**Supplementary file 1: Tables for consensus diagnosis**

**Title: Stimulus-induced gamma rhythms are weaker in human elderly with Mild Cognitive Impairment and Alzheimer’s Disease**

**Running title:** Stimulus-induced **g**amma rhythms weaken in MCI/AD subjects

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**Supplementary Table 1: Criteria used for consensus diagnosis of dementia**

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| **NIA-AA criteria for dementia1** | **TLSA Criteria for dementia** |
| Interfere with the ability to function at work or at usual activities | CDR box scores in the subdomains of outdoor activities, hobbies and personal care: average > 0.5. |
| Represent a decline from previous levels of functioning and performing | GPCOG informant subdomain > 4 |
| Are not explained by delirium or major psychiatric disorder | Clinician’s judgement (no mention of acute change in cognition status during clinical history taking) and/or HMSE > 242 |
| HAMD (<14)3 |
| Cognitive impairment is detected and diagnosed through a combination of   * History-taking from the patient and a knowledgeable informant * An objective cognitive assessment, either a “bedside” mental status examination or neuropsychological testing | **Any 2 of the following:** |
| GPCOG informant subdomain > 4 |
| ACE < 88 |
| HMSE < 27 |
| GPCOG patient subdomain >5 |
| Clinician assessment based on sub scores on ACE, HMSE or GPCOG patient |

(Continued…)

|  |  |
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| The cognitive or behavioral impairment involves a minimum of two of the following domains   * Impaired ability to acquire and remember new information * Impaired reasoning and handling of complex tasks, poor judgment * Impaired visuospatial abilities * Impaired language functions * Changes in personality, behavior, or comportment | **Any 2 of the following:** |
| IADL shopping ( >/= 1) |
| IADL finance ( >/= 1) |
| IADL travel ( >/= 1) |
| IADL social ( >/= 1) |
| IADL prayer activity ( >/= 1) |
| NPI (Any one of the following behavioral problem should be present: apathy, disinhibition, elation, anger) |

ACE: Addenbrooke's Cognitive Examination (So et al., 2018)

CDR: Clinical Dementia Rating (Hughes et al., 1982; Morris, 1993)

GPCOG: General Practitioner Assessment of Cognition (Brodaty et al., 2002)

HAMD: Hamilton Depression Rating Scale (Hamilton, 1960; Williams, 1988)

HMSE: Hindi Mental State Examination (Ganguli et al., 1995)

IADL: Instrumental Activities of Daily Living (Mathuranath et al., 2005)

NIA-AA: National Institute on Aging-Alzheimer’s Association workgroups (McKhann et al., 2011)

NPI: Neuropsychiatric Inventory (Cummings et al., 1994)

TLSA: Tata Longitudinal Study of Aging

1NIA-AA criteria are presented from McKhann et al. (2011)

2Cognitive decline could also be seen in delirium. So, this criterion is intended to rule out delirium. A combination of clinician assessment and HMSE is used. Acute change in cognitive status and/or HMSE<24 is suggestive of delirium.

3This criterion is intended to rule out moderate/severe depression as that can cause cognitive impairment.

**Supplementary Table 2: Criteria used for consensus diagnosis of probable AD**

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| **NIA-AA criteria for probable AD** | **TLSA criteria for probable AD** |
| Meets criteria for dementia (see Supplementary Table 1) | Meets criteria for dementia (as in Supplementary Table 1) |
| Clear-cut history of worsening of cognition by report or observation | GPCOG informant subdomain > 4 |
| Most prominent cognitive deficits are   * Amnestic presentation * Non-amnestic presentations * Language/visuospatial/executive dysfunction | Clinician’s assessment based on sub scores of ACE or HMSE or GPCOG patient scores |
| Should not have   * Substantial concomitant cerebrovascular disease (Stroke/extensive infarcts/severe WMH) * Features of Lewy body dementia Features of FTD * Features of primary progressive aphasia * Concurrent neurological cause/medical comorbidity/medication impairing cognition | No Clinical history of stroke |
| No structural abnormality, no evidence of severe white matter hyperintensities and no evidence of extensive infarcts or bleed, as seen in MRI |
| NPI (>2 of the following behavioral problems should be absent: apathy, disinhibition, elation and anger) |
| Clinician’s assessment on reversible causes of dementia/other causes of dementia |

WMH: white matter hyperintensities

FTD: Frontotemporal Dementia

The rest of the abbreviations are as described in Supplementary Table 1.

**Supplementary Table 3: Criteria used for consensus diagnosis of MCI**

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| **NIA-AA criteria for MCI** | **TLSA criteria for MCI** |
| Concern regarding a change in cognition | CDR = 0.5 |
| Impairment in one or more cognitive domains   * Memory * Executive function * Attention * Language * Visuospatial skills | **Any one of the following:** |
| GPCOG patient subdomain >5 |
| ACE < 88 |
| HMSE < 27 |
| Clinician’s assessment based on sub scores of ACE/HMSE/GPCOG patient |
| Preservation of independence in functional abilities | IADL (average of finances, shopping, phone and meal preparation <0.5) |
| Not demented | CDR total score (<1) |
| Longitudinal decline in performance over repeated measures | ‘Yes’ for question no. 41 of CDR informant: memory subdomain **or** clinician assessment |

1Q4: Have there been some decline in memory in the past one year? (Hughes et al., 1982; Morris, 1993)

Abbreviations are as described in Supplementary Table 1.