2016 J. Leonard Goldner Award - Can Initial PROMIS Scores Predict Outcome for Foot and Ankle Patients?

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Introduction/Purpose: The use of patient reported outcomes continues to expand beyond the scope of clinical research to involve standard of care assessments across orthopaedic practices. It is currently unclear how to interpret and apply this information in the daily care of patients. We examined the relationship between patient reported outcomes (PROMIS Physical Function, Pain Interference and Depression scores) obtained at initial visit as a predictor of outcome at a minimum of 7 month follow up.

Methods: Prospective collection of all consecutive patient visits to the University of Rochester Orthopaedic foot and ankle clinic was initiated on April 2015. Data through December 2015 was classified as new or follow up and operative or non-operative based on ICD-9 and CPT codes. 17,019 patient visits were collected on 7,265 patients, of which 4,213 were new patients. PROMIS physical function, pain interference, and depression scores were assessed at initial and follow up visits. Only patients with a minimum of 7 months (mean 8.2) follow up who completed all PROMIS domains were included, resulting in 262 patients (69 operative, 193 non-operative). PROMIS scores are normalized to a US population with an average score of 50 and a standard deviation of 10. Statistical analysis using student t-tests and linear regression were performed to determine if the initial PROMIS scores were predictive of patient reported outcomes at final follow up.

Results: There were no differences between operative and non-operative treatment groups in initial PROMIS scores or change in scores at follow up (p>0.40). Patients with higher baseline pain were likely to experience less pain over time (r=0.63, p < 0.01). Similarly, patients with higher baseline depression were likely to experience decreased depression over time (r =0.52, p < 0.01). Patients with lower baseline physical function were likely to improve over time whereas patients with higher baseline physical function were likely to worsen over time (r=0.68, p< 0.01). Specifically, all patients
with baseline physical function score less than 28 improved over time, while all patients with a score greater than 52 worsened (Figure 1).

**Conclusion:** Physical function, pain, and depression trends did not vary between operative and non-operative patients at 8.2 month follow up. Patients with high initial pain and depression were likely to have improvements in pain and depression over time. Similarly, patients with low initial physical function were likely to have improved physical function. However, despite treatment, patients with above average initial physical function did not experience improvement in physical function, suggesting these patients are more challenging to treat. This information demonstrates that baseline patient reported outcomes are predictive of improvement in outcomes over time, and could assist in the treatment decision process.

**Figure 1:** Initial PROMIS physical function scores versus change in PROMIS scores at follow up

Dotted line represents the threshold of initial PROMIS physical function scores below which all patients had improvement at follow up. Solid line represents the threshold above which all patients worsened at follow up.