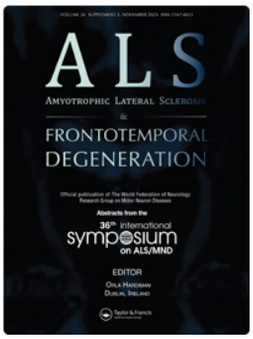

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LETTER TO THE EDITOR

Prioritizing neuropsychological research and care in Amyotrophic Lateral Sclerosis (ALS): building an international neuropsychological framework for ALS

JOKE DE VOCHT[1,2†], EMMET COSTELLO[3,4†], CAROLINE MCHUTCHISON[5,6], RATKO RADAKOVIC[6,7,8,9], JULIETTE FOUCHER[10,11], ROISIN MCMACKIN[12], COLM PEELO[3,4], LEONARD VAN DEN BERG[13], ORLA HARDIMAN[3,4], PHILIP VAN DAMME[1,2], NIALL PENDER[3,14#], SHARON ABRAHAMS[6,15#], DOROTHÉE LULÉ[16#] & FIRST ICNALS WORKSHOP*

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Background

Neuropsychological changes, long overlooked in Amyotrophic lateral Sclerosis (ALS), are now recognized as an integral part of its clinical spectrum, impacting survival, patient care and clinical trial eligibility (1). Up to 50% of people with ALS (PwALS) can exhibit neuropsychological changes, as seen in Frontotemporal Dementia, with up to 15% of PwALS meeting diagnostic criteria for concomitant FTD (2). Cognitive symptoms include executive, verbal fluency, social cognition and language deficits. Behavioral symptoms include disinhibition, apathy, diminished empathy, stereotyped or perseverative behaviors, and hyperorality. Anosognosia - impaired awareness of cognitive and behavioral deficits - is frequently observed, and psychotic symptoms may occur in a subset of PwALS (2).

Consequently, guidelines by the European Academy for Neurology on the management of ALS stress the importance of systemic neuropsychological assessments (3). Despite these guidelines, neuropsychological assessment remains inconsistently applied across clinical and research settings and is underutilized in ALS clinical trials (4). To address this critical issue, the International Consortium for Neuropsychology in ALS (ICNALS) was founded, serving as a dedicated platform for clinicians and researchers addressing neuropsychological aspects of ALS. Its primary objective is to foster collaboration, best-practice

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sharing, and to elevate standards of ALS clinical care and research.

This commentary outlines the formation of ICNALS and provides an overview of its first workshop in Turin, highlighting emerging priorities for the field, identified by attendees.

Methodological approach

The ICNALS was established, with neuropsychologists Dorothée Lulé (DL), Sharon Abrahams (SA), Niall Pender (NP), Emmet Costello (EC) and Joke De Vocht (JDV) as co-chairs. The first ICNALS workshop, a public event announced through the ENCALS website, was held at the Centro Congressi Lingotto in Turin, Italy, on the 4th of June 2025, at the start of the 22nd ENCALS meeting.

The primary aim of this first workshop was to identify key challenges and priorities in clinical care and research related to neuropsychology in ALS. At this workshop, leading experts, clinicians and early-career researchers convened, representing a cross-section of the ALS research and care community.

Attendees were assigned to focus groups of 8–10 participants within six pre-defined thematic areas, based on their expertise: "Integration of neuropsychological metrics in ALS Clinical Trials", "Integration with Neurophysiology, Neuroimaging & Neurobiology", "Assessment design and implementation", "Clinical Practice", "Multimodal Assessment and Support Approaches" and the "ALS-FTSD Disease Spectrum". Focus groups were supported by an organizer-appointed facilitator. The ALS-FTSD Disease Spectrum focus group was held virtually.

Ninety-minute focus group discussions were conducted, using a semi-structured format, guided by a central prompt and secondary cues to foster a dialogue. Discussion worksheets were designed to elicit unmet needs, key priorities, and future directions for neuropsychological research and care for ALS. Identified priority areas were subsequently ranked through an ad-hoc online prioritization poll to highlight the five most pressing challenges and opportunities for future initiatives.

Results

The inaugural ICNALS Workshop brought together a total of 50 participants from 26 ALS research and care centers (including 23 ENCALS centers), across 13 countries, reflecting the international commitment to advance neuropsychological research in ALS. Registered attendees included 12 Neurologists (24%, including 11 academics), 18 Psychologists (36%, including 12 academics), 11 PhD Students (22%), seven Clinical Research Scientists (14%), one Nurse Consultant (2%) and one Rehabilitation Physician and academic (2%).

Analysis of the discussions revealed recurring themes across focus groups, reflecting shared concerns and target research goals. Following the prioritization poll, the following five key areas (Table 1) were recognized as being of highest priority.

Recommendations

Focus group discussions at the first ICNALS Workshop revealed five key priority areas that warrant targeted action.

1. The limited availability of comprehensive measures for behavioral domains, emerged as the primary concern. While behavioral assessment tools (e.g., Edinburgh Behavioral interview from the ECAS (5), the Beaumont Behavioral Inventory (6), the ALS-FTD-Q (7)) are commonly applied, there is a clear need for more in-depth domain-specific instruments (e.g. the Dimensional Apathy Scale (8)), capable of detecting nuanced behavioral changes from both caregiver and self-report perspectives, with sensitivity to timing of onset and temporal dynamics, and designed for systematic integration into both research and clinical protocols.
2. Understanding whether neuropsychological symptoms are due to pathology, a psychosocial response to a life-limiting diagnosis, increasing physical disability, changes in family dynamics and quality of life - or a combination thereof – is a necessary first step toward investigating how these factors interact and contribute to symptom expression over time. Addressing this complexity will require interdisciplinary research to improve differential diagnosis and guide more effective disease management strategies.
3. To prepare for the arrival of disease-modifying therapies in ALS, robust neuropsychological markers capable of detecting cognitive and behavioral change over relatively short intervals – such as 6 to 12 months – are critical for the incorporation of neuropsychological measures in clinical trials. Standardized longitudinal protocols, sensitive to disease progression, that can meet the demands of evolving therapeutic landscapes should be prioritized.
4. The lack of robust normative data across diverse populations remains a key concern. Most countries developed their own normative data, but the primary challenge lies in the varied methodologies used to define impairment, complicating meaningful comparisons, alongside differences in healthcare organization and cultural interpretations of neuropsychological symptoms. To achieve meaningful harmonization in pan-European research initiatives (e.g., PRECISION-ALS), aligning methodologies and incorporating culturally sensitive frameworks are essential to

Table 1. The five main cross-cutting themes, ranked by their level of importance, as identified through the prioritization poll.

Priority area	*Contextual note*
1. **Develop more comprehensive measures of behavioral changes**	*Most frequently ranked concern, highlighting the need for improved domain-specific tools to assess behavioral symptoms.*
2. **Distinguish if neuropsychological changes are from pathology or psychosocial adjustment**	*Emphasizes the challenge of differentiating between disease-related changes with neurobiological underpinnings, and psychosocial responses to a life-threatening disease.*
3. **Identify an assessment protocol sensitive to cognitive decline over 6–12 months**	*Highlights the need for assessments that are sensitive to decline. Critical for incorporating neuropsychological measurements in clinical trials.*
4. **Harmonize cross-cultural normative data protocols**	*Calls for harmonized benchmarks to support cross-cultural interpretation of assessments.*
5. **Implement stratification according to baseline cognitive status**	*Seen as vital for refining clinical trial design and enabling personalized interventions.*

support cross-country interpretation and to disentangle potential cultural influences that shape how cognitive performance is assessed and interpreted (9).

5. Embedding stratification of clinical trial participants by baseline cognitive and behavioral status into clinical trial design enhances the precision of outcome measures, supports personalized interventions, and enables more accurate phenotyping that contributes to a more comprehensive understanding of disease heterogeneity.

Future directions

Advancing the areas identified through this first ICNALS Workshop will improve the accuracy of neuropsychological evaluation and ensure meaningful representation of neuropsychological dimensions in future ALS research and care.

The diversity of expertise included in this consensus process – spanning early-career to senior academics and clinical professionals – has ensured that the proposed priorities reflect both scientific advances and practical considerations in clinical settings. While the group was representative of academic and clinical perspectives, the inclusion of patient and industry representatives will be crucial for future rounds of consensus building to ensure priorities align with real-world translational efforts. Moving forward, ICNALS plans to expand on this effort through future meetings and joint initiatives.

Declaration of interest

E.C., C.M., C.P., J.D.V., R.R. have no conflicts of interest to declare. D.L. has received speaking honoraria from and has served in an advisory board for Zambon. J.F. has consulted for SOBI and NHTA, and is the co-chair of the International Network for ALS Research and Care (INARC, non-for-profit organization). L.H.v.d.B.: Participation on advisory boards for Cytokinetics, Ferrer, Amylyx, Sanofi, Biogen, Phoenix, and Adore; and a leadership or fiduciary role as Chair of ENCALS and Chair of TRICALS. N.P. serves as the associate editor of the International Journal of Neuroscience and has received speaker honoraria from Novartis. O.H. has received speaking honoraria from Janssen Cilag, Biogen Idec, Sanofi Aventis, Novartis and MerckSerono. She has been a member of advisory panels for Biogen Idec, Allergen, Ono Pharmaceuticals, Novartis, Cytokinetics and Sanofi Aventis. She serves as the editor-in-chief of the journal Amyotrophic Lateral Sclerosis and Frontotemporal Dementia. P.V.D. has served in advisory boards for Biogen, CSL Behring, Alexion Pharmaceuticals, Ferrer, QurAlis, Cytokinetics, argenx, UCB, Muna Therapeutics, Alector, Augustine Therapeutics, VectorY, Zambon, Amylyx, Novartis, Prilenia, Verge Genomics, Sapreme Technologies, Trace Neuroscience, NRG Therapeutics (paid to institution). He has received speaker fees from Biogen and Amylyx (paid to institution) and is supported by the E. von Behring Chair for Neuromuscular and Neurodegenerative Disorders (paid to institution). S.A. serves as the associate editor for the journal Amyotrophic Lateral Sclerosis and Frontotemporal Dementia.

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References

1. Strong MJ, Abrahams S, Goldstein LH, Woolley S, McLaughlin P, Snowden J, et al. Amyotrophic lateral sclerosis - frontotemporal spectrum disorder (ALS-FTSD): Revised diagnostic criteria. Amyotroph Lateral Scler Frontotemporal Degener. 2017;18:153–74.
2. Abrahams S. Neuropsychological impairment in amyotrophic lateral sclerosis-frontotemporal spectrum disorder. Nat Rev Neurol. 2023;19:655–67.
3. Van Damme P, Al-Chalabi A, Andersen PM, Chiò A, Couratier P, De Carvalho M, et al. European Academy of Neurology (EAN) guideline on the management of amyotrophic lateral sclerosis in collaboration with European Reference Network for Neuromuscular Diseases (ERN EURO-NMD). Eur J Neurol. 2024;31:e16264.
4. Beswick E, Park E, Wong C, Mehta AR, Dakin R, Chandran S, et al. A systematic review of neuropsychiatric and cognitive assessments used in clinical trials for amyotrophic lateral sclerosis. J Neurol. 2021;268:4510–21.
5. Abrahams S, Newton J, Niven E, Foley J, Bak TH. Screening for cognition and behaviour changes in ALS. Amyotroph Lateral Scler Frontotemporal Degener. 2014;15:9–14.
6. Elamin M, Pinto-Grau M, Burke T, Bede P, Rooney J, O'Sullivan M, et al. Identifying behavioural changes in ALS: Validation of the Beaumont Behavioural Inventory (BBI). Amyotroph Lateral Scler Frontotemporal Degener. 2017. 2167–9223 (Electronic).
7. Raaphorst J, Beeldman E, Fau - Schmand B, Schmand B, Fau - Berkhout J, Berkhout J, et al. The ALS-FTD-Q: a new screening tool for behavioral disturbances in ALS. Neurol. 2012. 1526-632X (Electronic).
8. Radakovic R, Stephenson L, Colville S, Swingler R, Chandran S, Abrahams S. Multidimensional apathy in ALS: validation of the Dimensional Apathy Scale. J. Neurol. Neurosurg. Psychiatry. 2016. 1468-330X (Electronic)).
9. Costello EA-O, De Vocht J, Beswick E, Mac Domhnaill É, Peelo C, Foucher J, et al. Neuropsychological assessment practices in PRECISION-ALS: challenges and opportunities for harmonization. Amyotroph Lateral Scler Frontotemporal Degener. 2025. 2167-9223 (Electronic).