



# REVIEW ON ADVANCE DEVELOPMENT IN PERSONALIZED MEDICINE

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**ABSTRACT:** The purpose of this review article is to provide a foundation for understanding the principles of personalized medicine. The goal of personalized medicine is to improve the quality of treatment and reduce the threat of toxicity to an individual patient. It tells the right medicine and dosage, the right patient and the right time of the medicine. Personalized medicine focuses on personalized medicine based on each patient's genetic makeup and molecular diagnosis. Personalized medicine promises to predict, prevent and treat diseases based on individual needs. This article explores the benefits of personalized medicine in improving patient outcomes and improving the healthcare industry. The main purpose of this study is to determine the benefits and benefits of personal medicine, its problems and its effects on health. It will create the ability to provide comprehensive patient care. In this review, we discuss the motivation for personalized medicine, its background, new technologies that enable personalized medicine, some experiences (e.g., successes and failures), and ways personalized medicine can be analyzed and used, and future directions, including potential. Finally, we believe that because the characteristics of personal medicine derive from the reality of medicine, in some cases the practice of personalism cannot be avoided, especially the analysis and presentation of strategies that will be more efficient and effective.

**Keywords:** Personalized Medicine, Genetic Makeup, Molecular Diagnosis, Personalism

## I. INTRODUCTION:

Personalized medicine aims to prevent, identify, diagnose and treat diseases that affect patients. <sup>[1]</sup> Personalized medicine can be prescribed to an individual patient or a group of patients. It usually means a combination of molecular analysis and age-based strategies to identify and treat each patient. Individualized medicine is medical treatment based on the characteristics of each patient. The approach is based on a scientific understanding of how an individual's molecular identity and genetic characteristics predispose them to certain diseases. This research improves our ability to predict which treatments are safe and effective for each patient and which are not. Self-healing medicine can be thought of as an extension of the cognitive and therapeutic process. Equipped with more sensitive equipment, doctors can choose treatment or management based on the patient's molecular profile; this not only reduces side effects and improves results more effectively, but can also help control costs compared to traditional treatments. "Trial and error" approach to treatment. Personalized medicine can change the way we think about, identify and manage health problems. It has already had a positive impact on clinical research and patient care, and this impact will expand as our understanding and technology advances. <sup>[2]</sup>

New applications of high-throughput biomedical laboratory data such as DNA sequencing, proteomics, imaging protocols, and wireless monitoring devices have revealed many individual differences in effects, mechanisms, and objects. This raises the question of how individual differences influence decisions about the best way to treat, monitor, or prevent individual diseases. In fact, it is now recognized that differences among many disease processes suggest that strategies for treating infected individuals, and perhaps monitoring or preventing that disease, must be tailored to the characteristics of the individual's personality or "personality." physiological, environmental exposure, and behavioral profiles. Many excellent reviews of personalized medicine have been published, including several textbooks for medical students and practitioners. Although many people use "personal" medicine interchangeably with "individual" and "precision" medicine (as we do here), many believe the surprising thing is that even the differences between them are often subtle. <sup>[3, 4]</sup>

Personalized medicine is a rapidly growing field of medicine that relies on each person's unique genetic, medical, and environmental information to accurately predict an individual's susceptibility to disease, its course, and response to treatment. Even though we know the effectiveness of personalized medicine, we still have to face issues such as medical costs, medical education, insurance, and privacy concerns.

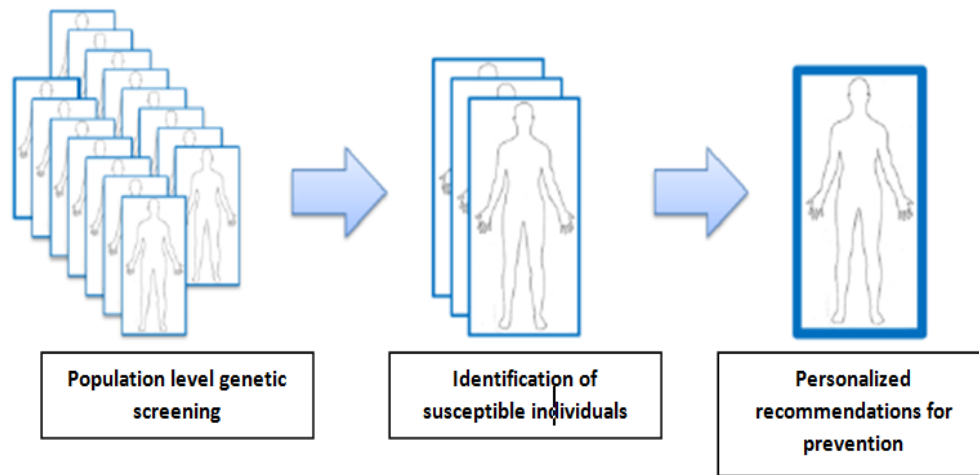


Fig. 1: Basic strategy of PM

**Benefits of Personalized Medicine:**

- Better matching patients to drugs instead of “trial and error.
- Customized pharmaceuticals may eliminate life-threatening adverse reactions.
- Reduce costs of clinical trials by quickly identifying total failures & Favorable responses for particular backgrounds.
- Improved efficacy of drugs.

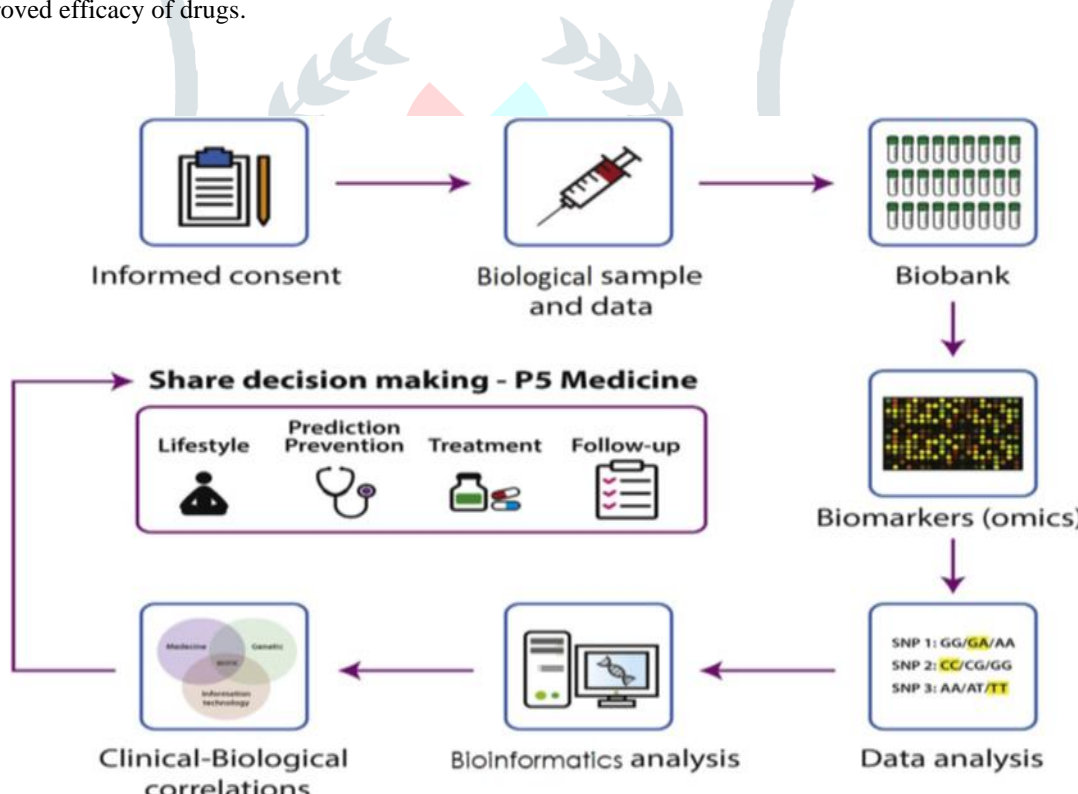


Fig. 2: Major steps involved in the process of PM

**Precision Therapeutics:**

Precision therapy is a great way to create treatments for many diseases. It involves using genomic, proteomic and molecular data to change the way we fight diseases. By targeting specific molecules that cause disease, precision medicine can increase treatment effectiveness and reduce side effects compared to traditional treatments. This new approach holds particular promise in treating complex diseases such as cancer, heart disease and rare genetic diseases. Precision therapies including monoclonal antibodies, small cell vaccines, and gene therapy have made significant advances in this field. These treatments are effective in treating many conditions and improving outcomes in certain patients. By using molecular biology and genomics to identify specific biomarkers that drive disease development and progression, we can facilitate personalized and more effective treatment. Precision therapy shows great potential in different medical fields such as oncology, neurology and rare genetic diseases. <sup>[5, 6, 7]</sup>

### Genomics and Its Role in Personalized Medicine:

Genetic information in the human genome can influence people's susceptibility to various diseases and their response to treatment. [7] Thanks to genomics, which examines the genetic structure of diseases, medicine has been transformed by a fundamental understanding of the causes of diseases and the development of new treatments. [8] Personalized medicine using genomics can identify genetic changes associated with specific diseases. [9] This approach allows doctors to estimate a patient's risk of infection and choose the best treatment. [10] The Human Genome Project has played an important role in modern genomics, allowing scientists to identify genetic changes associated with disease and drug response. [11]

### Pharmacogenomics:

Pharmacogenomics is an important field of personalized medicine because it studies the interaction between genes and drugs. This study focuses on how genetic variation affects drug metabolism, efficacy, and potential effects. Using this information, doctors can determine the appropriate dose and dosage for each patient, thereby improving treatment outcomes and reducing adverse drug reactions. [12]

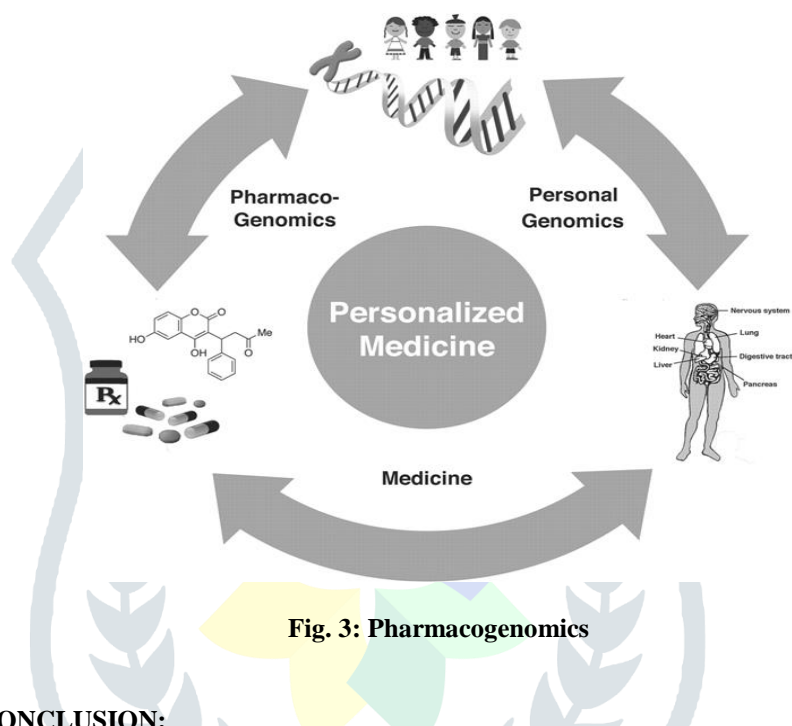


Fig. 3: Pharmacogenomics

### DISCUSSION AND CONCLUSION:

Personalized medicine, together with personalized pharmacogenetics, is a unique approach that will be effective in the health problems we face in the new millennium. Although the medical and scientific community has faced many diseases since the advent of advanced medicine, we are still threatened by many complex diseases such as diabetes, heart disease, cancer and Alzheimer's disease. Personalized medicine aims to provide the tools and knowledge necessary to combat and treat these diseases better than ever before. The vision of personalized medicine is to avoid the costly, time-consuming trial-and-error process that can cause patients to suffer side effects and waste their valuable time. It is effective in combating disease. Self-medication has proven to be the best way to eliminate many health problems, but this path is not easy. Self-medication must face challenges such as lack of knowledge, medical costs, ethical issues, and regulations.

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