

Chapter 2

Healthcare 6.0 Promising the Era of Smart and Intelligent Hospitals: A Paradigm Shift

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ABSTRACT

This chapter outlines the revolutionary potential of smart and intelligent hospitals, which use cutting-edge technologies to alter healthcare delivery and patient outcomes. These hospitals are leading the way in the use of innovative technologies like digital twins, AI-enabled seamless Models, and the Internet of Things (IoT) including scalable blockchain technology, which are bringing in a new era of data-driven, individualized, and efficient healthcare. The smart hospital concept has the potential to revolutionize the way medical care is delivered in the future by making healthcare more efficient, accessible, and customized to each patient's needs. While intelligent hospitals take a more comprehensive, integrated approach to improving the entire hospital ecosystem through the strategic convergence of sophisticated technologies and thoughtful facility design, smart hospitals use data and technology to enhance particular processes and the patient experience.

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INTRODUCTION

This chapter outlines the revolutionary potential of smart and intelligent hospitals, which use cutting-edge technologies to alter healthcare deliverables and patient outcomes. These hospitals are in the lead to use innovative technologies like digital twins, AI-enabled seamless Models, and the Internet of Things (IoT) including scalable blockchain technology which are bringing in a new era of data-driven, individualized, and efficient healthcare. The smart hospital concept (Lapão & Viegas, 2024a), has the potential to revolutionize the manner in which the medical care will be delivered in the upcoming tech era, by making healthcare more efficient, accessible, and customized to each patient's needs. While intelligent hospitals take a more comprehensive, integrated approach to improving the entire hospital ecosystem through the strategic convergence of sophisticated technologies and thoughtful facility design, smart hospitals use data and technology to enhance particular processes and the patient experience.

Smart technologies are being adopted by hospitals more frequently in an effort to improve patient outcomes and provide better healthcare. Smart hospitals continuously monitor patient vitals and health data through the use of linked devices and sensors, which enables early issue diagnosis and proactive actions. By streamlining processes like asset tracking and patient flow optimization, these solutions save time and money while reducing waste and increasing the emphasis on patient care. Smart hospitals can provide insights from patient records and other sources with the help of data analytics and artificial intelligence, leading to more individualized and accurate care. Additionally, via better resource management and energy efficiency, tech savvy hospitals achieve sustainability and cost savings. Thanks to features like digital check-in, room automation, and proactive progress updates, they provide a more intuitive and connected patient experience. AI helps with predictive analytics, allowing for personalized treatment and better patient outcomes, with noticeable improvements in clinical metrics after its implementation. IoT devices provide real-time monitoring, helping to manage resources more efficiently and enabling prompt medical responses (Ahmad, 2024). The “Smart Hospital DNA” framework promotes collaboration and innovation, with initiatives like telenursing addressing staffing challenges while enhancing care delivery. However, there are still obstacles to overcome, such as the need for workforce training, safeguarding data privacy, and developing digital skills to fully realize the potential of smart hospitals. Despite these challenges, the future of healthcare is increasingly dependent on these advanced systems, offering more efficient, patient-focused care.

The integration of financial technology (Jovy-Klein et al., 2024; Li & Carayon, 2021) into healthcare has transformed how patients engage with services, make payments, and access insurance, particularly evident during the COVID-19 pan-

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