

# Chapter 14

## IoT–Enabled Remote Patient Monitoring for Chronic Disease Management and Cost Savings: Transforming Healthcare

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### ABSTRACT

*The integration of internet of things (IoT) technology in healthcare has revolutionized chronic disease management and healthcare cost reduction. IoT-enabled remote patient monitoring systems provide real-time insights into patients' health parameters, enabling informed decisions and patient participation. The central hub of these systems provides accurate, up-to-date patient data, enabling timely alerts for chronic diseases. Electronic health records (EHR) offer comprehensive historical health data while ensuring privacy and security. However, challenges like data security, scalability, and interoperability remain. The healthcare industry must improve security measures, standardize interoperability, and adopt advanced analytics, artificial intelligence, and wearable technology for personalized, data-driven, and cost-effective care.*

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## **INTRODUCTION**

The integration of Internet of Things (IoT) technology in healthcare is revolutionizing patient care, particularly in remote patient monitoring. This innovation is set to significantly improve healthcare delivery and management of chronic diseases like diabetes, hypertension, and heart disease. IoT-enabled remote patient monitoring systems can address these challenges and improve healthcare outcomes by ensuring continuous attention and effective management to prevent complications and maintain a good quality of life for affected individuals (Roy & Chowdhury, 2021).

IoT-enabled remote patient monitoring aims to provide real-time data on a patient's vital signs and health parameters through a network of sensors, wearables, and medical devices. This data is securely transmitted to healthcare providers and caregivers, empowering them to make informed decisions and encouraging patients to take an active role in their health. This proactive, data-driven care can reduce hospital readmissions and emergency room visits, ultimately reducing healthcare costs (Sainadh et al., 2021).

The integration of electronic health records (EHR) is crucial in IoT-enabled remote patient monitoring, providing a comprehensive view of a patient's health data. This allows healthcare providers to tailor treatment plans based on past medical history. Ensuring seamless integration with remote patient monitoring systems is essential for holistic care, patient privacy, and data security (Sharma et al., 2021).

The central hub of an IoT-enabled remote patient monitoring system is the hub where data from various sensors and devices converges before being transmitted to a cloud-based platform. It ensures data accuracy, reliability, and consistency, facilitates seamless information flow, and enhances the system's ability to generate real-time alerts and notifications, crucial for immediate action in critical situations (Malche et al., 2022).

This chapter explores the potential of IoT-enabled remote patient monitoring in managing chronic diseases, reducing healthcare costs, and integrating EHRs. It highlights the central hub's role and the importance of alerts and notifications for timely patient responses. The chapter presents case studies and discusses current challenges and future directions in this evolving field, highlighting the profound impact of these technologies on the healthcare landscape (Rathee et al., 2021).

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