Abstract
Cognitive changes in patients with ALS often present as deficits in executive functions and changes in language and social cognition. In disease management, cognitive dysfunction may impair patient’s decision-making ability.

The Edinburgh Cognitive and Behavioural ALS Screen (ECAS) has been developed to detect the specific profile of cognition and behaviour changes in ALS and to differentiate it from other disorders (1).

It is a 15-20 min screen that includes ALS-specific and non-specific functions and a carer behaviour screen.

Methods and Materials
➢ We translated and adapted the original version of ECAS (Figure 1).
➢ Cognitive status of 41 ALS patients (mean age 63.7, range 41-87 years) was evaluated using ECAS (Table 1).
➢ 42 healthy controls (mean age 65.4, range 41-85 years) were evaluated using ECAS (Table 1).
➢ 32 carers completed the behavioural interview.

Results
➢ Data from healthy controls was used to produce abnormality cut-offs (Table 2).
➢ 24% of patients scored below the cut-off in the ALS-specific domain and 22% for the ECAS total score (Figure 2). Behavioural changes were found in 32% of patients (Figure 3).
➢ Patients with bulbar onset of disease showed significantly more cognitive impairment than those with spinal onset.
➢ No correlation was found between cognitive impairment and age, education, duration, stage of disease or respiratory status.

ECAS total score
ALS specific domain
ALS non-specific domain

Table 1. Characteristics of ALS patients and healthy controls.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ALS patients n = 41</th>
<th>Healthy controls n = 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Mean (SD)</td>
<td>Range</td>
</tr>
<tr>
<td></td>
<td>63.7 (8.9)</td>
<td>41-87</td>
</tr>
<tr>
<td>Sea (male/female)</td>
<td>24/17</td>
<td>25/17</td>
</tr>
<tr>
<td>Years of education</td>
<td>10.7 (1.7)</td>
<td>8-16</td>
</tr>
</tbody>
</table>

Table 2. Normative data for the Slovenian version of ECAS.

Modifications
➢ COMPREHENSION:
According to the comprehension in the respective culture, we replaced the word “sting” with “kleše” (claws), “webbed feet” with “plavalna kožica” (the skin between the fingers, typical for water birds and ambibia) and “chopping” with “cepljenje drv” (to split a big log into smaller logs).

➢ MEMORY:
According to the frequency of certain geographical and individual names, we changed “Primrose Woods” to “Kocevski gozd” and “Douglas Watt” to “Janez Novak”.

➢ FLUENCY:
We adjusted the given letters, according to the frequency of the letters in Slovenian – we used „P“ instead of „S“ and „M“ instead of „T“.
Conversion tables were adjusted accordingly.

➢ SENTENCE COMPLETION:
We used “Janez” instead of “John” and “Sabina” instead of „Sally“. We changed “local cafe” into “vaški lokal“ (village pub).

Conclusions
The results of the Slovenian version of ECAS are comparable to other published versions (Figure 3).

ECAS is an effective and useful clinical tool that can improve the quality of ALS patient care.

References

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Figure 1. First page of Slovenian version of ECAS.

Figure 3. The percentage of patients falling below cut-off score in the ECAS total score, ALS specific domain and ALS non-specific domain.

Figure 2. The percentage of patients falling below cut-off score in the ECAS total score, ALS specific domain and ALS non-specific domain.