

# Supplementary Material

## Dementia Care in Times of COVID-19: Experience at Fundació ACE in Barcelona, Spain

### Neuropsychological assessment adapted to telemedicine

In March 2020, as a result of confinement caused by the COVID-19 pandemic, the neuropsychological battery in use in Fundació ACE [1], for baseline and follow-up visits, was modified by the Neuropsychological Team (A.E., G.O., A.P., A.S., N.R., M.A.) to be administered telemedicine-based instead of in person. Thus, since 18 March 2020 a home-to-home teleneuropsychological visit has been carrying out by the Fundació ACE neuropsychological team. It resulted from adaptation of NBACE which has been administered in person from January 2006 to March 2020 at the Memory Unit of Fundació ACE. Apart from the deep knowledge using NBACE, it has the advantage of having standardized and cut-off values to be used in the clinical practice [1], [2].

Similar to NBACE (as detailed in [1]), the modified NBACE teleneuropsychological visit (named NBACEtn) (approximately 50 minutes of duration) includes tests sensitive to cognitive information processing speed, orientation, attention, verbal learning and memory, language, visuoception, praxis, and executive functions. The NBACEtn includes the following tests: Temporal, Spatial and Personal Orientation; Digit Span Forwards and Backwards, and Similarities (abbreviated to the first 10 items) subtests of the Wechsler Adult Intelligence Scale–Third Edition (WAIS–III); The Word List Learning test from the Wechsler Memory Scale–Third Edition (WMS–III; without using the interference list); Verbal Comprehension (to correctly execute two simple, two semicomplex, and two complex commands extracted from the ADAS-cognitive subscale (ADAS-cog); Repetition (words and sentences); an abbreviated 15-item

naming test from the Boston Naming Test; two Poppelreuter-type overlap figures; Luria's Clocks Test; the Automatic Inhibition subtest of the Syndrom Kurtz Test (SKT); Letter Verbal Fluency (words beginning with the letter "p" in one minute); Category Verbal Fluency ("animals" in one minute); the Clock test; and The 15-Objects Test.

In the NBACEtn was added the Verb Fluency [3, 4] and made a change to assess constructional praxis. Instead of Block Design of WAIS-III (abbreviated so that items 6 to 9 were scored only for accuracy without a time bonus) which it was not able to administer because individuals have not the material needed (the cubes) needed to perform it, the Figure Copy of Repeated Battery for the Assessment of Neuropsychological Status (RBANS) was selected. Thus, in comparison to NBACE [1], the NBACEtn has not the Block Design from WAIS-III, but it have two additional tests: 1) the RBANS Figure, which allows to assess constructional praxis and long-term visual memory; and 2) the Verb Fluency to assess executive function.

Apart from the technological devices intrinsic features, in home-to-home administration individuals were seriously warned not to write or copy during memory tests. With regard to scoring and registration of non-verbal tests such as RBANS Figure and the Clock Test, participants were asked to show their drawings to the camera for being conventionally scored in real-time by the neuropsychologist ensuring accuracy.

All of the neuropsychological testing was administered telematically by one of the six neuropsychologists (A.E., G.O., A.P., A.S., N.R. and M.A.). Prior to the evaluation, after verifying that videoconference conditions were optimal, a verbal informed consent was requested to all individuals (and caregivers in the cases of dementia). Patients were not required experience with computer use.

The results obtained in the NBACEtn of first or basal visits were collated for presentation at the next day's diagnostic consensus meeting with all the neurologists, neuropsychologists and social workers of Fundació ACE by means of a video call conference (10–15 minutes per patient).

### **Neurological assessment adapted to telemedicine**

The neurological assessment using telemedicine is remarkably similar to the on-site examination. Before starting the visit, we take the following into consideration for our setting: use a private room, take care of acoustics and lighting, interior net surfaces and have the equipment ready. When starting the visit, we present ourselves and inform the patient and family members the content of the visit. Then we ask the patient and family members to identify themselves.

For the baseline visit we conduct a 30 minutes interview with the family to obtain clinical information focused but not restricted to cognitive and behavioral symptoms, as well as the ability to conduct activities of daily living, sleep and eating habits. Additionally, we check patient's medical history and concomitant medication. The second part of the interview is performed with the patient within 30 minutes. Here we ask the subject's cognitive and behavioral symptoms, and contrast the information given by the family member. Then we conduct the MMSE remotely, for which we ask the subject to have a blank piece of paper and a pencil. Time and spatial orientation, repetition, attention and calculation, immediate memory recall and naming can be done easily. For the reading and praxis items we use a paper that is shown to the camera, and instruct the patient to please read it and do what it says (the reading instruction is "*Close your eyes*") and then we ask to please draw the shown picture for

the pentagons. As for the 3-stage command we use a modified version from Adag-cog: *Tap your left shoulder twice with your right hand keeping your eyes shut*. And for the writing we instruct the patient to write a sentence in the piece of paper and show it to us to the camera. Finally, we perform the neurological examination. The majority of the assessment can be done visually [5]: level of alertness, extraocular movements, facial symmetry and movement by asking the patient to close the eyes, smile and press the cheek, shoulder shrug, tongue movement, motor exam with the Barré maneuver and for the lower extremities we ask the patient to stand in one leg and in some cases is possible to perform Mingazzini maneuver, coordination by asking the patient to spread each arm and touch the tip of the nose, and gait by making the patient to walk. Sensation and hearing can be evaluated with the help of the family member. What we cannot examine is deep tendon reflexes, plantar reflex, pupilar reflex, comprehensive eye exam, and vestibular assessment. Additionally, our original on-site protocol contains the 7 Minutes test, that cannot be performed due to technical problems related to the bad visual quality of the receptor's device.

The final diagnosis and therapeutic plan are established during a consensus meeting by discussing the results of the neurological, neuropsychological and social work evaluations [6]. Then, a new appointment is scheduled with the patient and family members to inform the diagnosis and therapeutic options. We are able to prescribe medication as usual using a web platform established by our local health authority. The follow up visits are very similar but shorter in duration (30 minutes).

## REFERENCES

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