JRAAS
Special Issue in Medicine & Surgery
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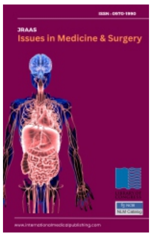

Editorial

Section: Medicine

The Promise & Peril of Personalized Medicine

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In the last decade, the term personalized medicine has transformed from a futuristic buzzword into a tangible revolution at the heart of modern healthcare [1]. Once, medicine was an art of averages - a prescription for the "typical" patient, a treatment designed to fit the majority. Today, fueled by advances in genomics, data analytics, and biotechnology, medicine is moving toward an era where treatment is not only based on disease but tailored to the individual who bears it [2-4]. The promise is profound. Genetic profiling can now identify how a person might respond to a drug, detect predispositions to conditions like cancer or Alzheimer's, and even guide preventive measures long before symptoms appear [1,3]. In oncology, for instance, targeted therapies have already begun to replace traditional chemotherapy with precision strikes on specific genetic mutations [10]. For many patients, this shift has meant longer survival and a better quality of life [5,10].

Yet, beneath this optimism lies a complex web of ethical, social, and economic challenges. Personalized medicine demands vast amounts of data - from genetic codes to lifestyle metrics - raising urgent questions about privacy and consent [8,9]. Who owns our genetic information? Can it be used to discriminate in employment or insurance? Furthermore, as cutting-edge therapies often carry astronomical price tags, there is a risk that personalized medicine could deepen the divide between those who can afford bespoke care and those who cannot [5,6]. Equally important is the issue of access to technology and representation in research. The genetic data driving personalized medicine has historically been derived largely from populations of European descent [7]. If this imbalance continues, the so-called "personalization" may fail to serve humanity in its entirety, leaving large segments of the global population without effective therapies [9].

To ensure that personalized medicine fulfills its humanitarian promise, we must marry scientific progress with ethical foresight [8]. Governments, researchers, and healthcare providers must establish transparent data governance systems, ensure equitable access to treatments, and promote diversity in biomedical research [7–9]. Education, too, plays a vital role - both for clinicians, who must interpret complex genetic information, and for patients, who deserve to understand their own biology [2,4]. Personalized medicine represents not merely a technological shift, but a philosophical one: a move toward seeing each patient as a unique biological narrative [11]. The challenge ahead lies in ensuring that this revolution serves not just the fortunate few but the collective human story. If guided wisely, personalized medicine may become not just the future of healthcare, but the future of humanity's relationship with itself [9].

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Article History: Received 04 December 2025; Received in Revised form 09 January 2026; Accepted 16 January 2026
How To Cite: Karan Singh Saini & Satendra Singh. The Promise & Peril of Personalized Medicine. *JRAAS : Special Issue in Medicine & Surgery.*2026;41(1): 1-3. DOI: https://doi.org/10.71393/ythyhm93

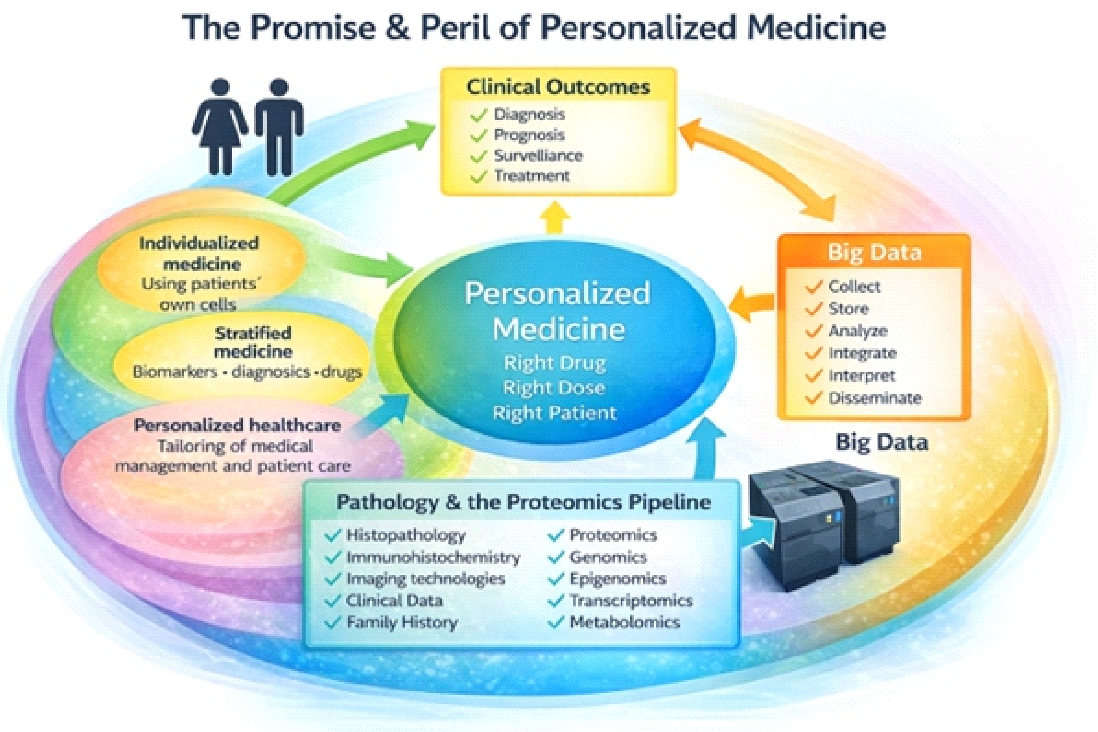

Figure 1. Personalized Medicine. *Adopted from Jin et al., 2018* [12].

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This article serves as an important educational tool for the scientific community, offering insights that may inspire future research directions. However, they should not be relied upon independently when making treatment decisions or developing public health policies.

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