the inclusion of BDI only marginally improved the explained variance (adjusted R-square increased from 0.51 to 0.52). CONCLUSIONS: Whereas sociodemographic factors, motor complications and neuropsychological disturbances do not exert independent effects on utilities when controlling for UPDRS, depression has an independent effect on EQ-5D. Although depression is not explicitly included in the UPDRS score of parts II–IV, its inclusion did not substantially reduce the unexplained variance. It remains to be investigated which factors further explain the remaining variance.

**PNL23**

**CHRONIC NEUROPATHIC PAIN (NEP) IMPACT ON PATIENT QUALITY OF LIFE AND DISABILITY: RESULTS FROM THE DONEGA STUDY**

Gálvez R1, Ribera MV2, Rejas J1, Masramón X3, Ruiz M4

1Pain & Palliative Care Unit, Hospital Virgen de las Nieves, Granada, Spain; 2Pain Unit, Hospital Vall d’Hebrón, Barcelona, Spain; 3Pfizer SA, Alcobendas, Madrid, Spain; 4Euroclin Institute, Barcelona, Spain

OBJECTIVES: The goal of this cross-sectional analysis was to determine pain impact on Quality of Life (QoL) and interference with disability among patients with chronic NeP. METHODS: Participants in an observational, prospective and multicentre study in Spain (DONEGA study) with NeP of different etiologies, completed the Short-Form-McGill Pain Questionnaire (SF-MPQ), the MOS Short Form-12 (SF-12), and the Sheehan Disability Scale at baseline. RESULTS: A total of 1519 patients [mean ± SD; 56.0 ± 13.7 years old (58.8% female)] with NeP were enrolled in the study. Patients had NeP for 1.1 ± 2.8 years, and 83.3% were on any type of analgesic treatment at baseline: oral analgesics (51.2%), topical analgesics (26.9%), NSAID's (22.8%), antiepileptics (7.3%), and psychoanaleptics (3.5%). Average Pain scores were 13.1 ± 8.2 pts., 10.0 ± 5.8 pts., and 3.1 ± 3.3 pts., for total scale (range 0–45), sensory domain (range 0–33), and affective domain (range 0–12), respectively. Present pain intensity was 2.8 ± 1.0 (range 0–5) and mean pain past week on a VAS scale was 71.2 ± 18.9 mm. Pain substantially interfered (≥25 on 0–10 scale) with normal work (6.0 ± 3.1), social life (5.7 ± 3.0), and family life (5.3 ± 3.0), then producing disability; Sheehan total (on 0–30 scale): 17.0 ± 8.4 pts. Country normalized physical (PCS) and mental health (MCS) component summary scores (SF-12) indicated significant impairment in both domains compared to the general Spanish population: PCS; 37.6 ± 6.0 vs. 50.1 ± 9.5, and MCS; 45.9 ± 8.1 vs. 50.0 ± 9.6, respectively. Increasing levels of refractory pain, as assessed by number of medications, corresponded to increasing levels of disability (Sheehan total: 14.2 ± 8.8 to 16.4 ± 8.3, to 18.7 ± 8.1, and to 20.6 ± 7.0, by 0, 1, 2, and 3 medications respectively, p < 0.01 for all between group comparisons except 2 vs. 3). CONCLUSIONS: NeP decreases patients’ physical and mental components of QoL, while increasing level of disability and impaired normal work. The disability increases with level of pain treatment resistance.

**PNL31**

**NEUROPATHIC PAIN (NEP) IMPACT ON PATIENT MENTAL FUNCTIONING, SYMPTOM LEVELS OF ANXIETY AND DEPRESSION, AND SLEEP DISTURBANCE: RESULTS FROM THE DONEGA STUDY**

Gálvez R1, Ribera MV2, Rejas J1, Masramón X3, Ruiz M4

1Pain & Palliative Care Unit, Hospital Virgen de las Nieves, Granada, Spain; 2Pain Unit, Hospital Vall d’Hebrón, Barcelona, Spain; 3Pfizer SA, Alcobendas, Madrid, Spain; 4Euroclin Institute, Barcelona, Spain

OBJECTIVES: The goal of this cross-sectional evaluation was to assess pain impact and interference with mental functioning,
symptom levels of anxiety and depression, and sleep impairment among patients with NeP. METHODS: Participants in an observational, prospective and multicentre study in Spain (DONEGA study) with NeP of different etiologies, completed the Short Form-McGill Pain Questionnaire (SF-MPQ), the Mini Mental State Examination (MMSE), the COVI Anxiety Scale, the RASKIN Depression Rating Scale, and the MOS Sleep Scale (MOS-S) at baseline. RESULTS: A total of 1519 patients above 18 years [mean ± SD: 56.0 ± 13.7 years old (58.8% female)] with NeP were enrolled in the study. Peripheral NeP was presented in >95.0% of subjects. Patients had NeP for 1.1 ± 2.8 years, and 83.3% were on any type of analgesic treatment at baseline: oral analgesics (51.2%), topical analgesics (26.9%), NSAID’s (11.1%), antiepileptics (7.3%), and psychoanaleptics (3.5%). Average Pain scores were 13.1 ± 8.2 pts, 10.0 ± 5.8 pts, and 3.1 ± 3.3 pts, for total scale (range 0–45), sensory domain (range 0–33), and affective domain (range 0–12), respectively. Present pain intensity was 2.8 ± 1.0 (range 0–5) and mean pain past week on a VAS scale was 71.2 ± 18.9 mm. Pain slightly interfered with patient mental functioning (average MMSE score: 27.2 ± 3.6 pts, 18.0% of patients with MMSE score ≤ 24 pts). Pain interfered with all sleep attributes, obtaining high scoring in composite measures; SLPe6: 45.3 ± 21.8, and SLPq9: 46.8 ± 21.1. The 24.4% and 15.6% of patients had moderate to severe symptoms levels of anxiety and depression (RASKIN and COVI scores ≥ 9 on 3–15 scale), with an average depression and anxiety scores of 6.3 ± 3.3 pts and 5.4 ± 2.8, respectively. CONCLUSIONS: NeP decreases patient mental functioning as assessed by MMSE, while increasing anxiety and depression symptoms and sleep problems. These findings substantially deteriorated with pain severity.

NEUROLOGICAL DISORDERS (Migraine, Alzheimer’s, Dementia)

NEUROLOGICAL DISORDERS (Migraine, Alzheimer’s, Dementia)—Methods and Concepts

INTERNAL, EXTERNAL, AND CROSS-MODEL VALIDATION OF A MULTI-OBJECTIVE DECISION MODEL FOR PARKINSON’S DISEASE

METHODS: Our lifetime PD Markov model simulates a hypothetical cohort of patients moving through health states reflecting patient characteristics that would be observed in the absence of treatment (Hoehn&Yahr “off” states [HYoff]). We used HYoff I-V and death as Markov states. The model is designed to simultaneously predict multiple outcomes, e.g. time in Hoehn&Yahr “on” states (HYon) observed under treatment, quality-adjusted life expectancy (QALE), or complication rates. As internal validation, we compared time in HYoff stages predicted by our model to results reported in the progression study used to derive our input parameters. As external validation, we compared model results of mean times in HYoff and HYon states with external literature data not used in our model. Finally, we cross-validated our model comparing QALE under levodopa treatment with QALE of other published models reporting this outcome. RESULTS: Internal validation of HYoff input data showed a 97.4–99.9% accuracy. Although external validation of average HYoff progression rates overestimated external population data from Hoehn & Yahr (1967) by 19%, the mean HYon progression rate predicted by our model (0.42 HY stages/y) matched well with estimates reported in the literature (0.40 HY stages/y). After restricting our model to a 5-year time horizon, discounted QALYs exceeded those from 2 other published models by 24% and 35%. This differences were mostly attributable to different Markov state-specific utilities. As other Markov models for drug treatment did not evaluate QALE, we could not cross-validate for this outcome. CONCLUSIONS: Our PD model is internal valid and closely reproduces external data for progression under standard treatment. Variability in QALE are due to a combination of different model design, state-specific utilities, and underlying study populations.

A NEW SCREENING TOOL FOR MIGRAINE IN THE GENERAL POPULATION: THE MIGRAINE-SCREEN-Q (MS-Q)

Láinez JM1, Domínguez M2, Arriaza E3, Palacios G3, Madrigal M3, García-García M4, Rejas J5

1University Hospital, Valencia, Spain; 2Hospital Puerta de Hierro, Madrid, Spain; 3Pfizer SA, Alcobendas, Madrid, Spain; 4Biométrica CRO, Barcelona, Spain

COMPARING CLASSIFICATION AND REGRESSION TREE ANALYSIS WITH MULTIPLE REGRESSION FOR TRANSLATING A CLINICAL PARKINSON’S DISEASE SCALE INTO UTILITIES

Siebers U1, Bornschein B2, Dodel R3

1Harvard Medical School, Boston, MA, USA; 2University of Munich, Munich, Germany; 3Friedrich-Wilhelms-University, Bonn, Germany

OBJECTIVES: Utilities for Parkinson’s Disease (PD) are needed for cost-utility analyses of antiparkinsonian treatments but are not always available from PD studies. We compared the performance of classification and regression tree (CART) analysis with multiple regression for mapping the Unified Parkinson’s Disease Rating Scale (UPDRS) to utilities. METHODS: We used data from an ongoing prospective cost study of the German Competence Network for Parkinson Syndromes. Single UPDRS items were used as predictors for utilities assessed with EuroQol (EQ-5D). First, we developed a multiple regression model using forward selection based on likelihood ratio testing (p < 0.05). Second, we developed a CART model using t-test statistics as selection criteria and adjusting p-values for non-dichotomous variables by the Miller & Siegmund method. The resulting mutual exclusive and exhausting groups were used as predictors in a multiple linear regression model. The performance (goodness-of-fit) of both approaches was compared using explained variance (adjusted R-square statistic). RESULTS: The final multiple regression model included a linear combination of three UPDRS subscore variables (i.e., parts II–IV) and yielded an adjusted R-square of 0.55. The final CART model had three

levels with four variables partitioning the sample into five subgroups. These variables were level of rigidity (UPDRS item 22), problems arising from a chair (item 27), posture (item 28), and unpredictable fluctuations (item 36). The mean (median) utility in the 5 subgroups was 0.90 (0.89), 0.81 (0.89), 0.68 (0.70), 0.66 (0.70), and 0.32 (0.29). The CART model had adjusted R-square of 0.50. CONCLUSIONS: Multiple regression performed slightly better than CART when used to predict utilities based on clinical characteristics of PD patients. Both models were based on feasible and parsimonious prediction rules with only three and four variables, respectively. Whereas multiple regression modeling is the more widely used statistical approach, CART-based prediction models may be easier to interpret for physicians.

PNL25

INTERNAL, EXTERNAL, AND CROSS-MODEL VALIDATION OF A MULTI-OBJECTIVE DECISION MODEL FOR PARKINSON’S DISEASE

Siebers U1, Bornschein B2, Dodel R3

1Harvard Medical School, Boston, MA, USA; 2University of Munich, Munich, Germany; 3Friedrich-Wilhelms-University, Bonn, Germany

OBJECTIVES: We have recently reported on a generic, multi-outcome disease model for Parkinson’s disease (PD). Now we present first results of internal, external and cross-model validation. METHODS: Our lifetime PD Markov model simulates a hypothetical cohort of patients moving through health states reflecting patient characteristics that would be observed in the absence of treatment (Hoehn&Yahr “off” states [HYoff]). We used HYoff I-V and death as Markov states. The model is designed to simultaneously predict multiple outcomes, e.g. time in Hoehn&Yahr “on” states (HYon) observed under treatment, quality-adjusted life expectancy (QALE), or complication rates. As internal validation, we compared time in HYoff stages predicted by our model to results reported in the progression study used to derive our input parameters. As external validation, we compared model results of mean times in HYoff and HYon states with external literature data not used in our model. Finally, we cross-validated our model comparing QALE under levodopa treatment with QALE of other published models reporting this outcome. RESULTS: Internal validation of HYoff input data showed a 97.4–99.9% accuracy. Although external validation of average HYoff progression rates overestimated external population data from Hoehn & Yahr (1967) by 19%, the mean HYon progression rate predicted by our model (0.42 HY stages/y) matched well with estimates reported in the literature (0.40 HY stages/y). After restricting our model to a 5-year time horizon, discounted QALYs exceeded those from 2 other published models by 24% and 35%. This differences were mostly attributable to different Markov state-specific utilities. As other Markov models for drug treatment did not evaluate QALE, we could not cross-validate for this outcome. CONCLUSIONS: Our PD model is internal valid and closely reproduces external data for progression under standard treatment. Variability in QALE are due to a combination of different model design, state-specific utilities, and underlying study populations.

PNL26

A NEW SCREENING TOOL FOR MIGRAINE IN THE GENERAL POPULATION: THE MIGRAINE-SCREEN-Q (MS-Q)

Láinez JM1, Domínguez M2, Arriaza E3, Palacios G3, Madrigal M3, García-García M4, Rejas J5

1University Hospital, Valencia, Spain; 2Hospital Puerta de Hierro, Madrid, Spain; 3Pfizer SA, Alcobendas, Madrid, Spain; 4Biométrica CRO, Barcelona, Spain