

P116 Identifying patients with delayed pain interference recovery after solid organ transplantation using supervised cluster analysis

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Objective: Clinically it is important to identify patients whose pain interference (PI) recovery is delayed following solid organ transplantation (SOT). We identify patterns of PI recovery using supervised cluster analysis of longitudinally obtained Patient-Reported Outcomes Measurement Information System® PI (PROMIS®-PI) scores.

Methods: Longitudinal study of adult incident kidney, kidney-pancreas, and liver transplant recipients who completed PROMIS-PI Computer Adaptive Test (CAT) (higher=worse PI) within ~1 week post-transplant and biweekly over the next 2 months. Based on visual inspection of individual recovery patterns, we identified baseline PI score and change between week0-week2 as features potentially associated with PI recovery. We stratified participants by baseline PROMIS-PI (≥ 60 vs. < 60) and by PI change between baseline and week 2 (≥ 1 vs. < 1 ; improved vs. non-responder). Four clusters (EXPOSURE) were identified: **CL1** (poor baseline–non-responder), **CL2** (poor baseline–improvement), **CL3** (better baseline–non-responder), **CL4** (better baseline–improvement). We used linear mixed-effects models with random effects for participants and modeled time-by-cluster interactions to assess trajectories. We fit parametric survival models using interval regression to estimate time to recovery (T-score ≤ 50 -OUTCOME) followed by Wald-test to evaluate significance of group differences.

Results: Of 109 participants, 15 (14%) were in **CL1**, 52 (48%) in **CL2**, 18 (16%) in **CL3**, and 24 (22%) in **CL4**. **CL1** was the youngest (mean [SD] age 44 [13]) and **CL3** was the oldest group (58 [12]). Organ type, demographics and baseline PROMIS domain scores were similar across clusters.

At 2 months, mean (95% CI) PROMIS-PI scores were: **CL1**: 55 (51–59) vs **CL2**: 50 (48–53) ($p=0.048$); **CL3**: 55 (51–59) vs **CL4**: 45 (42–48) ($p<0.001$). The mean(SD) change in PROMIS PI T-scores between baseline and week 8 was -10 (6) vs -18 (8) for **CL1** vs **CL2**; 2 (7) vs -8 (7) for **CL3** vs **CL4**; $p<0.001$ for both. The proportion of individuals who reached the recovery event were 7%, 33%, 47%, 82% in **CL1**, **CL2**, **CL3** and **CL4**, respectively ($p<0.001$).

Conclusions: Baseline and early change of PI identified four distinct recovery clusters among SOT recipients. This information can help identify patients who might benefit from tailored post-transplant support.