

# Aging

**BOLD variability**, which measures moment-to-moment fluctuations in brain signal, is sensitive to age differences in cognitive performance. However, the effect of aging on BOLD variability in the context of different cognitive demands is still unclear. The current study examined how **aging** affects brain variability across cognitive loads and the contribution of BOLD variability to **working memory** abilities. Participants (N = 149, ages 20–86) completed an fMRI n-back paradigm with 3 loads and 10-minute resting state scan. Rieck et al. found that BOLD variability was greater during **rest** compared to **task** and decreased even further as n-back load increased. Older age was associated with smaller load-related modulations of BOLD variability in default mode and fronto-parietal control networks. Increased variability in default mode, fronto-parietal control, and limbic regions and decreased variability in sensori-motor regions during the n-back task was associated with better working memory performance, regardless of age. Our findings suggest that working memory reductions in older ages are related to failure of core cognitive control and default mode regions to modulate dynamic range of activity in the face of increased demands <sup>1)</sup>.

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In an aging **society**, traumatic head injuries, such as **acute subdural hematomas** (aSDHs), are increasingly common because the **elderly** are prone to **falls** and are often undergoing **anticoagulation** treatment. Especially in advanced age, cranial surgery such as craniotomies may put patients in further jeopardy. But if treatment is conservative, a **chronic subdural hematoma** (cSDH) may develop, requiring surgical evacuation

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The Canadian Longitudinal Study on Aging (CLSA) is a large, national, long-term study that will follow approximately 50,000 men and women who are between the ages of 45 and 85 when recruited, for at least 20 years. The CLSA will collect information on the changing biological, medical, psychological, social, lifestyle and economic aspects of people's lives. These factors will be studied to understand how, individually and in combination, they have an impact in both maintaining health and in the development of disease and disability as people age.

Using baseline data from the Canadian Longitudinal Study on Aging (CLSA), we examined the burden of five neurological conditions. The CLSA is a population-based study of approximately 50,000 individuals, aged 45 to 85 years at baseline. We used multivariable Poisson regression to identify correlates of comorbidity burden and healthcare utilization.

**RESULTS:** The lifetime prevalence of five neurological diseases is presented: epilepsy, Parkinson's disease/parkinsonism, stroke/transient ischemic attack, multiple sclerosis, and migraine. We found the somatic and psychiatric comorbidity burden to be higher in those individuals with a neurological disease (an 18% to 45% mean increase in the number of chronic conditions), as compared to the comparison group without a neurological disease, except for Parkinson's disease/parkinsonism. The presence of a neurological disease was associated with only a modest increase in the probability of visiting a general practitioner but was associated with a greatly increased probability of visiting a medical specialist (up to 68% more likely), an emergency department (up to 79% more likely), and an overnight hospitalization (up to 108% more likely).

**CONCLUSIONS:** We found striking associations between our neurological diseases and increased comorbidity burdens and healthcare utilization. These findings are important for informing public

policy planning as well as driving avenues for future research. The present study establishes the CLSA as an important research platform for the study of neurological conditions in an aging general population <sup>2)</sup>.

## Complications

### [Aging complications.](#)

<sup>1)</sup>

Rieck JR, DeSouza B, Baracchini G, Grady CL. Reduced modulation of BOLD variability as a function of cognitive load in healthy aging. *Neurobiol Aging*. 2022 Feb 5;112:215-230. doi: 10.1016/j.neurobiolaging.2022.01.010. Epub ahead of print. PMID: 35240490.

<sup>2)</sup>

Wolfson C, Fereshtehnejad SM, Pasquet R, Postuma R, Keezer MR. The high burden of neurological disease in the older general population: Results from the Canadian Longitudinal Study on Aging. *Eur J Neurol*. 2018 Oct 9. doi: 10.1111/ene.13823. [Epub ahead of print] PubMed PMID: 30300458.

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