Cost-Effectiveness of the PReDicT Test: Results and Lessons Learned from a European Multinational Depression Trial

J Simon1,2*, N Perić1, S Mayer1, J Deckert3, P Gorwood4, V Perez Sola5, A Reif6, HG Ruhe7, D Veitman8, R Morriss9, AC Bilderbeck10, GR Dawson10, C Dourish10, R Dias11, J Kingslake11, M Browning5,10 on behalf of the Predict Group

1Dept. of Health Economics, Center for Public Health, Medical University of Vienna, AUT; 2Dept. of Psychiatry, University of Oxford, UK; 3Dept of Psychiatry, Psychosomatics and Psychotherapy, University Hospital of Wuerzburg, DE; 4Hôpital Sainte-Anne (CMME), Université Paris–Descartes, FR; 5Dept. of Psychiatry, Univ Autonoma de Barcelona, ES; 6Dept of Psychiatry, Psychosomatic Medicine and Psychotherapy, University Hospital Frankfurt, DE; 7Dept of Psychiatry, Radbud University, NL; 8Dept of Psychiatry, VU University Medical Centre and Amsterdam Neuroscience, NL; 9University of Nottingham, Nottingham, UK; 10PRevital Ltd., Howbery Park, Wallingford, Oxfordshire, UK; 11PRevital Products Ltd, Howbery Park, Wallingford, Oxfordshire, UK

*Contact: judit.simon@muv.ac.at

Objectives

- The PRevital® PReDicT Test was developed as a digital tool to provide an early indication of response or non-response to antidepressant (AD) medication, helping reduce time to recovery.
- A randomised-controlled trial has been conducted (2016–2019) in five European countries (DE, ES, F, NL, UK) to assess its clinical and cost-effectiveness in primary depression care.

Methods

- Incremental within-trial economic evaluation comparing the value of the PReDicT Test (n=460) with Treatment–As–Usual (TaU) (n=453) over 24 weeks (DE:130, ES:164, FR:76, NL:54, UK:489) from the I) health care, II) health and social care and III) societal perspectives.
- Between group differences in costs and outcomes using quality-adjusted life years (QALYs) based on the EQ–5D–5L, and capability-weighted life years (CWLys) based on capability well-being measured by the OxCAP-MH (UK and DE), were assessed using a regression–based approach adjusted for missing data.
- Uncertainty was explored using bootstrapping and sensitivity analyses. Besides country-specific results which showed great variation, a single set of EQ–5D tariffs and unit costs was deployed to achieve harmonized European estimates.

Results

- Both arms significantly improved in terms of quality of life (QoL) during 24 weeks follow-up.
- No significant group difference in HRQoL (EQ–5D–5L), but a significant difference in broader capability well-being (OxCAP–MH) at 24 weeks (PReDicT vs. TaU: +2.127; p=0.0210) corresponding to an additional 24% improvement in the PReDicT arm (PReDicT: 11.056 vs. TaU: 8.929). (Fig. 1 & Fig. 2)
- Total intervention cost was €93 (59% health care related). No other significant cost differences between the groups from any of the analytical perspectives including AD costs. (Fig. 3)
- Additional reduction in absenteeism from work observed in the PReDicT arm.
- Significant cost savings per patient in both arms when comparing before and during trial periods (HC perspective: PReDicT: −€929.08, TaU: −€828.12, societal perspective: PReDicT: −€3037.10, TaU: −€3353.73). (Fig. 3)
- Probability of PReDicT being cost-effective in comparison to TaU in Europe varies between 53%–71% at a €50,000/QALY willingness–to–pay threshold, highest from a full societal perspective. (Table 1)

Conclusions

- The main economic benefits of the PReDicT test seem to fall on broader societal costs.
- Potential major positive impact and socioeconomic benefits of actively monitored AD treatment as implemented in the PReDicT trial.
- Great between-country variations are likely to reflect substantial underlying system and depression care differences.

References:


Fig. 1. HRQoL over 24 weeks (EQ–5D–5L DE tariff)

Fig. 1b. Capability well-being over 24 weeks (OxCAP–MH)

Fig. 2a. HRQoL over 24 weeks by country (national EQ–5D–5L tariffs)

Fig. 2b. Capability well-being over 24 weeks by country (OxCAP–MH)

Fig. 3. Cost results (€, 2018)

Table 1. Cost-effectiveness results (€/QALY, N=913)

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Cost difference</th>
<th>QALY difference 1</th>
<th>ICER (95% CI) 2</th>
<th>Probability of cost-effectiveness at €50,000/QALY 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health care</td>
<td>216.60 €</td>
<td>0.0037</td>
<td>€4,130/QALY</td>
<td>52.2%</td>
</tr>
<tr>
<td>Treatment–As–Usual</td>
<td>52.50 (62.38–42.62)</td>
<td>0.0051 to 0.1212</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health and social</td>
<td>208.60 €</td>
<td>0.0037</td>
<td>€4,312/QALY</td>
<td>53.1%</td>
</tr>
<tr>
<td>Treatment–As–Usual</td>
<td>50.30 (60.13–40.47)</td>
<td>0.0051 to 0.1212</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Societal partial</td>
<td>191.60 €</td>
<td>0.0039</td>
<td>€4,993/QALY</td>
<td>55.9%</td>
</tr>
<tr>
<td>Treatment–As–Usual</td>
<td>53.60 (63.45–43.75)</td>
<td>0.0051 to 0.1212</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Societal total</td>
<td>606.44 €</td>
<td>0.0050</td>
<td>€12,019/QALY</td>
<td>73.0%</td>
</tr>
<tr>
<td>Treatment–As–Usual</td>
<td>519.00 (618.84–419.16)</td>
<td>0.0051 to 0.1212</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 means adjusted for age, sex, treatment group and baseline cost 2 means adjusted for age, sex, treatment group and baseline EQ–5D / OxCAP index. QALYs are based on EQ–5D–5L DE tariffs.
3 The means of the costs by group and the adjusted difference have been calculated using generalized linear model (GLM) family gamma and link long (cost as dependent variable and group as the only independent variable) and the command margins. 4 Multivariable mixed-effects linear regression according to device and week, *p<0.05 5 Participants employed during the trial. 6 (PReDicT n=327, TaU: n=315)

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 696802.