

Antihypertensive Use Linked to Higher Fall Risk Across Patient Groups

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The management of hypertension is critical for reducing cardiovascular morbidity and mortality, yet the potential for adverse events, particularly falls, remains a significant concern in clinical practice.¹ Recent analyses consistently indicate that the use of antihypertensive medications is associated with an elevated risk of falls across diverse patient populations, demanding a re-evaluation of prescribing strategies and patient monitoring.

KEY TAKEAWAYS

- **The Pivot:** Antihypertensive therapy, while essential for blood pressure control, consistently increases fall risk.
- **The Data:** Meta-analyses report an increased fall risk, with hazard ratios often ranging from 1.15 to 1.30, particularly with initiation or dose escalation.
- **The Action:** Clinicians should routinely assess fall risk in patients on antihypertensives, especially the elderly, and consider medication adjustments or non-pharmacological interventions.

Hypertension affects a substantial portion of the adult population globally, and its effective treatment is a cornerstone of preventive medicine. However, the physiological mechanisms by which antihypertensive agents lower blood pressure can also predispose individuals to orthostatic hypotension, dizziness, and syncope, thereby increasing the likelihood of falls. Falls represent a major public health issue, particularly among older adults, leading to fractures, hospitalisations, and reduced quality of life. Understanding the precise association between antihypertensive use and fall risk is therefore paramount for optimising patient safety while maintaining therapeutic efficacy.¹

What the evidence shows

Multiple observational studies and meta-analyses have investigated the relationship between antihypertensive medication use and fall incidence. A large prospective cohort study involving 19,000 community-dwelling adults found that participants initiating antihypertensive therapy had a 25% higher risk of falls compared to non-users (HR: 1.25, 95% CI: 1.18-1.33, $p < 0.001$).² This risk was particularly pronounced within the first 90 days of treatment initiation.² Further analysis stratified by drug class has revealed varying degrees of risk. Diuretics, particularly loop diuretics, have been consistently associated with an elevated fall risk, likely due to their effects on volume depletion and electrolyte imbalances.³ Beta-blockers and calcium channel blockers have also shown associations with increased fall rates, although the magnitude of this effect can differ based on patient characteristics and concomitant medications.⁴ Angiotensin-converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARBs) generally demonstrate a more modest association with falls, but the risk is not entirely absent, especially in susceptible individuals.⁵

The risk of falls appears to be dose-dependent, with higher doses of antihypertensive medications correlating with a greater incidence of falls.⁶ Furthermore, polypharmacy, defined as the concurrent use of multiple medications, significantly amplifies this risk. Patients taking four or more medications, including at least one antihypertensive, exhibit a substantially higher fall rate compared to those on fewer medications.⁷ This suggests a cumulative effect of drug-induced adverse events on balance and gait stability.⁷

Age is a critical modifying factor. Older adults, particularly those over 75 years, are inherently more vulnerable to falls due to age-related physiological changes, such as impaired baroreflex sensitivity, reduced muscle strength, and slower reaction times.⁸ When antihypertensive therapy is introduced in this population, the risk of orthostatic hypotension and subsequent falls is markedly increased.⁸ A systematic review of studies in older adults reported an overall increased fall risk of 1.18 (95% CI: 1.10-1.27) with antihypertensive use.⁹

Despite these associations, the benefits of blood pressure control in preventing cardiovascular events often outweigh the fall risk in many patients. The challenge lies in identifying individuals at highest risk for falls and implementing strategies to mitigate this risk without compromising hypertension management. This includes careful medication selection, dose titration, and regular monitoring for orthostatic hypotension.¹⁰

The epidemiological burden of falls is substantial. Globally, falls are the second leading cause of unintentional injury deaths. Among older adults, falls are the leading cause of injury-related morbidity and mortality. The direct and indirect costs associated with fall-related injuries, including hospitalizations, rehabilitation, and long-term care, place a significant strain on healthcare systems. Given the widespread use of antihypertensive medications, understanding their contribution to fall risk is crucial for public health interventions.

The mechanisms underlying the increased fall risk are multifaceted. Antihypertensive medications primarily reduce blood pressure, which can lead to orthostatic hypotension, a sudden drop in blood pressure upon standing. This can cause dizziness, lightheadedness, and syncope, directly precipitating falls. Diuretics, for instance, reduce blood volume, which can exacerbate orthostatic effects. Beta-blockers can reduce heart rate and contractility, potentially impairing the body's ability to compensate for postural changes. Calcium channel blockers can cause vasodilation, leading to peripheral edema and contributing to dizziness. These physiological effects are often amplified in older adults due to age-related declines in baroreflex sensitivity and vascular compliance.

Limitations in current research include the observational nature of most studies, which precludes definitive conclusions about causality. Confounding factors, such as comorbidities, lifestyle choices, and the severity of hypertension itself, can influence both medication use and fall risk. Furthermore, the precise definition and ascertainment of falls can vary across studies, potentially affecting the comparability of results. Future research should focus on interventional studies to evaluate the effectiveness of specific strategies aimed at reducing fall risk in hypertensive patients.

CLINICAL IMPLICATIONS

The persistent signal linking antihypertensive use to increased fall risk demands a more nuanced approach to blood pressure management, particularly in our increasingly elderly patient population. It is no longer sufficient to merely prescribe and monitor blood pressure; clinicians must integrate a comprehensive fall risk assessment into every consultation for patients on these medications. The data, consistently showing elevated hazard ratios, particularly upon initiation or dose escalation, should prompt a review of current prescribing

habits. Perhaps the zealous pursuit of guideline-recommended blood pressure targets, especially in frail individuals, needs to be tempered by a greater appreciation for the immediate, tangible risk of a hip fracture versus the long-term, statistical benefit of a lower systolic reading.

For pharmaceutical companies, this evidence underscores the need for more granular data on fall incidence in their clinical trials. While cardiovascular outcomes remain the primary endpoint, the real-world impact of their products on patient safety, particularly in vulnerable populations, warrants greater transparency. Labelling should perhaps include more explicit warnings and guidance on fall risk, moving beyond generic statements about dizziness. The industry has an opportunity to develop formulations or combination therapies that minimise orthostatic effects, or even to invest in digital health solutions that monitor gait and balance in real-time, offering a proactive safety net.

Patients, especially those with multiple comorbidities, often face a difficult trade-off between managing their hypertension and maintaining their independence. The current evidence suggests that a shared decision-making model is not just ideal, but essential. Patients need to be fully informed about the fall risk associated with their medication and empowered to report symptoms like dizziness or lightheadedness. This is not about discouraging treatment, but about ensuring that treatment is tailored to the individual's overall health profile, rather than a rigid adherence to population-level guidelines. A fall can be catastrophic, and preventing one is often as impactful as preventing a stroke, particularly from the patient's perspective.

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