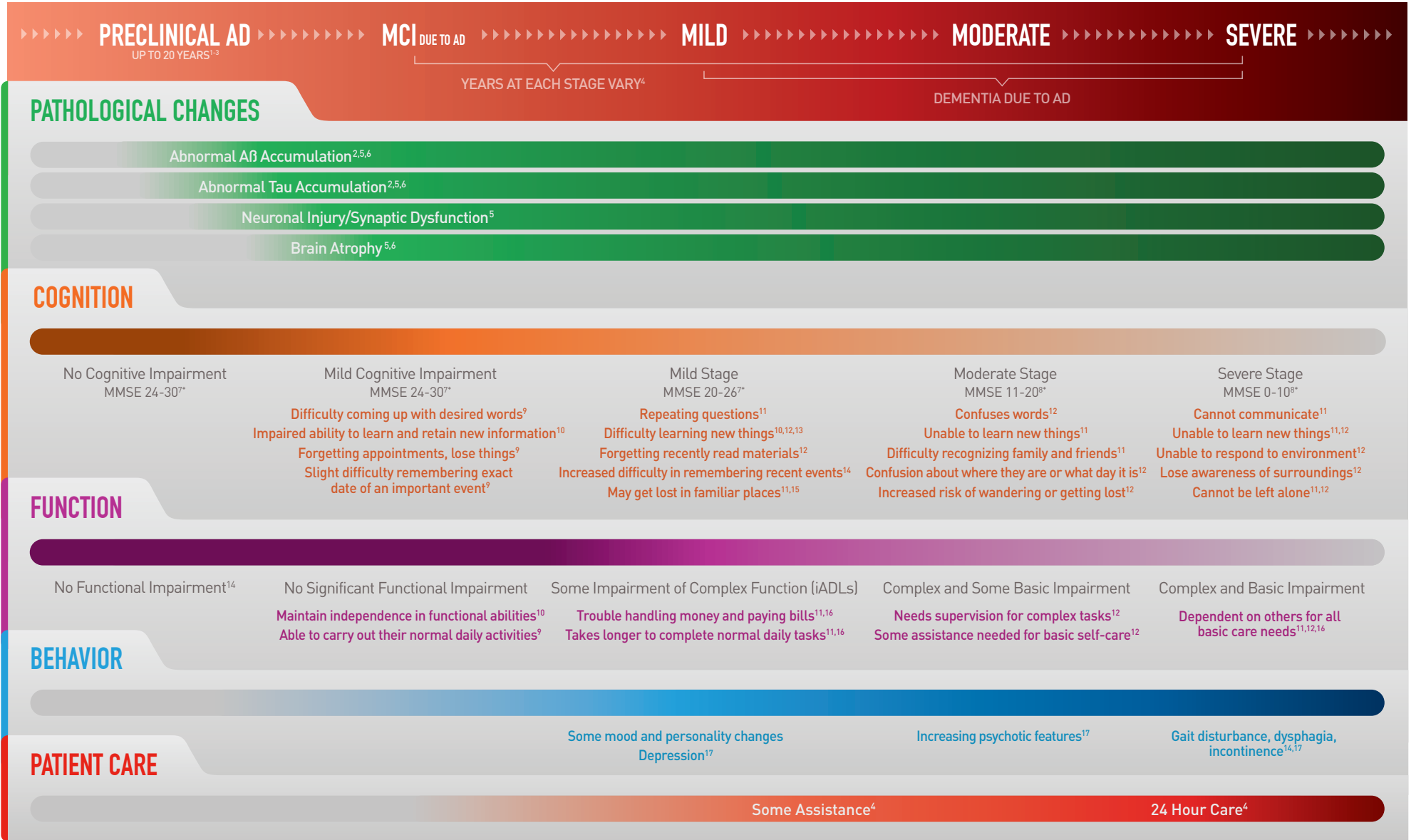


PROGRESSION OF ALZHEIMER'S DISEASE (AD)



AD progresses differently in each patient. Biomarkers, symptoms, and cognitive abilities may manifest at different stages and with differing severity. Statements above are examples and are not all-inclusive of signs and symptoms of patients with AD. *MMSE score ranges by stage vary by source. The scores included here reference research cohorts, and staging was based upon the MMSE, as well as other measures and clinical judgment. Level of education should also be considered when interpreting results. MCI=Mild Cognitive Impairment; MMSE=Mini-Mental Status Examination; iADL=Instrumental Activities of Daily Living.

References: 1. Villemagne VL, Burnham S, Bourgeat P, et al; for the Australian Imaging Biomarkers and Lifestyle (AIBL) Research Group. Amyloid β deposition, neurodegeneration, and cognitive decline in sporadic Alzheimer's disease: a prospective cohort study. *Lancet Neurol.* 2013;12(4):357-367. 2. Bateman RJ, Xiong C, Benzinger TL, et al; Dominantly Inherited Alzheimer Network. Clinical and biomarker changes in dominantly inherited Alzheimer's disease. *N Engl J Med.* 2012;367(9):795-804. 3. Fleisher AS, Chen K, Quiroz YT, et al. Associations between biomarkers and age in the presenilin 1 E280A autosomal dominant Alzheimer disease kindred: a cross-sectional study. *JAMA Neurol.* 2015;72(3):316-324. 4. Alzheimer's Association. 2016 Alzheimer's disease facts and figures. *Alzheimers Dement.* 2016;12(4):459-509. 5. Jack CR Jr, Knopman DS, Jagust WJ, et al. Hypothetical model of dynamic biomarkers of the Alzheimer's pathological cascade. *Lancet Neurol.* 2010;9(1):119-129. 6. Jack CR Jr, Knopman DS, Jagust WJ, et al. Tracking pathophysiological processes in Alzheimer's disease: an updated hypothetical model of dynamic biomarkers. *Lancet Neurol.* 2013;12(2):207-216. 7. Alzheimer's Disease Neuroimaging Initiative. Alzheimer's disease neuroimaging protocol (ADNI). http://www.adni-info.org/Scientists/doc/ADNI_Protocol_Extension_A2_091908.pdf. Updated September 2008. Accessed May 23, 2016. 8. Pernecky R, Wagenpfeil S, Komossa K, et al. Mapping scores onto stages: mini-mental state examination and clinical dementia rating. *Am J Geriatr Psychiatry.* 2006;14(2):139-144. 9. National Institutes of Health. National Institute on Aging website. Forgetfulness: knowing when to ask for help. <http://www.nia.nih.gov/health/publication/forgetfulness>. Published 2016. Accessed July 5, 2016. 10. Albert MS, DeKosky ST, Dickson D, et al. The diagnosis of mild cognitive impairment due to Alzheimer's disease: Recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. *Alzheimers Dement.* 2011;7(3):263-269. 11. National Institutes of Health. National Institute on Aging website. About Alzheimer's disease: symptoms. <https://www.nia.nih.gov/alzheimers/topics/symptoms>. Published 2016. Accessed July 5, 2016. 12. Alzheimer's Association. Stages of Alzheimer's disease. http://www.alz.org/alzheimers_disease_stages_of_alzheimers.asp. Published 2016. Accessed July 5, 2016. 13. McKhann GM, Knopman DS, Chertkow H, et al. The diagnosis of dementia due to Alzheimer's disease: Recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. *Alzheimers Dement.* 2011;7(3):263-269. 14. Morris JC. The Clinical Dementia Rating (CDR): Current version and scoring rules. *Neurology.* 1993;43(11):2412-2414. 15. NIH Senior Health. Alzheimer's Disease: Symptoms and Diagnosis. <http://nihseniorhealth.gov/alzheimersdisease/symptomsanddiagnosis/01.html>. Updated 2015. Accessed August 8, 2016. 16. National Institutes of Health. National Institute on Aging website. <https://www.nia.nih.gov/alzheimers/publication/alzheimers-disease-fact-sheet>. Alzheimer's Disease Fact Sheet. Published 2015. Accessed July 5, 2016. 17. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Washington, DC: American Psychiatric Association; 2013.

