

## **Medical Big Data: Hype or Hope?**

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### **Abstract**

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Advancements in information and communication technology (ICT) has enabled convergence among industries and the pace of innovation is accelerating day by day. As new types of large-scale, real-time data are generated across all industries, techniques to store, analyze, and utilize the data have been developed widely so that it is possible to derive meaningful insights from the data.

Artificial intelligence (AI) will be the most popular among various analytical techniques applied to derive meaning from big data. Artificial intelligence, which is able to learn a lot of data efficiently and shows the ability to overcome human performance in some fields, is applied to various industries and technologies to improve human life quality.

Growing levels of adoption in big data and AI are bringing ever more hope especially for healthcare industry leading to better health outcomes, lower cost of care, and realization of precision medicine. AI has a great influence on the paradigm shift in healthcare as a core technology basis not only for assisting healthcare professionals through clinical decision support such as medical image reading but also for offering personalized treatment and care experience for patients or even improving the efficiency of hospital operation.

However, a number of challenges still lies ahead for successful adoption of medical big data both in and out of hospitals, such as ambiguity of data ownership, privacy and security concern, regulatory and governance. Moreover, as AI is not dependent on a specific program or set of codes, but learns from the data itself, the amount and quality of data are a very important factor in the development of artificial intelligence and that the performance of AI-based services (or solutions) to be developed according to the data collection and preprocessing process can be controlled. As the phrase "garbage in, garbage out" (GIGO) implies, ensuring accurate and complete data will be the keys to competence in the era of artificial intelligence, and the expected worth increase exponentially as the amount of data gathered continues to grow.

### **Keywords**

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*Medical Big Data, Artificial Intelligence, Paradigm shift in medicine*