Stroke can cause a number of neuropsychological conditions, as even small focal lesions can significantly disrupt the brain network’s connectivity and thus, its functionality (Carrera & Tononi, 2014; Griffis et al., 2019). One syndrome that commonly occurs during the acute stage after predominantly right hemispheric stroke is visuospatial neglect, though it may also be caused by other forms of unilateral brain injury (Karnath & Rorden, 2012; [Li & Malhotra, 2015](#limalhotra15); [Stone, Halligan & Greenwood, 1993](#stone93)). Neglect is often described as a supramodal disorder of spatial attention with a “heterogenous collection of symptoms” (Corbetta et al., 2005; more). The core symptoms include a pathological spatial bias towards the ipsilesional (i.e., typically right) side of space, affecting both gaze direction and exploration. This manifests as sustained and spontaneous deviation of the head- and eye-position towards the ipsilesional side at rest, as well as during goal-directed behaviour, which persists even in complete darkness (Becker & Karnath, 2010; Karnath, 2012; Karnath & Fetter, 1995). At the same time, patients have difficulties in orienting towards the contralesional side and will typically ignore information located on that side ([Becker & Karnath, 2010](#beckerkarnath2010); Corbetta & Shulman, 2011; [Karnath, 2015](#karnath2015); [Karnath & Rorden, 2012](#karnathrorden2012)).

Those characteristic spatial biases do not necessarily only affect vision, but may also affect other modalities, such as audition, olfaction, motion, and even memory (Bisiach & Luzatti, 1978; Beschin et al., 1997; Karnath, 2012). Even though neglect is considered to be a basal disorder, meaning that the symptoms do not merely emerge in higher-order cognitive tasks, the biases are not due to underlying paralysis or sensory deficits (Heilman & Valenstein, 1979; Karnath, 2012).

Typically, the behavioural core symptoms of neglect, in the form of pathological deviation of the patients’ eyes and heads towards the ipsilesional side with the additional omission of contralesional located information, manifest with reference to the patient’s egocentre, i.e., relative to their own body centre (Corbetta & Shulman, 2011; Karnath & Rorden, 2012). However, the behavioural deficits may also occur in an allocentric reference frame: Patients with allocentric neglect ignore the left side of an object (rather than the overall space), irrespective of the object’s location relative to the patient (Li et al., 2014; more). Although some authors argue that ego- and allocentric neglect can dissociate (Hillis et al., 2005), others report significant interactions: For example, the presentation of stimuli in the (egocentric) contralesional space may result in a more severe allocentric bias (Li et al., 2014; Rorden et al., 2012).

Neglect severely affects the patients’ everyday life, especially in the acute phase (Czernuszenko et al., 2009; Hammerbeck et al., 2019; Wee & Hopman, 2008). Though the symptoms may be alleviated or overcome for a short period of time, this requires top-down (e.g., verbal request) or bottom-up (e.g., visual cues) input, as often times patients are not aware of their deficit (Karnath, 2012; more).

While there is no consensus on the exact prevalence of neglect, estimates of a prevalence of about 30% in the acute phase after stroke seem likely (e.g.: Bowen et al., 1999; Corbetta, 2014; Hammerbeck et al., 2019; but see also Ten Brink et al., 2017 or Stone et al., 1993 for more extreme estimates). Hammerbeck et al. (2019) established a sex difference in neglect prevalence in an analysis of data from more than 88,000 stroke patients, with women exhibiting a prevalence of 33% versus 27% in men.

Neglect is often considered to be negative predictor for functional outcome in stroke recovery, even if the patient shows spontaneous recovery from the condition itself during the acute post-stroke phase (Jehkonen et al., 2000 & 2007; Wee & Hopman, 2008; Wu et al., 2015).

On a neurological level, stroke-induced neglect most often occurs after right unilateral brain damage in the territory of the middle cerebral artery (MCA) ([Li & Malhotra, 2015](#limalhotra2015)). The perisylvian network, including the temporo-parietal junction (TPJ), inferior parietal lobule (IPL), superior and middle temporal cortex, insula, and ventrolateral prefrontal cortex (vlPFC), have been implicated in contributing to the core deficits ([Karnath & Rorden, 2012](#karnathrorden2012); more sources). The white matter connections in between those areas, specifically the superior longitudinal fasciculus (SLF), the inferior occipitofrontal fasciculus (IOF) and the superior occipitofrontal fascicle (SOF) have been shown to be particularly vulnerable to causing neglect after being damaged (He et al., 2007; Karnath, Rorden & Ticini, 2009).

* RH perisylvian network seems to underlie spatial orientation, its disruption leads to neglect;
* Speech (LH) & spatial orientation (RH) organised in homologous networks/areas
* Subcortical lesion (e.g. to thalamus (esp. pulvinar) & BG (esp. putamen & sometimes caudate nucleus)) can also induce neglect
  + Theory: not the lesion to those neurons/regions themselves causes neglect, but rather the long-range effects; reduction of metabolism/blood perfusion 🡪 reduced function in perisylvian network