

# Emerging therapies for hypertension: Impact on heart health outcomes.

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## Introduction

Hypertension or high blood pressure, is a silent killer. Often asymptomatic, it silently damages arteries, the heart and other organs over time, leading to severe health complications. With millions affected worldwide, the search for effective treatments and therapies is a critical ongoing endeavour. Two classes of medications, Angiotensin-Converting Enzyme (ACE) inhibitors and Angiotensin II Receptor Blockers (ARBs), have been the cornerstone of hypertension treatment for years. These drugs work by targeting the renin-angiotensin system, a hormonal system that plays a crucial role in regulating blood pressure. Emerging therapies within these classes have shown enhanced efficacy and fewer side effects.

## Description

### *Novel ACE inhibitors*

Researchers have developed next-generation ACE inhibitors with improved pharmacokinetics, ensuring longer duration of action and increased patient adherence. These new drugs not only control hypertension effectively but also have a positive impact on heart health by reducing the workload on the heart and improving its overall function.

### *Advanced ARB's*

Recent developments in ARBs have focused on their selectivity and efficacy. Modern ARBs target specific receptors more precisely, leading to better blood pressure control. By modulating the effects of angiotensin II, these drugs reduce arterial stiffness, decrease oxidative stress and improve endothelial function, thus positively influencing heart health outcomes.

Calcium channel blockers, another class of antihypertensive medications, have seen significant advancements. These drugs, while primarily used to relax blood vessels and reduce blood pressure, have additional benefits for heart health.

### *Vascular protection*

Modern calcium channel blockers not only dilate arteries but also protect the vascular system. By preventing the buildup of plaque in arteries (atherosclerosis) and improving blood flow, these medications reduce the risk of heart attacks and strokes.

### *Cardio protective effects*

Certain calcium channel blockers exhibit cardio protective effects by preventing arrhythmias and reducing the workload on the heart. They are particularly beneficial for patients with hypertension and underlying heart conditions, enhancing their overall cardiovascular health. Sodium-Glucose Cotransporter-2 (SGLT-2) inhibitors, initially developed for diabetes management, have recently garnered attention for their significant impact on hypertension and heart health.

### *Blood pressure and fluid balance*

SGLT-2 inhibitors reduce blood pressure by promoting diuresis (increased urine production) and natriuresis (excretion of sodium in the urine). This dual action helps in lowering blood volume, leading to improved blood pressure control and reduced strain on the heart.

### *Metabolic benefits*

Apart from blood pressure reduction, SGLT-2 inhibitors offer metabolic benefits. They decrease body weight, improve insulin sensitivity and reduce inflammation, all of which contribute to better heart health outcomes. Additionally, these medications have been linked to a reduced risk of heart failure in hypertensive patients.

While these emerging therapies offer promising avenues for hypertension management and heart health improvement, challenges remain. Adherence to medications, monitoring for potential side effects and ensuring access to these innovative treatments for all socioeconomic groups are critical challenges faced by the healthcare system.

Looking forward, ongoing research aims to refine existing therapies and develop new, more targeted treatments. Genetic and molecular studies are uncovering unique pathways that can be exploited for drug development, offering the potential for truly personalized hypertension management tailored to an individual's genetic makeup.

## Conclusion

The landscape of hypertension management is evolving rapidly. Emerging therapies not only control blood pressure effectively but also have a profound impact on heart health outcomes. As these treatments continue to advance, there is hope that the

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burden of hypertension-related cardiovascular diseases will significantly decrease, leading to healthier, happier lives for millions worldwide. As the field of hypertension management progresses, it is essential for healthcare providers, researchers

and policymakers to work collaboratively to ensure that these innovative therapies reach those in need, ultimately preventing complications and saving lives.

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