**SUPPLEMENTARY FILE 4: SENSITIVITY ANALYSIS OF WEIGHTS ASSIGNED**

In a MCDA, the weighting should reflect each individual perception on the relevance attributed to each criterion at the time of evaluating any intervention (1–4). Given the nature of the MCDA, they may change under different decision-making settings, i.e., other countries, different composition of a committee, or even under the availability of new evidence.

We have performed a sensitivity analysis in relation to the weights assigned to this MCDA, to test: (i) What influence the case-mix of raters (i.e., clinicians granting highest weight for severity, unmet need, and therapeutic benefit. Pharmacists highest on efficacy; Patients had highest on PRO's, etc.) have on the statement of value resulted from the analysis; (ii) Whether the weights assigned in this MCDA have external validity.

For that, we have used the work of Badia (2018) (5) as a reference for weightings, as this study developed training sessions with 98 Spanish evaluators and decision makers (25 at National level and 73 at regional level), which weighted the criteria based on the EVIDEM framework with a perspective of evaluations of orphan drugs.

**Influence of case-mix raters on the statement of value**

To test what influence the case-mix of raters we have replaced the normalized weights assigned by the experts committee in this MCDA by the ones resulted from the study from Badia (2018) (5), while keeping the same scores assigned by the experts committee in this MCDA. Finally, we compared the original results from this MCDA (i.e., weights by the experts committee) with the results from the sensitivity analysis (i.e., weights from Badia 2018).

Value estimates would vary from 0.50 to 0.42 in non-IPF PF-ILD and from 0.40 to 0.31 in SSc-ILD when replacing the original weights assigned to the ones found by the study from Badia (2018). Key differences emerge in disease severity (-0.07), unmet needs (-0.03 to -0.04), and type of therapeutic benefit (-0.02) (**supplementary tables 4.1 and 4.2**).

**Supplementary Table 4.1: Mean value estimates by variating weights, non-IPF PF-ILD**

|  |  |  |  |
| --- | --- | --- | --- |
| Criteria | Original | Weights by Badia 2018 | ∆ |
| 1. Disease severity | 0.1669 | 0.0920 | -0.0749 |
| 2. Unmet needs | 0.1202 | 0.0807 | -0.0395 |
| 3. Comparative effectiveness / efficacy | 0.0612 | 0.0660 | 0.0048 |
| 4. Comparative safety / tolerability | 0.0041 | 0.0017 | -0.0024 |
| 5. Comparative PRO | 0.0226 | 0.0249 | 0.0023 |
| 6. Type of therapeutic benefit | 0.0710 | 0.0519 | -0.0192 |
| 7. Cost of intervention | -0.0574 | -0.0601 | -0.0027 |
| 8. Other medical costs | 0.0183 | 0.0324 | 0.0141 |
| 9. Non-medical costs | 0.0045 | 0.0162 | 0.0117 |
| 10. Quality of evidence | 0.0690 | 0.0730 | 0.0040 |
| 11. Expert consensus / CPG | 0.0219 | 0.0407 | 0.0188 |
| Total | **0.5022** | **0.4193** | **-0.0829** |

*Non-IPF PF-ILD*: non-idiopathic progressive fibrosing interstitial lung disease

**Supplementary Table 4.2: Mean value estimates by variating weights, SSc-ILD**

|  |  |  |  |
| --- | --- | --- | --- |
| Criteria | Original | Weights by Badia 2018 | ∆ |
| 1. Disease severity | 0.1522 | 0.0851 | -0.0672 |
| 2. Unmet needs | 0.1088 | 0.0743 | -0.0345 |
| 3. Comparative effectiveness / efficacy | 0.0520 | 0.0556 | 0.0036 |
| 4. Comparative safety / tolerability | -0.0411 | -0.0415 | -0.0004 |
| 5. Comparative PRO | 0.0059 | 0.0039 | -0.0020 |
| 6. Type of therapeutic benefit | 0.0630 | 0.0454 | -0.0177 |
| 7. Cost of intervention | -0.0531 | -0.0617 | -0.0086 |
| 8. Other medical costs | 0.0184 | 0.0284 | 0.0100 |
| 9. Non-medical costs | 0.0100 | 0.0208 | 0.0108 |
| 10. Quality of evidence | 0.0602 | 0.0664 | 0.0062 |
| 11. Expert consensus / CPG | 0.0214 | 0.0344 | 0.0130 |
| Total | **0.3977** | **0.3110** | **-0.0866** |

*SSc-ILD*: systemic sclerosis-associated interstitial lung disease

**External validity of assigned weights**

To test external validity of assigned weights, we have calculated the Pearson Correlation Coefficient between the original means and the ones resulted from Badia (2018). Global correlation coefficient was high (0.8209). In the analysis by subgroup, highest correlations were found between clinicians vs. Badia (0.8236), followed by pharmacists (0.8016), others (0.7599), managers (0.6414) and patients (0.4647) (**supplementary table 4.3**).

**Supplementary Table 4.3: Pearson correlation coefficient, original mean weights vs. weights resulting from the study by Badia (2018)**

|  |  |
| --- | --- |
| Parameters | Pearson Correlation Coefficient |
| Clinicians vs. Badia | 0.8236 |
| Patients vs. Badia | 0.4647 |
| Managers vs. Badia | 0.6414 |
| Pharmacists vs. Badia | 0.8016 |
| Others vs. Badia | 0.7599 |
| Global vs. Badia | **0.8209** |

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