# Risk of falls following the initiation of antihypertensives in the elderly: A self-controlled case series in the UK

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**Background**: Studies suggest increased risk of falls among the elderly when initiating antihypertensives (AH), but information on risk in the most vulnerable is scarce.

**Objectives:** To assess the risk of falls associated with AH start in elderly patients with complex health needs.

**Methods:** We used UK primary care data (CPRD GOLD), linked to Hospital Episode Statistics (HES) inpatient and the Office for National Statistics mortality data.
We included all subjects aged >65 at start date (01/01/2010) with no AH used 1 year before study start. Among these, we identified 3 cohorts of patients with complex health needs: 1) unplanned hospitalisation, 2) frailty or 3) polypharmacy 1 year before study start.
Patients were followed up from start until the earliest of: patient leaving practice, practice last collection date, end of HES linkage coverage, death or data extraction date. For each cohort, we conducted self-controlled case series (SCCS), comparing event rates between exposed and non-exposed time for patients with a CPRD-recorded fall during follow-up. Multiple falls within 30 days were deemed duplicates. AH prescriptions were identified using product-specific codes in CPRD. Individual prescription durations were combined to create continuous treatment episodes, allowing for a refill gap ≤ 90 days.
Our main SCCS model was adjusted for age, with incidence rate ratios (IRR) comparing event rates during the first 30 days of each exposed to the non-exposed time period.
Sensitivity analyses comprised: 1) restricting to patients alive during follow-up, 2) using only the first fall per patient, 3) including a 30-day pre-exposure period, and 4) restricting to patients with no fall history.

**Results:** We identified 4,060, 3,550 and 3,126 eligible patients with falls included in the hospitalisation, frailty and polypharmacy cohort, respectively. Among these 1,756 (43%), 1,644 (46%) and 1,537 (49%) were exposed to AH during follow-up.
The main SCCS models showed IRR of 1.35 [95%CI 1.09,1.66], IRR 1.37 [1.10, 1.69] and IRR 1.53 [1.24, 1.89], respectively.
Sensitivity analyses among 1) survivors and 2) using only the first event attenuated these results for the hospitalisation cohort (IRR 1.13 [0.86, 1.50] and 1.17 [0.89, 1.54]) and frailty cohort (IRR 1.25 [0.95, 1.65] and 1.31 [0.995, 1.71]) but not the polypharmacy cohort (IRR 1.53 [1.18, 1.97] and 1.57 [1.20, 2.04]). All other sensitivity analyses were consistent with the main results for all 3 cohorts (data not shown).

**Conclusion:** Our study found a 35%-50% increased risk of falls associated with AH initiation in three cohorts of elderly patients: previously hospitalised, frail and patients with polypharmacy.