


## Chapter 4


# Smart Healthcare System Using Cloud–Integrated Internet of Medical Things

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### ABSTRACT

*Smart healthcare is a healthcare delivery system that leverages wearable devices, the internet of things, and the mobile internet to access information dynamically, connect people, materials, and institutions in the healthcare industry, and then intelligently control and respond to medical ecosystem demands. The internet of medical things (IoMT) plays an essential role in providing smart healthcare services to patients. In IoMT, several pieces of medical equipment are connected with each other and share data. On the other hand, cloud computing facilitates different computing services, including software, networking, data storage, servers, and data analytics over the internet. This chapter proposes an architecture to integrate cloud, edge, and internet of medical things. This architecture will facilitate remote patient monitoring, medical data analytics, and interoperability. Finally, we look ahead and evaluate the future prospects and challenges of smart healthcare.*

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## **INTRODUCTION**

In this age of exponential population growth, the conventional medical care system is not capable of providing medical services up to the requirements of its patients. It's possible that this is due to the tremendous rise in population seen all around the world, or that it's because people are using technology less. Even though we have qualified medical professionals, cutting-edge technology, and well-developed infrastructure, not everyone can take advantage of our medical facilities. The provision of healthcare services at prices that are affordable and the improvement of the accessibility of the healthcare system are both difficult tasks to accomplish. Some people are unable to afford it, while others are unable to approach it. In light of this, the concept of "smart healthcare" has emerged as a means of rendering the healthcare system accessible and available to all individuals at any given time. A forward-thinking healthcare system not only gives individuals access to medical care but also teaches them how to handle minor health problems on their own in an emergency and raises their awareness about how their bodies work. The term "smart healthcare system" refers to the intelligently collecting and managing the medical data and healthcare ecosystem. This is accomplished through the utilization of technology such as the Internet of Medical Things (IoMT), cloud computing, fog computing, containerization, Big Data, Artificial Intelligence, and Machine Learning as well as various wearable medical devices. The intelligent healthcare system enables the facility to link various medical devices to one another and to gain online access to various types of medical information, patient data, hospital details, and so on. A sophisticated healthcare system facilitates two-way contact between patients and their doctors, allowing for the remote exchange of information. By enabling report monitoring of patients and permitting remote control of medical ecosystems, smart healthcare systems bring down the overall cost of providing medical care, regardless of where in the world the patients are located.

Over the course of the past few decades, there has been a rising adoption of information and communication technology (ICT) in the field of healthcare, with the goal of making the healthcare system easily accessible to anyone and at any time. The application of ICT in healthcare raises the level of service provided, ensures the integrity of the electronic healthcare record, and reduces overall expenses. The electronic health record stores patient information, such as their medical history, which may include prescriptions, reports on their most recent diagnosis, previous and most recent lab test results, most recently recommended medicines, and any adverse effects that may have been caused in the recent past as a result of medication, among other things. When seeing a new doctor, it is not necessary for the patient to bring the old prescription with them. Using a computer or any other electronic device, a physician can access all of the information regarding a patient

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