

# Hypertension Treatment, Blood Pressure, and Deprescribing Among U.S. Nursing Home Residents With and Without Dementia

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## Overview

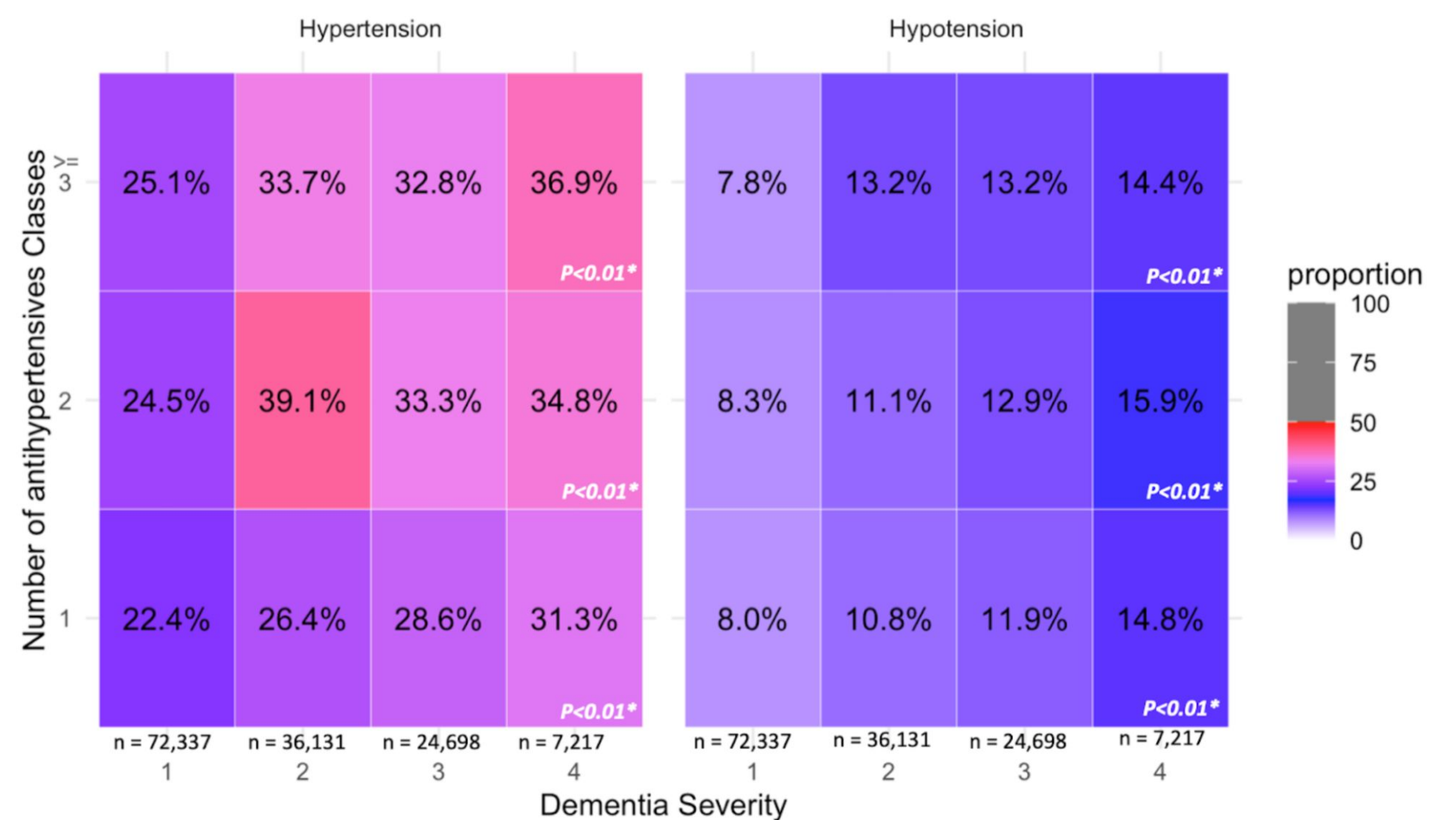
- In a retrospective cohort study, we examined **blood pressure control and antihypertensive prescribing among NH residents, assessing whether dementia was associated with different rates of deprescribing and potential overtreatment.**
- We also explored patterns before and after the onset of the **COVID-19 pandemic.**

## Results

**Table 2: BP control during the first week after the index date by cognitive impairment and COVID-19 period**

| Admission                               | Cognitive impairment | # residents | Range of SBP <sup>b,c</sup> | Range of DBP <sup>b,c</sup> | Average SBP/DBP measures per day | Average SBP/DBP(mmHg)        | Hypo/Hypertension <sup>d</sup> (%) |
|---|----------------------|-------------|-----------------------------|-----------------------------|----------------------------------|------------------------------|------------------------------------|
| Pre-Covid                               | No                   | 50,267      | 37.4<br>(24, 36, 49)        | 23.7<br>(16, 23, 30)        | 1.6 (1.1)                        | 128.8 (13.6) /<br>70.5 (7.6) | 5.2 / 22.2                         |
|   | Yes                  | 25,090      | 38.3<br>(24, 37, 50)        | 24.1<br>(16, 24, 31)        | 1.6 (1.2)                        | 128.9 (13.3) /<br>70.7 (7.4) | 5.6 / 23.0                         |
| Post-Covid                              | No                   | 36,528      | 38.9<br>(26, 38, 50)        | 25.0<br>(18, 25, 32)        | 1.8 (1.2)                        | 128.3 (12.6) /<br>70.7 (7.3) | 6.6 / 21.9                         |
|   | Yes                  | 16,810      | 39.9<br>(26, 39, 52)        | 25.7<br>(18, 26, 33)        | 1.9 (1.3)                        | 128.0 (12.4) /<br>70.8 (7.1) | 7.1 / 23.1                         |
| <i>aSMD<sup>e</sup> by covid-period</i> |                      | ADRD = 0    | 0.09                        | 0.12*                       | 0.21*                            | -0.04/0.02                   | 0.06 / 0.01                        |
|   |                      | ADRD = 1    | 0.11*                       | 0.16*                       | 0.24*                            | -0.07/0.02                   | 0.06 / <0.01                       |

Hypotension/Hypertension Incidence by Medication Class and Dementia Severity



**Table 3: Hazard Ratios for the First Deprescribing Event by Dementia Status in Cox Proportional Hazards Models**

| Variable        | HR (95% CI)                          |  |   |   |
|-----------------|--------------------------------------|--|---|---|
|                 | Model 1<br>- Unadjusted <sup>a</sup> | Model 2<br>- Demographics <sup>b</sup> | Model 3 - Model 2 +<br>Comorbidities <sup>c</sup> | Model 4 - Model 3 +<br>No. of meds class <sup>d</sup> |
| <b>Dementia</b> | 0.80 (0.77, 0.84)                    | 0.78 (0.75, 0.81)                      | 0.78 (0.75, 0.82)                                 | 0.82 (0.78, 0.85)                                     |

## Background

- Over 85% of multimorbid older adults have hypertension, rising to more than 90% among NH residents with dementia.
- Managing hypertension in this population is challenging due to multimorbidity and a higher risk of medication-related adverse events.
- The COVID-19 pandemic disrupted hypertension management in NH, affecting care practices and blood pressure control.
- Most existing evidence comes from healthier, community-dwelling adults, leaving gaps for medically complex NH residents.

## Study Design

- **Study Period:** January 2, 2018 – July 3, 2022.
- **Data Source:** EHR & MDS data from over 1,100 NH (accounting for approximately 11% of all US NH).
- **Population:** Newly admitted NH residents treated with eligible antihypertensive medications and with at least one MDS assessment.
- **Index Date:** Day 14 after admission.
- **Exclusions:** No hypertension diagnosis, hospice care, no antihypertensive medication, or no BP measurement within 14 days.
- **Sample Size:** 178,230 residents met all criteria.

- BP monitoring** was similar between those with versus without dementia but **increased post-COVID** (e.g., 1.56 measures/day pre- vs. 1.85 measures/day post-COVID in those with dementia).
- Residents with severe dementia had a **higher prevalence of hypertension and hypotension** when stratifying by the number of antihypertensive medication classes used
- There was a **lower rate of deprescribing among residents with dementia** compared to those with no evidence of dementia (fully adjusted HR: 0.82, 95% CI: 0.78–0.85).

## Key Conclusions

- Findings suggest potential overtreatment in residents with dementia, shown by more hypotension and less deprescribing.
- There is a need for targeted deprescribing to balance BP control and medication burden in cognitively impaired NH residents.