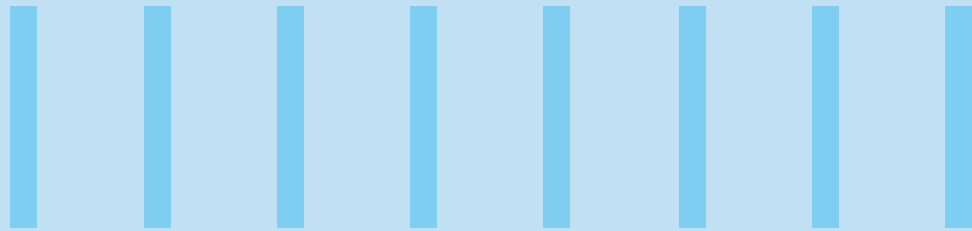




## ENABLING VIRTUAL CARE FOR A PROVIDER – THE INFOSYS WAY



The silver lining of the pandemic's persistent presence since it started in 2019 has been the shot in the arm it inadvertently gave to virtual modes of care delivery like telehealth and telemedicine. There has been a steep rise in the demand for at-home diagnostics and care, and growing interest in the application as well as acceptance of mobile health, remote patient monitoring devices, IoT devices for collection of health data and utilizing them for prevention and therapy.

However, the concepts of virtual healthcare are not new. An 1879 article in the Lancet described the use of the telephone to reduce avoidable outpatient visits. In 1925, a cover story of Science and Invention magazine talked about a doctor diagnosing his patient via the radio, and also ideated a device that would allow examining patients remotely

over video. Remote monitoring was also involved in the Mercury space program when the National Aeronautics and Space Administration (NASA) began performing physiologic monitoring from afar.

Despite the availability and constant developments in technological innovations, the healthcare and life sciences ecosystem lagged in adopting it uniformly before the outbreak of COVID-19. The unanticipated demand caused by the pandemic led to its unstructured and haphazard embracement. The sprints to provide virtual care services have happened without fully addressing or even anticipating the needs of Healthcare professionals (HCPs) and at times compromised patient experience. Physician burnout, limitations of telehealth for outpatient consultations at hospitals, scalability, competency issues among

providers (with Medicine traditionally being taught for in-person, bedside examination, and evaluation), interoperability, and sequestration of patient data are just some of the issues faced by hospitals and HCPs. And some of the patient pain points include inadequate consultation time, decreasing 'human' touch, breaks in the continuity of care, accessibility in remote areas, and quality of care.

With an aim to help Providers be 'digital ready' and ensure focus on the technologies and processes best suited for them and the population they service, Infosys has built a framework amalgamating the various contemporary medical technologies, processes, and procedures to address the provider and patient pain points with virtual care.

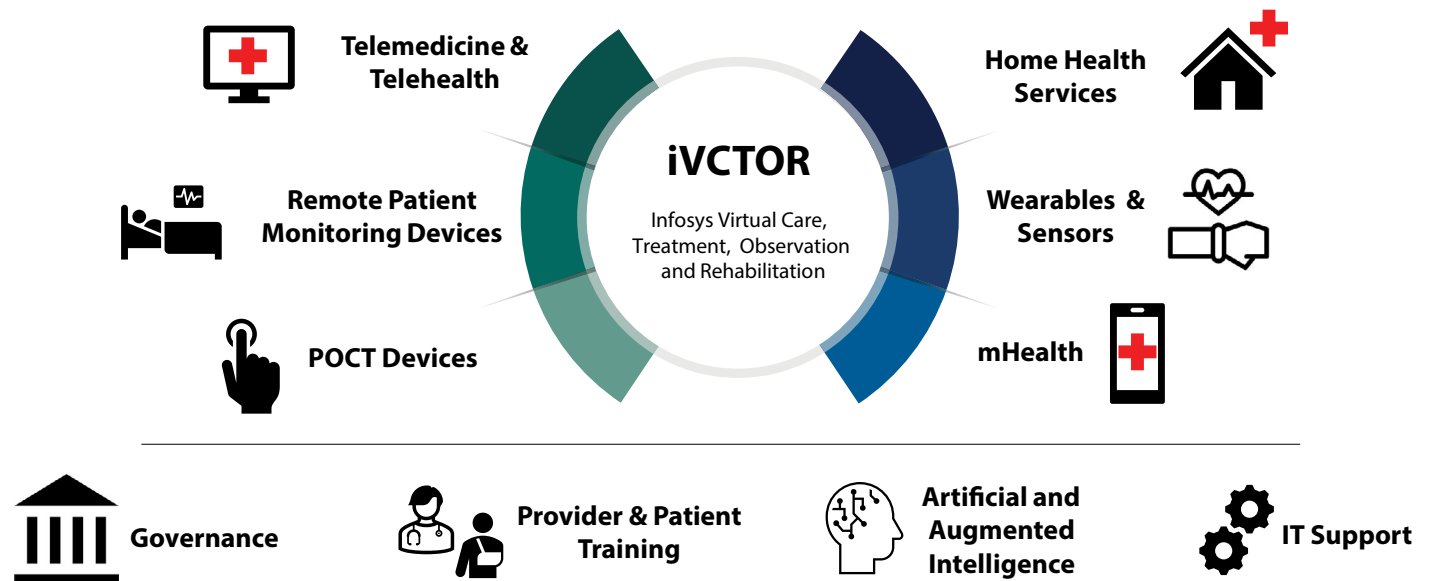


Fig 1: An overview - The iVCTOR framework

The iVCTOR (Infosys Virtual Care, Treatment, Observation, Rehabilitation) framework brings together telemedicine/telehealth with other enablers of virtual care such as remote patient monitoring (RPM) devices, wearables and sensors, mobile health and point of care testing with services such as home healthcare, portable diagnostics and therapeutics, this empowers a provider during the journey towards building an all-encompassing, scalable virtual care service and/or platform.

With patient experience at its core, the iVCTOR framework helps put forth recommendations by examining four key aspects for providers:

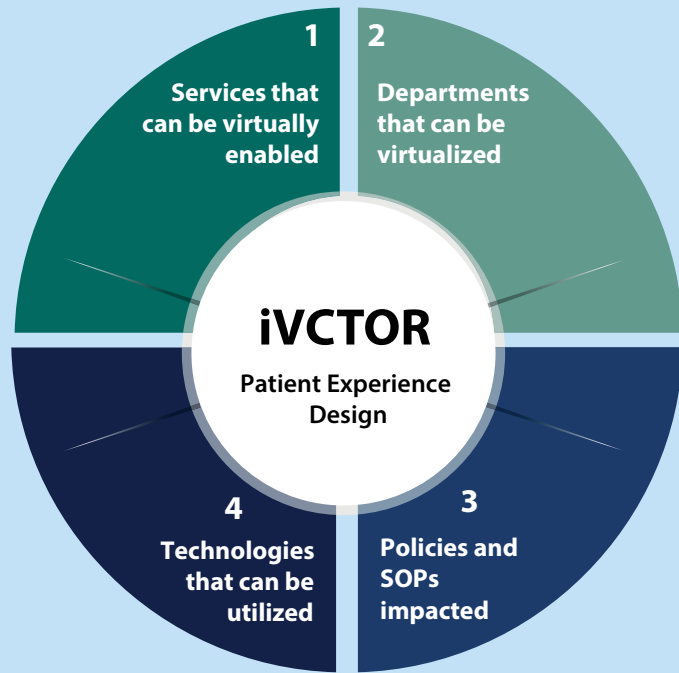


Fig 2: Four key considerations to provide recommendations

## Services that can be virtually enabled

We begin by reviewing the workflows across the various modes of healthcare delivery and the administrative processes that support the same – outpatient, inpatient, critical care, emergency care, inpatient surgery and day care surgery, and identifying the processes that may be automated and virtually enabled – from collecting patient history, scheduling to follow up, post-procedural-care, etc.

For example, outpatient services, registration of patient, any prior authorization, appointment scheduling, the actual consultation using RPM devices and wearables for checking vitals may all be facilitated without the patient leaving his/her/their home.

## Departments that can be virtually enabled

Virtual care is more germane for certain specialties, and for others just select processes would be amenable for virtual enablement. The framework looks through the physiological and disease conditions which define a specialty, and the related processes physicians follow as part of diagnoses and treatment of patients with these conditions to determine which ones are amenable for virtual enablement. For example, medical specialties such as Cardiology, Neurology and Gastroenterology are more pliable for virtual care enablement across the modes of healthcare delivery (such as outpatient, inpatient, etc.) than surgical specialties such as Cardiothoracic surgery,

Neurosurgery or Surgical Gastroenterology. And yet, the outpatient services for surgical specialties along with post-procedural rehabilitative monitoring can be virtually enabled.

## Policies and SOPs impacted

Similar to the way medicine is taught, most regulations and legislations have been ratified with physically present patients and doctors during healthcare delivery. The iVCTOR framework reviews the policies and SOPs across modes of healthcare deliveries and departments – clinical, supportive and administrative – and provides recommendations for additions and modifications to policies and SOPs for ensuring compliance with regulations and patient safety through every stage.

## Technologies that can be utilized

It makes prudent business sense to utilize the technologies and applications that are part of the existing IT Portfolio before looking to invest in one of the multiple solutions that have surfaced in the market for enabling virtual care. The framework includes the following:

Consultation	Diagnostics	Therapeutics	Monitoring	Procedures
Two-way Video Conferencing	POCT	Two-way messaging – chat, multimedia and documents	Remote Patient Monitoring Devices	Portable Medical Equipment (Home Health)
Two-way messaging – chat, multimedia and documents	Portable Medical Equipment (Home Health)	Two-way Video Conferencing	Portable Medical Equipment (Home Health)	Two-way Video Conferencing
POCT	eReporting	Remote Patient Monitoring Devices	Wearables	Two-way video messaging – chat, multimedia and documents
Remote Patient Monitoring Devices	LIS Integration technologies	ePrescription	Artificial and Augmented intelligence	Wearables
Wearables	RIS/PACS Integration technologies	Artificial and Augmented intelligence		Robotic Surgery
Portable Medical Equipment (Home Health)	Artificial and Augmented intelligence			AR/VR devices
Transcription				
Interoperability				
EMR/HIS Integration technologies				
Mobile Health – Patient & Provider facing				
Clinical Decision Support System				
Internet of Things				
Data Lake				

Fig 3: Applicable technologies - clinical processes





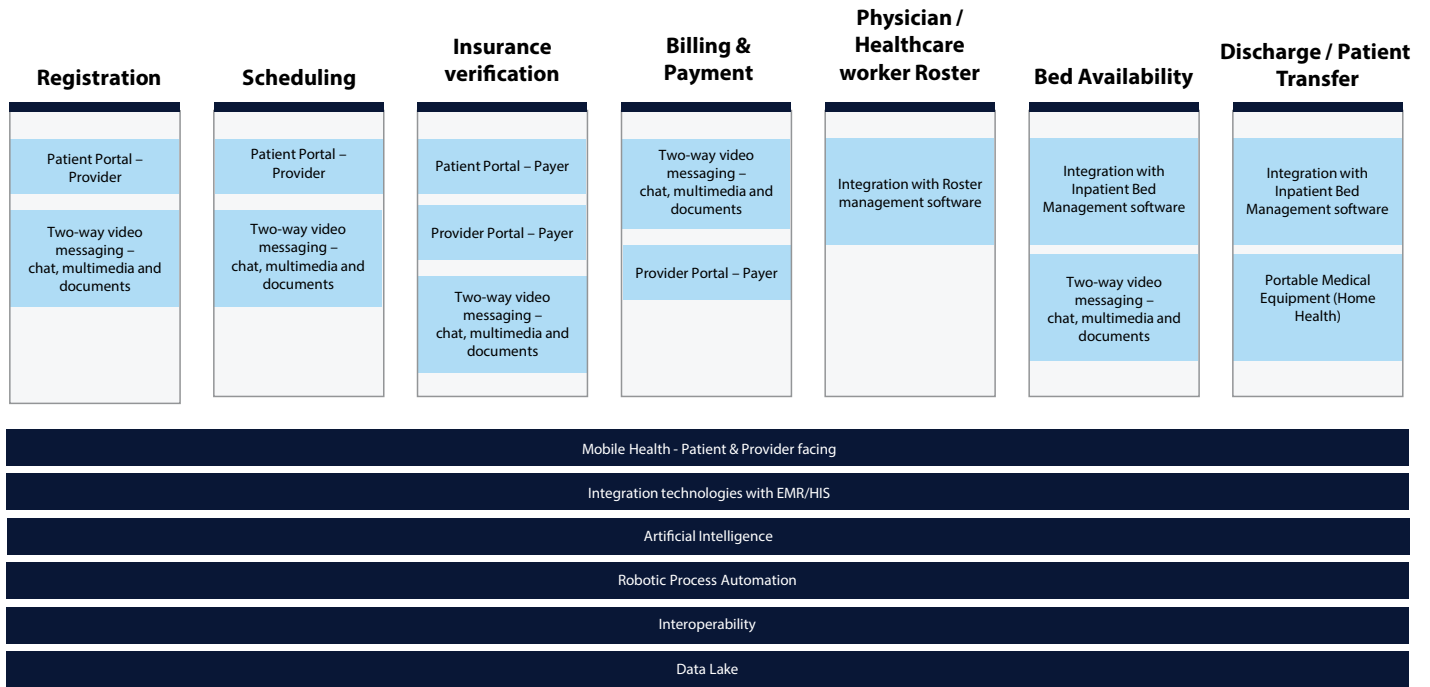


Fig 4: Applicable technologies – administrative processes



## Patient experience design

As with every healthcare IT service provided by Infosys, the iVCTOR framework at its core has the principles of patient experience design which underscores every assessment and ensuing recommendation. iVCTOR's triaging logic, utilizing data provided by patient, wearable devices and remote patient monitoring devices, helps identify patients that are best suited for seeking virtual care, versus those whose health condition needs an in-person assessment. The framework bridges any gaps created due to an HCP and a patient not sharing the same physical space. It enhances patient

experience with optimal use of the time an HCP spends with a patient, ensuring adequate information is available for HCPs to make the best possible diagnostic and therapeutic decisions. Eventually, safeguarding the continuity of care, improving patient safety and building confidence among patients and their families about the quality of care that is being delivered.

The pandemic may have caused an unprecedented demand, but the acceptance of virtual care among patients, families and providers has been

unprecedented too. Virtual care is here to stay! With continuing medical research and market analysis pointing towards the untapped value in virtual care, providers find a need to invest in building virtual care capabilities. The iVCTOR framework - built on principles of human-centric design, with extensive research of existing and emerging technologies, existing Virtual Care Frameworks (such as the AMA telehealth information playbook, the PAHO framework for telehealth), provider and patient pain-points - aims to help providers achieve their goals smartly, efficiently, and sustainably.

Here is a look at a Cardiology patient's outpatient virtual consultation journey:

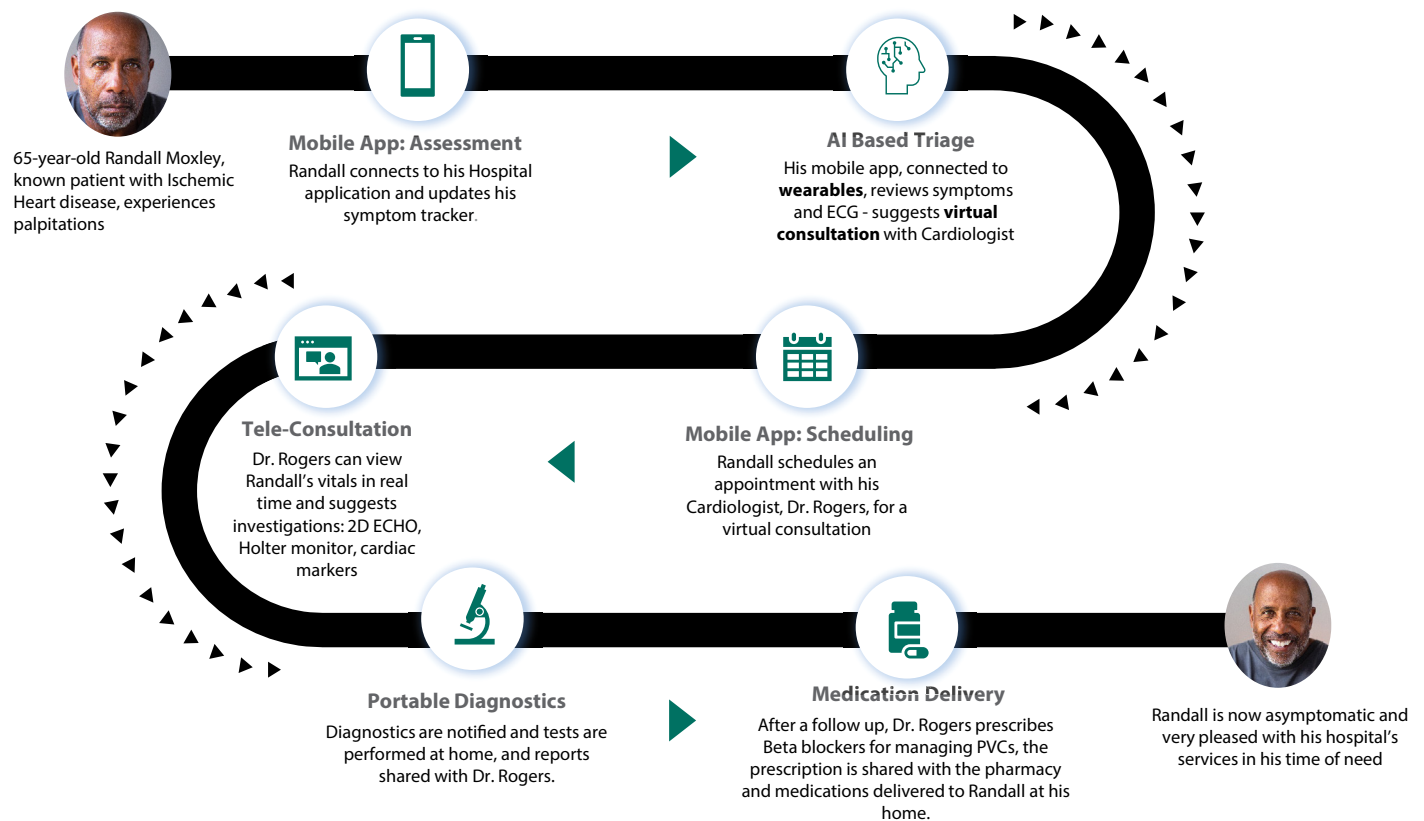


Fig 5: The virtual outpatient journey



And here is the journey of an inpatient when the treating physician is virtually enabled:

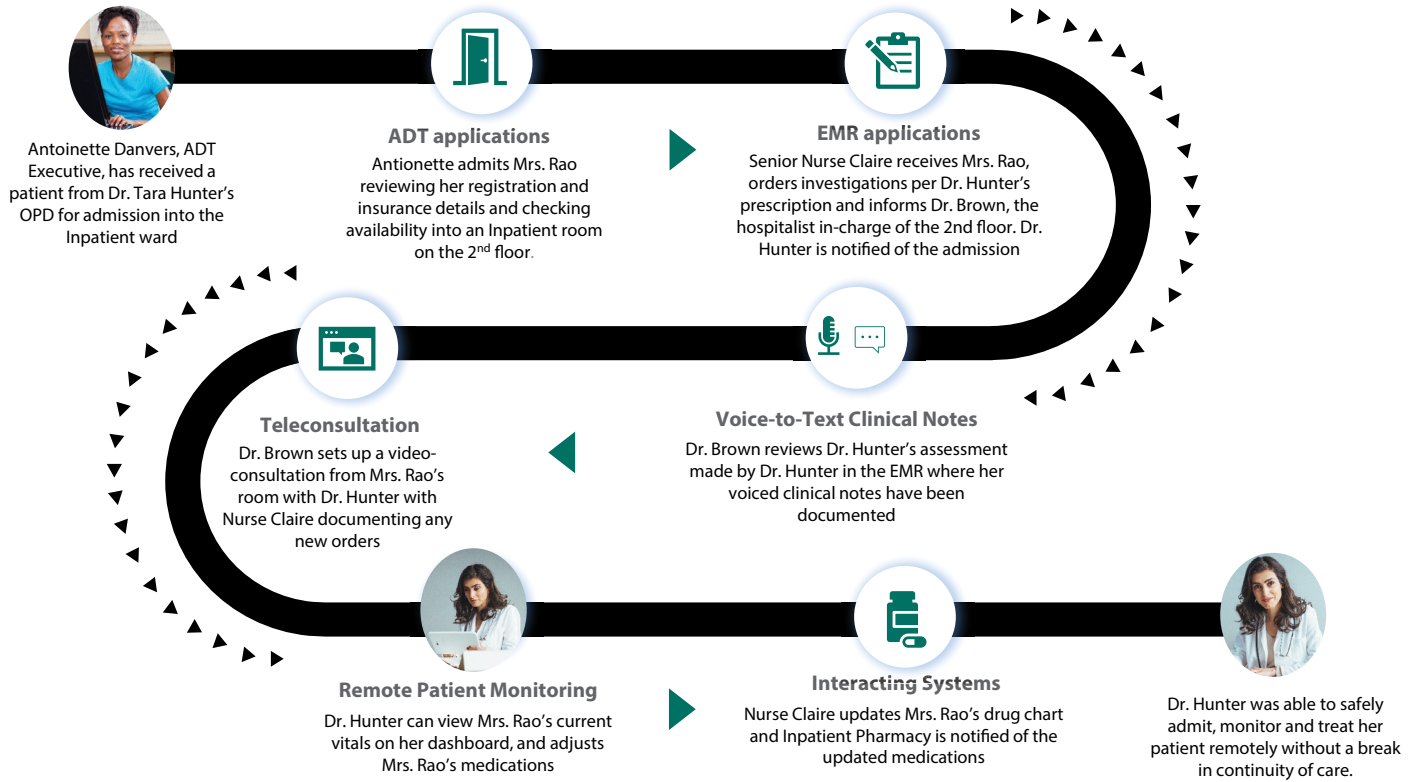


Fig 6: The virtual inpatient care journey



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## iVCTOR Framework by Provider Center of Excellence

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