Patient Pill Organization Strategies and Adherence Measured in a Cross-Sectional Study of Hypertension

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**Background**
- In controlled clinical trials, medications are dispensed at regular intervals with pill amounts set by the study team, often in prepared packaging (i.e., blister packs), strengthening the accuracy of pill count measured adherence.
- In pragmatic clinical trials, medication refill intervals and pill amounts vary by patient and pill count measured adherence may be affected by patient pill organization strategies (e.g., use of pill boxes).
- The strategies patients use to organize medications (e.g., pill dispenser) may be reflected in adherence measured at follow-up.
- In a pragmatic clinical trial, we evaluated the association between patients' pill organization strategies and adherence measured using pharmacy-fills, self-report, and pill counts.

**Methods**
- Study Population (N= 731): Secondary Analysis *
  - Receiving antihypertensive treatment
  - Self-identified Non-Hispanic African American/Black patients or White patients
  - 61.3% Women, 52.9% African-American
  - Patients recruited from 11 primary care clinics in Colorado and Maryland
  - At enrollment, all asked if they use the following strategies:

**Pill Organization Strategies:**
- Finish previous refills first
- Use a pill dispenser
- Combine same prescriptions
- Combine dissimilar prescriptions

**Other Factors that May Influence Adherence:**
- Took pills as needed (Clinician Instructions)
- Shares pills
- Takes different dose (Clinician Instructions)
- Takes different dose (Self-Choice)

**Pill Count Adherence calculation:**
\[
\text{Pill Count Adherence} = \frac{\text{# of pills dispensed} - \text{# pills remaining}}{\text{# of pills expected since refill}}
\]

**Pharmacy-fill Adherence:**
- Used medication supply obtained over 12-months compared to proportion of days covered (PDC)

**Self-Reported Adherence (VOILS):**
- Average over 7 previous days

**Results**

**Figure 1: Pill Organization Survey Questions and Response Frequency (N = 731)**

- Average number of strategies used: 2

**Figure 2: Pill Count Adherence by Pill Organization Strategy (%)**

**Figure 3: Pharmacy Fill Adherence by Pill Organization Strategy (%)**

**Results Continued**

- Patients used a median of 2 organization strategies
- Pill organization strategies were:
  - Associated with lower pill count adherence in those who combine same prescriptions (Figure 2)
  - Associated with lower pharmacy fill adherence in those who take a different dose per their choice (Figure 3)
  - Not associated with self-reported adherence (Data not shown) **

**Limitations**
- Up to 19% of patients did not bring pill bottles to their enrollment visit
- This was a cross-sectional study, disallowing causal conclusions
- Other less common strategies were not studied
- The association between strategies and clinical outcomes (e.g., blood pressure) was not measured

**Conclusions and Implications**
- Over 80% of participants used pill organization strategies
- Some pill management strategies may result in imprecise adherence estimates using pill counts or pharmacy fill measurements
- No strategy was significantly associated with self-reported adherence suggesting a possible advantage of this measure
- Clinicians and researchers should discuss pill management strategies with patients to understand how these strategies may unduly influence what is presumed to be objective measures of patient adherence

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* Of Data from a prospective randomized clinical trial, HYV ALUE Trial
** See supplemental data sheet