March/April 2023 Winning E-Journal Club Submission by *Dr David Moloney*

Title: Clinical Outcomes After Intensifying Antihypertensive Medication Regimens Among Older Adults at Hospital Discharge.

Authors: Anderson TS, Jing B, Auerbach A, et al.
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Introduction/Aim
There is uncertainty about how we should manage inpatient hypertension and it is unclear what the harms and benefits are of intensifying inpatient anti-hypertensive regimens. This study attempted to answer the question 'what is the association between the intensification of an anti-hypertensive regimen at hospital discharge and clinical outcomes of hospitalised older adults with hypertension?' They used electronic data from Veterans Affairs hospital records and Medicare claims to perform a retrospective propensity-score (PS) matched cohort study.

Design and Methods
Population: Adults >65years old with hypertension who were admitted medically with pneumonia, urinary tract infection or venous thromboembolism. Patients were excluded if the hospital admission involved management of atrial fibrillation, acute coronary syndrome, or acute cerebrovascular event.
Exposure: New or higher dose anti-hypertensive on discharge.
Control: No anti-hypertensive intensification on discharge.
Outcomes:

- Hospital readmission within 30 days.
- Medication-related serious adverse events (SAEs) within 30 days (composite of injurious falls, hypotension, syncope, electrolyte abnormalities, or acute kidney injury).
- Cardiovascular (CV) events within 1 year (composite of acute myocardial infarction, unstable angina, stroke, heart failure, or hypertension)

Results and Conclusion

- 14915 patients met population inclusion criteria.
- 2074 patients had their anti-hypertensive regime intensified as an inpatient.
- Propensity-score matching resulted in two cohorts ('intensified', 'not intensified', n=2028 each) for analysis.

- Intensification was associated with an increased risk in hospital readmission (hazard ratio [HR] = 1.23; 95% CI, 1.07–1.42) and SAEs (HR = 1.41; 95% CI, 1.06–1.88).
- Intensification was not associated with reduction in CV events (HR = 1.18; 95% CI, 0.99–1.40) or change in mean SBP (134.7 vs 134.4 mmHg).
    - Majority of CV events were stroke and heart failure.

Strengths

- Large sample size with detailed demographic and clinical characteristics.
- Low levels of missing data.
- PS included appropriate covariates and successfully balanced measured confounders (standard mean difference <0.1 post-matching).
- High level of events in both groups for hospital readmission and CV events.

Limitations

- Potential for unmeasured confounders causing observed difference between groups.
- Only 15% (2028/12841) of cohort used for PS matching.
- Short follow-up for CV events to occur.
- Majority cohort male (97.8%) limits generalisability.

Applicability and Future Direction

Inpatient intensification of anti-hypertensive regimes for multi-morbid older adults leads to a modest increase in short term hospital readmission and SAE rates (possibly due to blood pressure over treatment) and does not result in improved blood pressure control or increased rates of CV events at 1 year. This study supports a conservative approach to inpatient hypertension management.