

**Objective:** Blood pressure variability (BPV), independent of traditionally targeted average blood pressure levels, is an emerging vascular risk factor for stroke, cerebrovascular disease, and dementia, possibly through links with vascular-endothelial injury. Recent evidence suggests visit-to-visit (e.g., over months, years) BPV is associated with cerebrovascular disease severity, but less is known about relationships with short-term (e.g., < 24 hours) fluctuations in blood pressure. Additionally, it is unclear how BPV may be related to angiogenic growth factors that play a role in cerebral arterial health.

**Participants and Methods:** We investigated relationships between short-term BPV, white matter hyperintensities on MRI, and levels of plasma vascular endothelial growth factor (VEGF) in a sample of community-dwelling older adults (n = 57, ages 55-88) without history of dementia or stroke. Blood pressure was collected continuously during a 5-minute resting period. BPV was calculated as variability independent of mean, a commonly used index of BPV uncorrelated with average blood pressure levels. Participants underwent T2-FLAIR MRI to determine severity of white matter lesion burden. Severity of lesions was classified as Fazekas scores (0-3). Participants also underwent venipuncture to determine levels of plasma VEGF. Ordinal logistic regression examined the association between BPV and Fazekas scores. Multiple linear regression explored relationships between BPV and VEGF. Models controlled for age, sex, and average blood pressure.

**Results:** Elevated BPV was related to greater white matter lesion burden (i.e., Fazekas score) (systolic: OR = 1.17 [95% CI 1.01, 1.37]; p = .04; diastolic: OR = 2.47 [95% CI 1.09, 5.90]; p = .03) and increased levels of plasma VEGF (systolic:  $\beta$  = .39 [95% CI .11, .67]; adjusted R<sup>2</sup> = .16; p = .007; diastolic:  $\beta$  = .48 [95% CI .18, .78]; adjusted R<sup>2</sup> = .18; p = .003).

**Conclusions:** Findings suggest short-term BPV may be related to cerebrovascular disease burden and angiogenic growth factors relevant to cerebral arterial health, independent of average blood pressure. Understanding the role of BPV in cerebrovascular disease and vascular-endothelial health may help elucidate the increased risk for stroke and dementia associated with elevated BPV.

**Categories:** Stroke/Cerebrovascular Injury & Disease (Adult)

**Keyword 1:** cerebrovascular disease

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### 97 Distinct Clinical and Neuroanatomic Factors Associated with Function-based versus Patient-Reported Outcome Measures After Stroke

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**Objective:** Patient-reported outcome measures provide valuable insights into health status after neurologic disease, but their relationships with function-based outcome measures remain incompletely understood. Here we evaluate the relationship between these two classes of measure using dimensionality-reduction techniques in patients after acute stroke and examine their associated patterns of neuroanatomical injury.

**Participants and Methods:** Fifty-four adults with upper extremity motor deficits were serially assessed at four time points after stroke with functional outcome measures (Upper Extremity Fugl-Meyer, Barthel Index, modified Rankin Scale, Box and Blocks, 9- Hole Peg, Grip Strength) as well as patient-reported measures (PROMIS-Global Physical, Mental, and Social

Health, Patient Health Questionnaire-9) of health status. At each timepoint after stroke, exploratory and confirmatory factor analysis were performed to identify and confirm the underlying factorial structure of the entire battery of outcome measures. Multivariate linear regression analysis was used to determine the amount of variance explained by clinical and demographic characteristics on extracted factors. Voxel-Based Lesion Symptom Mapping was used to examine the relationship between factors and patterns of neuroanatomical injury.

**Results:** In the battery of stroke outcome measures, two factors were identified and retained, accounting for  $\geq 78\%$  of the overall variance across outcomes at every timepoint. Function-based measures loaded onto Factor 1 separately from patient-reported measures which loaded onto Factor 2. Results were consistent at each serial timepoint after stroke. Pre-stroke disability ( $p=0.03$ ) and amount of damage to the corticospinal tract ( $p=0.001$ ), explained significant variance in performance on Factor 1 (function-based outcomes), whereas education ( $p=0.01$ ) and socioeconomic status ( $p=0.04$ ) explained significant variance in performance on Factor 2 (PROMs). While function-based measures were related to injury to subcortical brain regions known to be important for motor function, patient-reported measures were related to injury to cortical brain regions including the insula and inferior parietal lobe, known to be important for affective processing and social cognition.

**Conclusions:** Two distinct factors representing function-based and patient-reported measures of health status were extracted from the study battery of stroke outcome measures scored across the first year post-stroke. Each factor was associated with injury to brain regions concordant with the content of the represented assessments. These findings emphasize the distinct behavioral elements and neuroanatomical underpinnings of function-based and patient-reported outcome measures after stroke and have potential implications for precision rehabilitation.

**Categories:** Stroke/Cerebrovascular Injury & Disease (Adult)

**Keyword 1:** stroke

**Keyword 2:** affective processing (normal)

**Keyword 3:** motor function

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## 98 Cognitive Outcomes Following Bilateral Focused Ultrasound Thalamotomy for Tremor

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**Objective:** Essential tremor (ET) is the most common movement disorder, characterized by bilateral action tremors of the upper extremities. Surgical interventions can be considered for severe cases that are refractory to medication. Magnetic resonance-guided focused ultrasound (MRgFUS) of the ventral intermediate nucleus of the thalamus (Vim) is a recently approved, minimally invasive treatment for unilateral tremor. While patients are generally pleased with unilateral treatment, many patients are bothered by tremor on the untreated side. Historically, bilateral thalamotomy has been associated with a higher rate of adverse events, including cognitive impairment. MRgFUS Vim thalamotomy for bilateral tremor is currently being investigated. The goal of the present study was to evaluate the effect of bilateral MRgFUS Vim thalamotomy on cognition.

**Participants and Methods:** Twelve patients with medication-refractory essential tremor (mean age = 68.77 +/- 11.78 years, mean education = 14.34 +/- 2.71 years, 8 male) were included in the present study. Three of the 12 patients met criteria for mild cognitive impairment (MCI). All patients successfully underwent unilateral MRgFUS thalamotomy at least 48 weeks before the second thalamotomy. A battery of neuropsychological tests was administered to patients before (considered baseline in the present study) and three months following the second thalamotomy. Baseline