Reproducibility of visit-to-visit variability of blood pressure measured as part of routine clinical care.

OBJECTIVES: Secondary analysis of clinical trial data suggests visit-to-visit variability (VVV) of blood pressure is strongly associated with the incidence of cardiovascular disease. Measurement of blood pressure in usual practice settings may be subject to substantial error, calling into question the value of VVV in real-world settings.

METHODS: We analyzed data on adults of at least 65 years of age with diagnosed hypertension who were taking antihypertensive medication from the Cohort Study of Medication Adherence among Older Adults (n = 772 with 14 or more blood pressure measurements). All blood pressure measurements, taken as part of routine outpatient care over a median of 2.8 years, were abstracted from patients' medical charts.

RESULTS: Using each participant's first seven SBP measurements, the mean intraindividual standard deviation was 13.5 mmHg. The intraclass correlation coefficient for the standard deviation based on the first seven and second seven SBP measurements was 0.28 [95% confidence interval (CI) 0.20-0.34]. Individuals in the highest quintile of standard deviation of SBP based on their first seven measurements were more likely to be in the highest quintile of VVV using their second seven measurements (observed/expected ratio = 1.71, 95% CI 1.29-2.22). Results were similar for other metrics of VVV. The intraclass correlation coefficient was lower for DBP than SBP.
CONCLUSION: These data suggest VVV of SBP measured in a real-world setting is not random. Future studies are needed to assess the prognostic value of VVV of SBP assessed in routine clinical practice.

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