Value
Focus	Acute episodes	Population health
Role of Provider	Single episodes	Care continuum
Information	Retrospective	Predictive

Digitization of The Healthcare Industry



Key Digital Health Benefits

ACCESS



Greater reach of healthcare delivery as some doctor services can be delivered to patients (and managed) via technology-based solutions (telehealth for remote monitoring and diagnostics).

Greater and faster patient access to health and wellness information delivered via mobile phones. This is key in developing countries where 51% of the population live in rural areas.

QUALITY



Better coordination of care as digital health enables faster and secure communication and data sharing between healthcare centres, professionals and patients.

Enhanced quality of professionals as they are more equipped and can analyse greater data sets to take decisions. Digital health also includes tools for e-learning and training.

COST






Earlier risk detection and action: digital health allows patients to take greater responsibility for active management of some of their own health issues and allows professionals to detect risks earlier. This can help reduce the burden of diseases.

Resource optimisation: digital health can ensure that available health resources are used most effectively and where/when needed.

Benefits of Digital Health



Drivers of Digital Health Revolution

ECONOMIC	DEMOGRAPHIC	TECHNOLOGICAL
Unsustainable cost of care; shift to value-based reimbursement	Aging populations in developed countries; digital-first millennials	Growth of precision medicine; rise of smartphones and wireless technologies
		
SOURCE: General Electric		

Using **big data** to drive value-based care could **reduce health care spending** in the U.S. between **\$300-450 BILLION A YEAR**, or 12-17% of the \$2.9 trillion spent that year

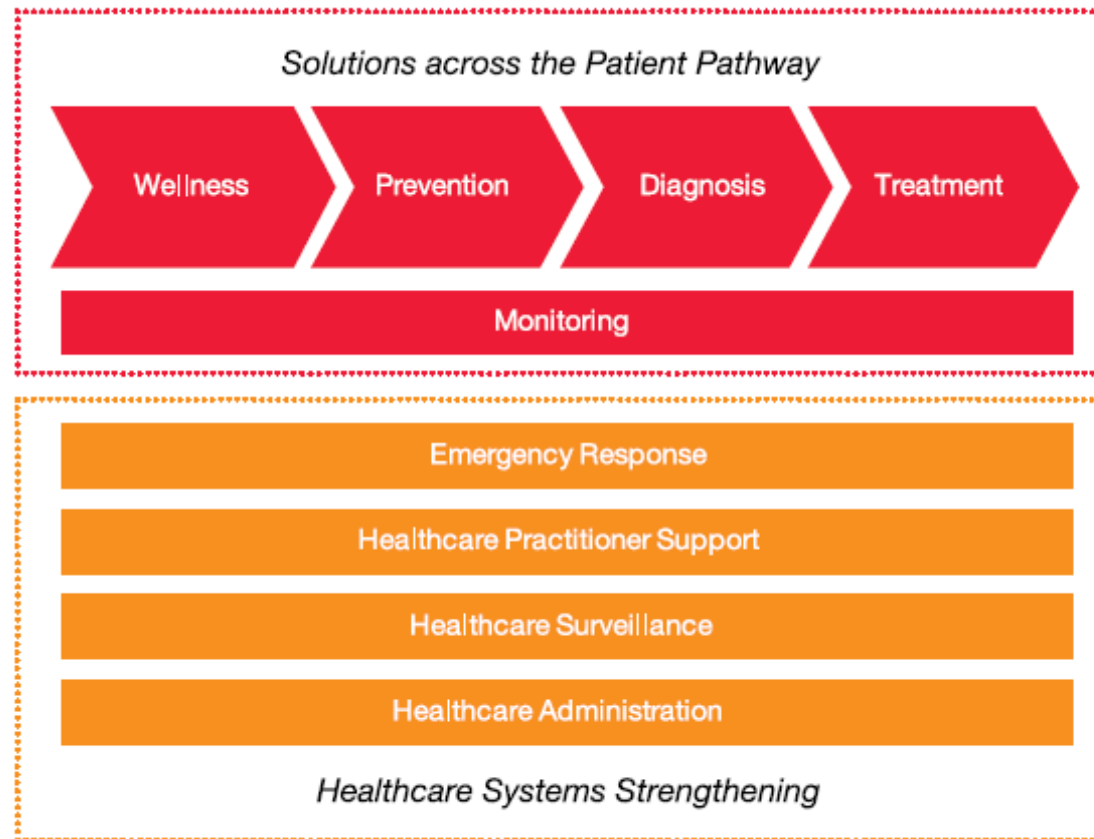
SOURCE: McKinsey and Company

Digital Health Will Push Care Back Home



Step Ups in Care and Cost

Digital Health Services Across the Continuum of Care



Source: GSMA and PwC analysis

“

Sustainable health is about promoting wellbeing delivering connected and better healthcare and pursuing innovation. We are deemed to change.

”

Malek El Hussein

Thanks