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Trending Issues in Hypertension: Research Recommendations for the Young Investigators

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1. Cuffless Ambulatory BP Monitoring (ABPM) While out-of-office measurement (ABPM/HBPM) is the gold standard for confirming diagnosis, cuffless devices are not yet recommended for diagnosis or management by contemporary guidelines. A primary concern is that standard validation protocols (AAMI/ESH/ISO) are inadequate for cuffless technologies. However, recent data on the cuffless device demonstrated strong correlation compared to reference methods, suggesting a promising future for wearable, continuous monitoring once reliability is fully established.

2. Novel BP-Lowering Medications The pipeline is moving toward targeted molecular pathways siRNA: Zilebesiran targets angiotensinogen in the liver for long-term control. Aldosterone Synthase Inhibitors: Baxdrostat and Iorundrostat offer a new way to manage aldosterone-driven hypertension. Endothelin Receptor Antagonists: Aprocritentan is being utilized for resistant cases.

3. Ultra-Low Dose Single Pill Combinations (SPC) Recent trials demonstrated that ultra-low dose SPC is superior or non-inferior to single antihypertensive in terms of efficacy and safety. It needs to be tested if they can be safely used for drug-naïve patients in real-world. Also escalation strategies are also interesting research topics.

4. Renal Denervation (RDN) 2.0 The "Aftermath" of earlier trial failures led to more rigorous study designs. Key lessons include the necessity of sham procedures, using ABPM as a primary endpoint, and strictly assessing medication adherence. Recent data from the RADIANCE series and the FDA-cleared Symplicity Spyral system confirm RDN's efficacy as an adjunct therapy for resistant or mild-to-moderate hypertension.

5. Frailty in Hypertension Recent guidelines recommend management must be tailored to frailty of individual patients. Assessment on frailty is getting more and more importance in the aged society.

6.

Hypertension & Brain Health The 2025 AHA/ACC Guidelines now recommend a target SBP <130 mmHg specifically to prevent mild cognitive impairment and dementia. Hypertension is now firmly established as the leading modifiable risk factor for neurocognitive decline.

Keywords: Hypertension