Neurofilament light chain (NfL)

Age-related reference values

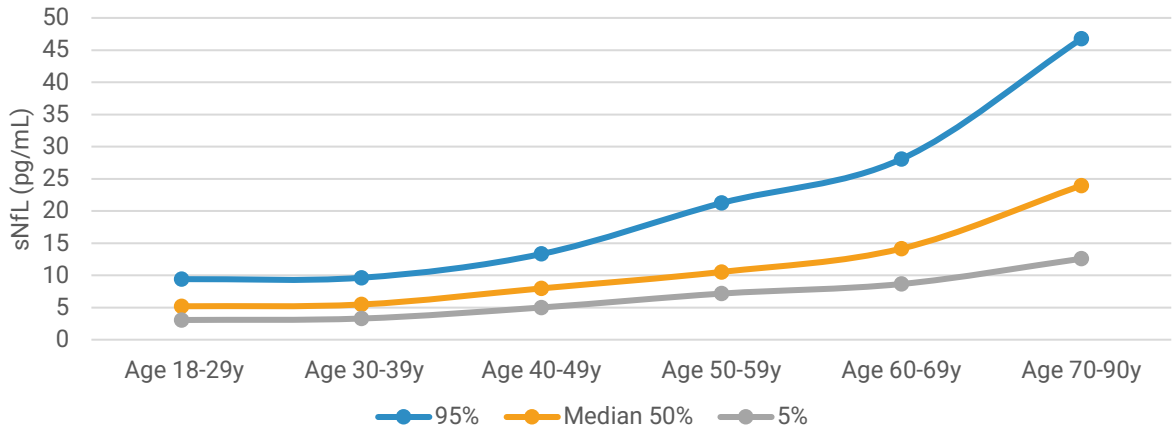
Axonal damage leads to the release of NfL molecules into the extracellular space and consequently into body fluids, including CSF and blood. In line with this, increased blood NfL concentrations were reported in neurodegenerative and neuro-inflammatory disorders. Simple blood-derived biomarker is desirable in the routine management of for disease activity, but NfL levels are known to generally increase with ageing [1]. Therefore, we determined age-dependent reference ranges for an adapted interpretation of NfL values. The table and the figure below represent the 95th percentiles of the normal reference ranges.

Table: Normal reference sNfL levels (pg/mL) by age range

Age range	N (282)	%	sNfL normal upper limit	95% Confidence Interval	
18-29y	47	16.7	**9.4**	7.7	11.3
30-39y	50	17.7	**9.6**	9.3	13.6
40-49y	46	16.3	**13.3**	11.3	16.5
50-59y	49	17.4	**21.2**	16.8	33.0
60-69y	47	16.7	**28.1**	24.7	48.9
70-90y	43	15.2	**46.8**	40.0	49.0

Reference ranges were established by measuring a total of 304 presumably healthy subjects (158 women, 146 men) from 18 to 90 years, well divided by age decade and >70 years, using the Lumipulse G NfL blood for research use only assay on the fully automated LUMIPULSE G analyser. sNfL values showing a modified z-score >7.0 by age decade were considered as far outliers and removed (5 cases). A multiple linear regression model was used to analyse the influence of age, renal function and gender on the logarithmically transformed sNfL values (skewed distribution). Excluding individuals with potential renal dysfunction with an eGFR of <60 mL/min/1.73m^2; 17/299 (5.7%), the upper limit was defined by the 95th percentile of the distribution in each age subgroup.

Figure: Serum NfL – 95th percentiles



1. Establishment of reference values for plasma neurofilament light based on healthy individuals aged 5–90 years. Simrén J, et al. BRAIN COMMUNICATIONS 2022