

# Individualized medical care for arterial and cerebral blood pressure management

Atención médica individualizada para el manejo de la presión arterial y cerebral.

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## Abstract

**H**igh blood pressure, also known as hypertension, is a common condition that affects millions of people worldwide and is a significant risk factor for various cardiovascular diseases, including stroke. Managing blood pressure effectively is crucial in reducing the risk of these complications. Individualization of medical care has become increasingly important in the management of hypertension. Physicians, particularly primary care doctors, play a pivotal role in tailoring treatment plans to suit each patient's unique needs. This personalized approach involves not only diagnosing and treating hypertension but also considering individual factors such as genetic predisposition, lifestyle choices, and comorbidities. Family doctors, in particular, are well-positioned to provide personalized care for hypertension patients. They often have long-standing relationships with their patients, allowing them to gather comprehensive information about their medical history and family health patterns. By understanding these factors, family doctors can develop customized treatment plans that address the specific needs and concerns of each patient. Furthermore, family doctors act as coordinators of care, fa-

cilitating access to specialized services and resources that are best suited to manage hypertension effectively. They work collaboratively with patients to devise strategies for blood pressure control, which may include lifestyle modifications, medication management, and regular monitoring. The integration of modern technologies, such as electronic health records and telemedicine, further enhances the individualization of hypertension care. These tools enable healthcare providers to access patient data remotely, track treatment progress more efficiently, and provide timely interventions when necessary. In conclusion, the individualization of hypertension care, spearheaded by family doctors, is essential for optimizing patient outcomes and reducing the burden of cardiovascular diseases. By recognizing the unique needs of each patient and leveraging advancements in medical technology, healthcare providers can deliver more effective and personalized care for individuals with hypertension.

**Keywords:** Hypertension, Individualization of care, Family doctors, Personalized treatment, Medical technology.

**L**a presión arterial alta, también conocida como hipertensión, es una afección común que afecta a millones de personas en todo el mundo y es un factor de riesgo importante para diversas enfermedades cardiovasculares, incluido el accidente cerebrovascular. Controlar eficazmente la presión arterial es crucial para reducir el riesgo de estas complicaciones. La individualización de la atención médica se ha vuelto cada vez más importante en el tratamiento de la hipertensión. Los médicos, en particular los de atención primaria, desempeñan un papel fundamental a la hora de adaptar los planes de tratamiento a las necesidades únicas de cada paciente. Este enfoque personalizado implica no sólo diagnosticar y tratar la hipertensión, sino también considerar factores individuales como la predisposición genética, las elecciones de estilo de vida y las comorbilidades. Los médicos de familia, en particular, están bien posicionados para brindar atención personalizada a los pacientes con hipertensión. A menudo tienen relaciones duraderas con sus pacientes, lo que les permite recopilar información completa sobre su historial médico y patrones de salud familiar. Al comprender estos factores, los médicos de familia pueden desarrollar planes de tratamiento personalizados que aborden las necesidades y preocupaciones específicas de cada paciente. Además, los médicos de familia actúan como coordinadores de la atención, facilitando el acceso a los servicios y recursos especializados más adecuados para controlar la hipertensión de forma eficaz. Trabajan en colaboración con los pacientes para diseñar estrategias para el control de la presión arterial, que pueden incluir modificaciones en el estilo de vida, manejo de medicamentos y monitoreo regular. La integración de tecnologías modernas, como los registros médicos electrónicos y la telemedicina, mejora aún más la individualización de la atención de la hipertensión. Estas herramientas permiten a los proveedores de atención médica acceder a los datos de los pacientes de forma remota, realizar un seguimiento del progreso del tratamiento de manera más eficiente y brindar intervenciones oportunas cuando sea necesario. En conclusión, la individualización de la atención de la hipertensión, encabezada por los médicos de familia, es esencial para optimizar los resultados de los pacientes y reducir la carga de las enfermedades cardiovasculares. Al reconocer las necesidades únicas de cada paciente y aprovechar los avances en la tecnología médica, los proveedores de atención médica pueden brindar una atención más eficaz y personalizada a las personas con hipertensión.

**Palabras clave:** Hipertensión arterial, Individualización de la atención, Médicos de familia, Tratamiento personalizado, Tecnología médica.

**T**he realm of arterial blood pressure and its cerebral implications confronts an urgent demand for the reassessment and adaptation of conventional medical paradigms. This exigency stems from the imperative to tailor medical interventions to the unique exigencies and attributes of individual patients. Personalization has evolved into a cornerstone of delivering exemplary healthcare and fostering proactive disease prevention strategies<sup>1,2</sup>. At the heart of this discourse lies the indispensable role of the family physician in tailoring medical care to the individual. Family physicians occupy a pivotal position in patient care, offering not only primary medical services but also nurturing enduring patient-doctor relationships. Their extensive knowledge of patient medical histories and familial traits enables them to adeptly craft bespoke treatment and preventive strategies tailored to the specific needs and circumstances of each patient<sup>3-5</sup>.

Moreover, this paper delves into the crucial contribution of contemporary technologies and medical research in enhancing the customization of medical interventions. These advancements empower healthcare professionals to delve deeper into the analysis of genetic predispositions, lifestyle influences, and other determinants of patient health. By harnessing the power of big data analytics and precision medicine techniques, physicians can now formulate highly personalized treatment regimens that optimize therapeutic outcomes and minimize adverse effects<sup>6,7</sup>. The customization of medical care transcends the realm of mere challenge; it constitutes a strategic imperative for advancing medical progress. By tailoring interventions to the unique needs and characteristics of each patient, healthcare providers can significantly enhance treatment efficacy, patient satisfaction, and overall health outcomes. Moreover, personalized medicine holds the promise of reducing healthcare costs by minimizing unnecessary treatments and hospitalizations, thus alleviating the burden on healthcare systems worldwide<sup>8,9</sup>.

However, realizing the full potential of personalized medicine requires a concerted effort to address various challenges and barriers. One such challenge is the need to ensure equitable access to advanced medical technologies and personalized treatments, particularly among underserved populations<sup>10</sup>. Addressing disparities in healthcare access and promoting health equity must therefore be integral components of any comprehensive strategy to advance personalized medicine. Furthermore, there is a need for robust regulatory frameworks and ethical guidelines to govern the use of patient data and ensure patient privacy and autonomy. As personalized medicine relies heavily on the analysis

of sensitive patient information, it is imperative to establish clear guidelines for data collection, storage, and usage to safeguard patient rights and maintain public trust in healthcare systems<sup>5,11</sup>.

Additionally, healthcare professionals must receive adequate training and education in the principles and practices of personalized medicine to effectively implement these approaches in clinical settings. This includes developing proficiency in interpreting genetic data, utilizing advanced diagnostic tools, and integrating patient preferences and values into treatment decision-making processes<sup>7,12</sup>. In conclusion, the individualization of medical care represents a transformative shift in the delivery of healthcare, with the potential to revolutionize treatment outcomes, patient experiences, and overall health system performance. By embracing personalized medicine approaches and empowering healthcare providers with the tools and knowledge they need to implement them effectively, we can usher in a new era of healthcare that is truly patient-centered, equitable, and sustainable.

In the process of studying arterial blood pressure and its cerebral implications, an extensive review of data from various sources pertaining to this issue was conducted. The methodology involved comparative and analytical approaches. Family physicians serve as pivotal coordinators of medical care, facilitating patient access to specialized services as depicted in Figure 1. Let's delve into the significance of this role:

**Familiarity with Patient Medical History:** Family physicians typically possess comprehensive records of patients' medical backgrounds, encompassing past ailments, allergies, medications, familial medical history, and other pertinent details. This knowledge enables them to grasp patients' health status better and make well-informed decisions regarding specialist referrals.

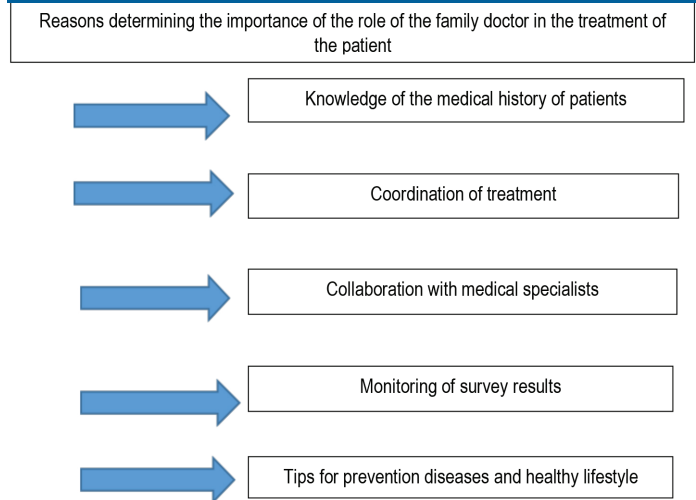
**Treatment Coordination:** When specialized medical attention is warranted, family physicians can recommend and refer patients to the appropriate specialists, ensuring prompt assessment and treatment. This is particularly crucial in managing chronic or intricate conditions.

**Collaborative Efforts with Medical Specialists:** Family physicians frequently collaborate with various medical specialists, such as cardiologists, neurologists, and pediatricians, to furnish comprehensive medical care to their patients.

**Monitoring of Diagnostic Findings:** Family physicians oversee the outcomes of examinations and laboratory tests, engaging in discussions with patients about

the results. If treatment adjustments or supplementary measures are necessitated, timely interventions can be undertaken. Guidance on Preventive Measures and Healthy Lifestyles: Family physicians assume a pivotal role in dispensing counsel on disease prevention and fostering healthy lifestyles. They assist patients in formulating plans to enhance their well-being.

**Fig. 1. The reasons determining the importance of the role of the family doctor in the treatment of the patient**



Family doctors play a critical role in managing arterial blood pressure and its cerebral implications, serving as crucial coordinators of comprehensive healthcare services. Acting as the primary point of contact for patients within the medical system, they facilitate effective communication between patients and various specialists, aiding in informed decision-making regarding their health. This pivotal role enables timely access to emergency medical interventions, expert recommendations, and consultations, thus optimizing patient care while minimizing unnecessary expenses associated with individual specialist visits.

Moreover, family doctors provide longitudinal care, monitoring patients' health over extended periods. This continuity allows for early detection of health fluctuations, ensuring prompt interventions when necessary. Leveraging insights from patients' family medical histories and genetic predispositions, these physicians tailor personalized health plans, mitigating risks and promoting proactive health management for all family members.

By fostering close relationships with patients and their families, family doctors gain profound insights into individual needs and preferences, facilitating the development of tailored care plans. Additionally, they play a pivotal role in patient education, empowering individuals to adopt preventive measures and actively participate in their self-care regimen.

In essence, family doctors serve as linchpins in the healthcare system, orchestrating coordinated and per-

sonalized medical interventions that enhance the quality of care and foster improved patient outcomes. Their holistic approach integrates genetic considerations, lifestyle factors, and patient preferences to devise comprehensive diagnostic and treatment strategies. Beginning with a thorough assessment of patients' medical histories, family doctors delve into familial disease patterns and lifestyle habits to identify potential risk factors and inform targeted interventions, including regular screenings, laboratory assessments, and lifestyle modifications.

**F**amily doctors play a crucial role in monitoring and managing arterial blood pressure and its cerebral implications. They meticulously track examination results and treatment effectiveness, adeptly adjusting plans as the patient's health status fluctuates. Moreover, these physicians serve as pillars of support and education, empowering patients to comprehend their health status and make informed decisions.

Tailored diagnostic and treatment strategies, crafted in collaboration with family doctors, enhance the precision and efficacy of medical interventions. Embracing the distinct needs and attributes of each patient, these plans are pivotal, particularly for individuals grappling with chronic ailments like diabetes, asthma, or cardiac issues. Regular medical assessments, parameter monitoring, and adherence to medical advice are integral components, ensuring comprehensive care.

Family doctors meticulously evaluate disease risk factors, encompassing genetics, age, gender, and lifestyle choices, proffering targeted interventions to mitigate or manage these risks. In intricate cases, collaboration with specialist practitioners facilitates the formulation of nuanced treatment regimens. A cornerstone of personalized plans lies in honoring patient preferences and desires. Family doctors collaborate closely with patients, aligning plans with their aspirations, and deliberating treatment modalities. Vigilantly overseeing plan implementation, they gauge its efficacy in attaining health objectives, promptly refining strategies for optimal outcomes.

Should specialized care necessitate involvement from other medical specialists, family doctors assume the role of mediators and coordinators, ensuring seamless care continuity. The bespoke diagnostic and treatment blueprints devised by family doctors not only optimize healthcare delivery but also enhance patient contentment, by acknowledging individual idiosyncrasies and aiding them in attaining and preserving optimal health.

Family doctors are proactive allies in disease prevention and fostering healthy lifestyles, tailoring recommen-

dations to individual requisites. Crafting personalized prevention plans grounded in medical history, risks, and necessities, they advocate for regular check-ups, vaccinations, screenings, and other preventive measures. Promoting the significance of a wholesome lifestyle, family doctors advocate for balanced nutrition, physical activity, cessation of detrimental habits like smoking and excessive alcohol consumption, and stress management. Empowering patients to set tangible lifestyle goals, they furnish guidance on achievement strategies, be it formulating weight loss regimens, enhancing physical activity, or refining dietary habits.

Crucially, family doctors play a pivotal role in motivating patients to embrace transformative life changes, offering unwavering support and monitoring progress. Recommendations are tailored to individual constraints and prerequisites, whether devising allergy-conscious nutrition plans or prescribing age-appropriate exercise regimes. By fostering collaboration in preventive care and lifestyle maintenance, family doctors serve as linchpins in enhancing patient well-being, curbing disease risks, and prolonging life expectancy.

Family doctors play a crucial role in managing arterial and cerebral blood pressure, ensuring patients develop self-management skills and adhere to prescribed recommendations. Lifestyle adjustments can pose challenges, and family doctors offer vital emotional support and motivation throughout this journey. They aid patients in assessing risks associated with their current lifestyle, facilitating informed decisions regarding necessary changes and preventive measures. Moreover, fostering long-term relationships with patients enhances the efficacy of maintaining a healthy lifestyle.

Promoting preventive measures and healthy habits among patients is integral to healthcare, significantly reducing the incidence of chronic diseases. Family doctors are encouraged to embrace modern technologies like electronic medical records (EMRs) and telemedicine for personalized medical care. EMRs centralize patient data, offering doctors comprehensive insights into their health status, including lab results, images, and prescriptions. Analytical algorithms in modern EMRs aid in identifying patterns, assessing risks, and devising individualized treatment plans, all while ensuring data security and patient confidentiality.

Telemedicine consultations extend medical care globally, particularly benefiting remote or mobility-limited patients. This approach facilitates remote monitoring using wearable devices, enabling early detection of health changes and improved chronic disease management. It fosters comfortable environments for doctor-patient interactions, promoting active patient involvement in healthcare management and facilitating access to specialized medical consultations without geographical constraints.

Technological innovations enhance the provision of individualized medical care, aligning with patient preferences and yielding superior treatment outcomes. Efforts to boost interoperability among electronic records and telemedicine platforms facilitate seamless data exchange, essential for coordinating care among diverse specialists and institutions. Leveraging artificial intelligence and big data analysis enables personalized medical recommendations based on extensive clinical records, enhancing treatment optimization for each patient.

Continuous monitoring through wearable sensors and medical devices, coupled with real-time interaction via telemedicine platforms, ensures proactive health management. Access to educational resources and disease prevention information empowers patients to make informed decisions about their health. In essence, modern technologies revolutionize medical practice, making it more personalized, accessible, and efficient, ultimately empowering family doctors to deliver tailored care to each patient.

Individualizing medical care presents numerous benefits, yet it confronts notable challenges in the realm of arterial and cerebral blood pressure management. As technology advances to tailor medical treatment for individual patients, concerns emerge. The burgeoning volume of electronic medical data heightens the risk of breaches and unauthorized access to patients' health records, necessitating prioritization of data privacy protection<sup>13-15</sup>.

Interoperability issues among diverse electronic medical record systems hinder seamless data exchange among medical facilities and specialists. Additionally, managing and analyzing the expanding pool of medical data poses challenges due to potential incompleteness, inaccuracy, or obsolescence. Such shortcomings may compromise the accuracy and efficacy of diagnoses and treatments<sup>15-18</sup>.

Telemedicine, while advantageous, remains inaccessible to many, particularly those in remote or underserved areas, exacerbating healthcare disparities<sup>19</sup>. Moreover, the integration of new technologies demands training and adaptation from medical staff, with some professionals facing reluctance or unpreparedness. Overreliance on technology may erode human interaction crucial in medical settings.

The adoption of technology raises ethical dilemmas regarding genetic data storage, autonomous decision-making systems, and data governance. Balancing technological advancements with patient safety and medical efficacy is paramount<sup>19,20</sup>.

In certain medical systems, limited access to primary care physicians and resources impedes the delivery of high-quality, personalized care. Time constraints often hinder detailed consultations and bespoke treatment planning by family doctors<sup>11</sup>. Effective individualized care necessitates patient engagement and education, yet patient knowledge gaps can impede adherence to personalized recommendations. Coordinating treatment decisions with patient preferences amidst myriad influencing factors can prove challenging<sup>9,21</sup>.

The integration of modern technologies like electronic health records and data analytics poses difficulties for some family doctors, particularly those lacking adequate training. Ethical concerns regarding privacy, confidentiality, and patient consent arise with individualized medical decision-making, which may also introduce financial barriers for some patients<sup>14,21</sup>.

Addressing these challenges mandates a multifaceted approach, encompassing physician training, resource enhancement, technological advancements, and patient education. Solutions may include enhancing physician competencies, promoting effective patient communication, improving electronic health record utilization, leveraging data analytics for precise treatment plans, and expanding telemedicine accessibility<sup>11,22</sup>.

Furthermore, fostering patient health literacy, self-management skills, interdisciplinary healthcare teams, and streamlined care coordination mechanisms are essential steps toward resolving these issues. A holistic approach involving education, technology, practice modifications, and collaborative efforts across the healthcare spectrum is imperative for tackling the complexities of individualized medical care<sup>23-24</sup>.

Individualizing medical care in the context of arterial blood pressure and cerebral health is crucial for optimizing patient outcomes. Just as in broader healthcare, tailoring treatments to individual needs is paramount in managing conditions related to blood pressure and brain health. Physicians specializing in this area, such as neurologists and cardiologists, play a pivotal role in this process.

Personalized care begins with a comprehensive assessment of each patient, taking into consideration factors such as genetics, lifestyle choices, and medical history. Through the use of advanced diagnostic tools, including ambulatory blood pressure monitoring and neuroimaging techniques, healthcare providers can gather detailed information about the patient's condition. This data serves as the foundation for creating individualized treatment plans that address the unique needs of each patient.

Advancements in medical technology have revolutionized the individualization of care in this field. Electronic health records enable seamless communication between healthcare providers, ensuring continuity of care and facilitating the exchange of crucial patient information. Telemedicine allows patients to consult with specialists remotely, eliminating barriers to access and enabling timely interventions.

Artificial intelligence and machine learning algorithms analyze vast amounts of patient data to identify patterns and predict individual responses to treatment. This predictive analytics approach enables healthcare providers to tailor interventions based on the specific characteristics of each patient, optimizing outcomes and minimizing adverse effects.

Despite the numerous benefits of personalized care, challenges persist. Limited resources, time constraints, and privacy concerns pose significant barriers to the implementation of individualized treatment plans. Addressing these challenges requires investment in training healthcare professionals, developing innovative technologies, and implementing robust data security measures. In conclusion, the individualization of medical care in the realm of arterial blood pressure and cerebral health represents a significant advancement in healthcare delivery. By leveraging technology and embracing a patient-centric approach, healthcare providers can optimize outcomes and improve the quality of life for individuals affected by these conditions.

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