



Role of medical devices in healthcare ecosystem

Suhas Tamras, the Global Head of the Medical Devices & Healthcare Practice at Tata Elxsi, speaks about how medical devices hold a key role in monitoring of health indicators

The world is turning digital and so are patient experiences. The last decade has witnessed a harmonious marriage between IoT and healthcare. Your views.

With the increase in health awareness and growing demand for quality healthcare, both patients and providers have started adopting technologies that are providing better visibility of data and predictability of events for desired user experience and clinical outcomes. The ability of real-time patient monitoring with connected devices for data gathering, reporting, and analysis at today's scale was unfathomable a decade ago. The latest technologies in the market improves the efficiency of the overall care delivery ecosystem. With a lot of IoT-enabled medical devices, the next set of challenges are to make the entire experience patient-centric, integrated, accurate, efficient, and more than ever, secure and private.

Over the past few decades, the medical device industry has seen waves of technological innovation. What trends do you notice?

Trends in the industry range from novel technologies for diagnosing, monitoring, and treating patients for various diseases or conditions to digital technologies for better care delivery. Manufacturers are not only

investing in making their devices reliable, efficient, and safer but also in providing holistic solutions that positively impact the patient journey. As industry witnesses the shift to connected medical devices in hospital and home settings, interoperability between disparate systems has become a key trend in effectively providing a 360-degree view of the patient's condition thus improving the treatment. Another trend that is picking up is the softwarisation of medical devices. Software as a Medical Device or SaMD is proving to be as effective a treatment as traditional methods.

How do you define a 'Smart Hospital'? What are the practices that would make a hospital 'Smart'?

The concept of smart hospitals has evolved from digitising the hospital processes through EHR in the early 2000s to gradual development into highly integrated, data-driven, patient-centric care delivery with a common objective of achieving excellence in clinical outcome, supply chain efficiency, and a better experience for patients and providers. To achieve the above objectives, the next generation of smart hospitals would have to rely on digital technologies such as robotic process automation, con-

nected technologies, and intelligent patient data management with cybersecurity to optimise resources, achieve energy efficiency, operational efficiency, establish patient-provider connect and maximise patient outcomes in both outpatient and inpatient settings. We are certainly seeing movement in this direction as medical device manufacturers have started to take the holistic outside-in approach. For example, medical device manufacturers are adopting service-oriented device connectivity, as in IEEE 11073-SDC, to solve the age-old problem of interoperability that restricted many workflows in a multi-vendor environment. SDC will allow hospitals to break the dependence on certain vendors and have more flexibility in procuring devices that provide high quality and cost-effective patient care. With this shift in manufacturer's mind-set, we can certainly hope to see the concept of smart hospital being realised sooner than we realised.

Give us an insight into Tata Elxsi's leading role in leveraging AI's growing potential?

Today's healthcare ecosystems generate vast amounts of data. This presents a great number of opportunities to leverage this data to make processes, systems and products more intelligent and efficient. Three key areas where we see the tremendous potential is AI-based process automation in healthcare organisations, AI-based early diagnosis of life-threatening diseases such as cancer, and virtual care assistants. Identifying the trends very early, Tata Elxsi's R&D team has developed solutions in each of these areas to assist our customers in developing better user-centric solutions. Our industry-leading AI-based RPA services help organisations accelerate the automation process with

above par accuracy. Our AI-based diagnostic imaging platform is capable of integrating into doctor's workflow to enable use cases such as lung cancer detection, Alzheimer's detection, etc. On the other hand, our intelligent conversation engine combined with our patient engagement platform is well-positioned to develop smart virtual care solutions for our customers.

What are the premium & innovative products from Tata Elxsi which is helping hospitals to digitally transform patient care?

By virtue of our industry experience and our continuous focus on internal R&D for developing solution accelerators or framework, our customers are expediting their digital transformation journey and significantly reducing their

time to market. For example, our vendor-agnostic patient engagement platform is developed to enable on-demand doctor consultation, appointment scheduling, and e-prescription.

The platform is built keeping in mind multi-vendor IT infrastructure for easier integration into clinical workflows. Our IoT-enablement platform is being used to remotely monitor chronic conditions, hospital assets, and enable predictive maintenance of capital equipment. While our IoT platform is known for seamlessly connecting devices, our cloud-based big data & analytics platform is integrated into the clinical and non-clinical workflows to address complex data analysis needs. Apart from these solutions, we have invested in developing an intelligent video cognition platform for content curation, object detection, and meta-tagging of endoscopic surgical procedures for post-surgery reviews as well as medical education. 



1. Lab-in-a-Box diagnostic device by Hemex Health where Tata Elxsi was the product design and engineering partner.