

## Updated Criteria for the Diagnostic Procedure for Parkinson's Disease Dementia on Level I

Martina Kvapilova<sup>1</sup>, Josef Mana<sup>1</sup>, Martin Cihak<sup>1</sup>, Ondrej Bezdicek<sup>1</sup>, Tereza Uhrova<sup>1</sup>,  
and Robert Jech<sup>1</sup>

<sup>1</sup>Department of Neurology and Centre of Clinical Neuroscience, First Faculty of  
Medicine and General University Hospital in Prague, Charles University, Czech  
Republic

### Author Note

Josef Mana  <https://orcid.org/0000-0002-7817-3978>

Robert Jech  <https://orcid.org/0000-0002-9732-8947>

Author roles were classified using the Contributor Role Taxonomy (CRediT; <https://credit.niso.org/>) as follows: *Martina Kvapilova*: Conceptualization, Data curation, Writing - original draft; *Josef Mana*: Conceptualization, Data curation, Investigation, Formal analysis, Software, Methodology, Project administration, Validation, Writing - original draft; *Martin Cihak*: Conceptualization, Investigation, Methodology, Writing - original draft; *Ondrej Bezdicek*: Investigation, Data curation, Funding acquisition, Conceptualization, Project administration, Supervision, Writing - original draft; *Tereza Uhrova*: Investigation; *Robert Jech*: Funding acquisition, Resources, Writing - review & editing

Correspondence concerning this article should be addressed to Josef Mana,  
Email: josef.mana@protonmail.com

## **Updated Criteria for the Diagnostic Procedure for Parkinson's Disease Dementia on Level I**

### **Introduction**

### **Methods**

#### **Participants**

The data of patients with idiopathic PD diagnosed by a movement disorder specialist fulfilling the Movement Disorder Society (MDS) Clinical Diagnostic Criteria for Parkinson's disease (PD) (Postuma et al., 2015) were retrospectively gathered from clinical records acquired between January 2014 and December 2023. All the patients underwent a neuropsychological assessment by a trained clinical psychologist (OB) during a routine examination of cognitive functions as a part of the evaluation process for the indication of Deep Brain Stimulation (DBS) at General University Hospital in Prague. The Ethics Committee of the General University Hospital in Prague had approved the study protocol. All patients provided written informed consent prior to the examination.

#### **Neuropsychological Assessment**

Participants were assessed with both MMSE (Folstein et al., 1975; Stepankova et al., 2015) and MoCA (Kopecek et al., 2016); (Nasreddine et al., 2005) to measure overall cognitive performance. Moreover, a comprehensive neuropsychological assessment was performed in accordance with MDS Task Force Level 2 criteria for MCI in PD (Litvan et al., 2012). We described our battery including a regression based calculator for normative scores in another study (Bezdicek et al., 2017). Besides other neuropsychological tests, the comprehensive assessment employed Clock Drawing Test (CDT) and Letter Fluency. To establish cognitive performance in individual cognitive domains according to Level 1 criteria for PDD, we used test scores proposed by Dubois et al., (Dubois et al., 2007) and their analogues in MoCA, see Table A for details.

Insert Table

To measure independence in activities of daily living, we administered Functional Activities Questionnaire (FAQ; Bezdicek et al., 201; (Pfeffer et al., 1982). To

assess neuropsychiatric functioning, we used Beck Depression Inventory II (BDI-II; (Ciharova et al., 2020); (Beck et al., 1996) and State-Trait Anxiety Inventory (STAI; Spielberg et al., 1970, Mullner et al., 1980). Psychotic symptoms were assessed in an interview by a trained psychiatrist.

## Results

## Discussion

## References

- Beck, A. T., Steer, R. A., & Brown, G. (1996). *Beck depression inventory–II*. American Psychological Association (APA). <https://doi.org/10.1037/t00742-000>
- Bezdicek, O., Sulc, Z., Nikolai, T., Stepankova, H., Kopecek, M., Jech, R., & Rika, E. (2017). A parsimonious scoring and normative calculator for the Parkinson's disease mild cognitive impairment battery. *The Clinical Neuropsychologist*, 31(6-7), 1231–1247. <https://doi.org/10.1080/13854046.2017.1293161>
- Ciharova, M., Cígler, H., Dostálová, V., ivicová, G., & Bezdicek, O. (2020). Beck depression inventory, second edition, Czech version: demographic correlates, factor structure and comparison with foreign data. *International Journal of Psychiatry in Clinical Practice*, 24(4), 371–379. <https://doi.org/10.1080/13651501.2020.1775854>
- Dubois, B., Burn, D., Goetz, C., Aarsland, D., Brown, R. G., Broe, G. A., Dickson, D., Duyckaerts, C., Cummings, J., Gauthier, S., Korczyn, A., Lees, A., Levy, R., Litvan, I., Mizuno, Y., McKeith, I. G., Olanow, C. W., Poewe, W., Sampaio, C., ... Emre, M. (2007). Diagnostic procedures for Parkinson's disease dementia: Recommendations from the movement disorder society task force. *Movement Disorders*, 22(16), 2314–2324. <https://doi.org/10.1002/mds.21844>
- Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state". *Journal of Psychiatric Research*, 12(3), 189–198. [https://doi.org/10.1016/0022-3956\(75\)90026-6](https://doi.org/10.1016/0022-3956(75)90026-6)
- Kopecek, M., Stepankova, H., Lukavsky, J., Ripova, D., Nikolai, T., & Bezdicek, O. (2016). Montreal cognitive assessment (MoCA): Normative data for old and very old

Czech adults. *Applied Neuropsychology: Adult*, 24(1), 23–29.

<https://doi.org/10.1080/23279095.2015.1065261>

Litvan, I., Goldman, J. G., Tröster, A. I., Schmand, B. A., Weintraub, D., Petersen, R. C., Mollenhauer, B., Adler, C. H., Marder, K., Williams-Gray, C. H., Aarsland, D., Kulisevsky, J., Rodriguez-Oroz, M. C., Burn, D. J., Barker, R. A., & Emre, M. (2012). Diagnostic criteria for mild cognitive impairment in Parkinson's disease: Movement Disorder Society Task Force guidelines. *Movement Disorders*, 27(3), 349–356. <https://doi.org/10.1002/mds.24893>

Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., Cummings, J. L., & Chertkow, H. (2005). The Montreal Cognitive Assessment, MoCA: A Brief Screening Tool For Mild Cognitive Impairment. *Journal of the American Geriatrics Society*, 53(4), 695–699. <https://doi.org/10.1111/j.1532-5415.2005.53221.x>

Pfeffer, R. I., Kurosaki, T. T., Harrah, C. H., Chance, J. M., & Filos, S. (1982). Measurement of Functional Activities in Older Adults in the Community. *Journal of Gerontology*, 37(3), 323–329. <https://doi.org/10.1093/geronj/37.3.323>

Postuma, R. B., Berg, D., Stern, M., Poewe, W., Olanow, C. W., Oertel, W., Obeso, J., Marek, K., Litvan, I., Lang, A. E., Halliday, G., Goetz, C. G., Gasser, T., Dubois, B., Chan, P., Bloem, B. R., Adler, C. H., & Deuschl, G. (2015). MDS clinical diagnostic criteria for Parkinson's disease. *Movement Disorders*, 30(12), 1591–1601. <https://doi.org/10.1002/mds.26424>

Stepankova, H., Nikolai, T., Lukavsky, J., Bezdicek, O., Vrajova, M., & Kopecek, M. (2015). MiniMental State Examination – eská normativní studie. *Ceska a slovenska neurologie a neurochirurgie*, 78(111), 57–63.