

Sept/Oct 2023 E-Journal Winner by Dr Luke Harris

Title: Clinical Outcomes of Intensive Inpatient Blood Pressure Management in Hospitalized Older Adults.

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Introduction/Aim

Clinicians are frequently asked to review inpatients with asymptomatic hypertension. Most commonly, these patients are prescribed antihypertensives on review. However, inpatient management of hypertension has been associated with an increased incidence of AKI, myocardial injury, and stroke. This study aimed to examine the association of intensive treatment of elevated inpatient blood pressures, with in-hospital clinical outcomes of older adults admitted for non-cardiac conditions.

Design and Methods

This was a retrospective observational cohort study conducted from 2015-2017 in the US.

Inclusion Criteria:

- Age ≥ 65 yrs
- Admitted to a Veterans' Health Administration hospital with a non-cardiovascular diagnosis
- ≥ 2 systolic BP readings ≥ 140 mmHg within the first 48 hrs of admission
- Exclusion Criteria:
- Admitted for cardiovascular/cerebrovascular conditions, acute renal failure, hypertensive emergencies
- Discharged or experienced a study outcome within 48 hrs of admission
- Admitted to ICU, surgical, psychiatric, rehab, or another acute care hospital
- ESKD pre-admission
- Admitted from a nursing home who availed less than 80% of their outpatient visits in the VHA system and those who received no medication from the VHA pharmacy in the year prior

Intervention: Intensive BP treatment (i.e. IV anti-hypertensive or new oral medication).

Primary Outcome: A composite of inpatient mortality, ICU transfer, stroke, AKI, BNP-elevation, and troponin-elevation.

Statistical Analyses: Propensity score overlap weighting was used to adjust for confounding between those who did and did not receive early intensive treatment.

Results and Conclusion

114,367 patients qualified for the study. 66,140 had ≥ 2 SBPs ≥ 140 mmHg. 14,084 (21%) received intensive treatment within the first 48 hours.

Intensive treatment was associated with a greater risk of the primary composite outcome (1220 [8.7%] vs 3570 [6.9%]; weighted odds ratio, 1.28; 95% CI, 1.18-1.39), with the risk higher among patients receiving intravenous antihypertensives (weighted odd ratio, 1.90; 95% CI, 1.65-2.19).

The authors concluded that intensive pharmacologic treatment of asymptomatic elevated BP in admitted older patients is associated with a higher risk of adverse events.

Strengths

- Large study with detailed inclusion and exclusion criteria outlined
- Propensity score overlap weighting to adjust for confounding, enabling inclusion of a larger cohort than would have been achieved using matching

Limitations

- Predominantly older, white, male population limiting generalisability
- Observational study design rather than randomised control trial
- Cardiac biomarkers used to identify myocardial injury but not measured in all patients
- Subjectivity in patients' reporting of symptoms of hypertension may have resulted in under-recognition

Applicability and Future Direction

This study supports an investigative approach to determine the underlying aetiology of asymptomatic elevated BP in these patients (e.g. pain, anxiety, urinary retention), as opposed to reflexive pharmacological intervention which is currently prevalent. Future studies should aspire to capture a more diverse population. There remains a need for RCTs in this area.