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Health Measures Conference 2017

UNIVERSITY of ROCHESTER MEDICAL CENTER

Generalizability and Validation of PROMIS Scores to Predict Surgical Success in Foot and Ankle Patients: *A Tale of Two Academic Centers*

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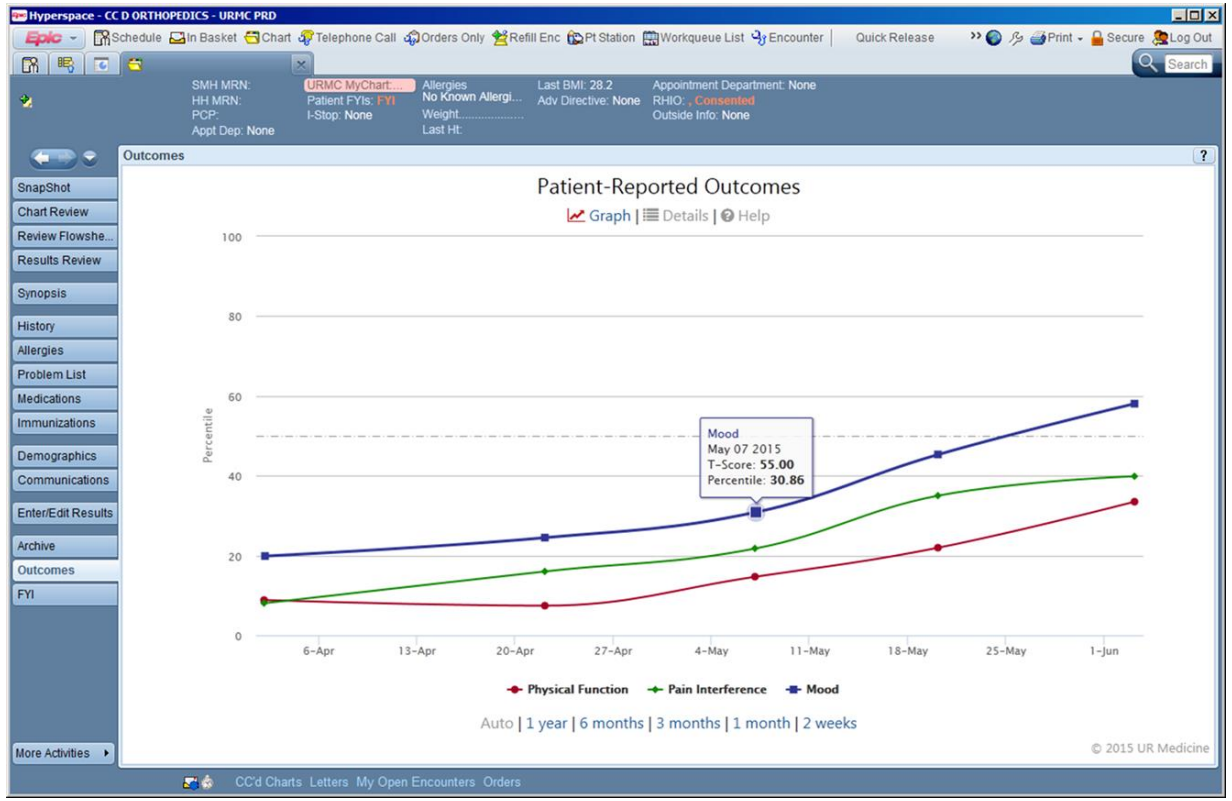
Disclosure

- No Conflict of Interest relative to this Research

Introduction

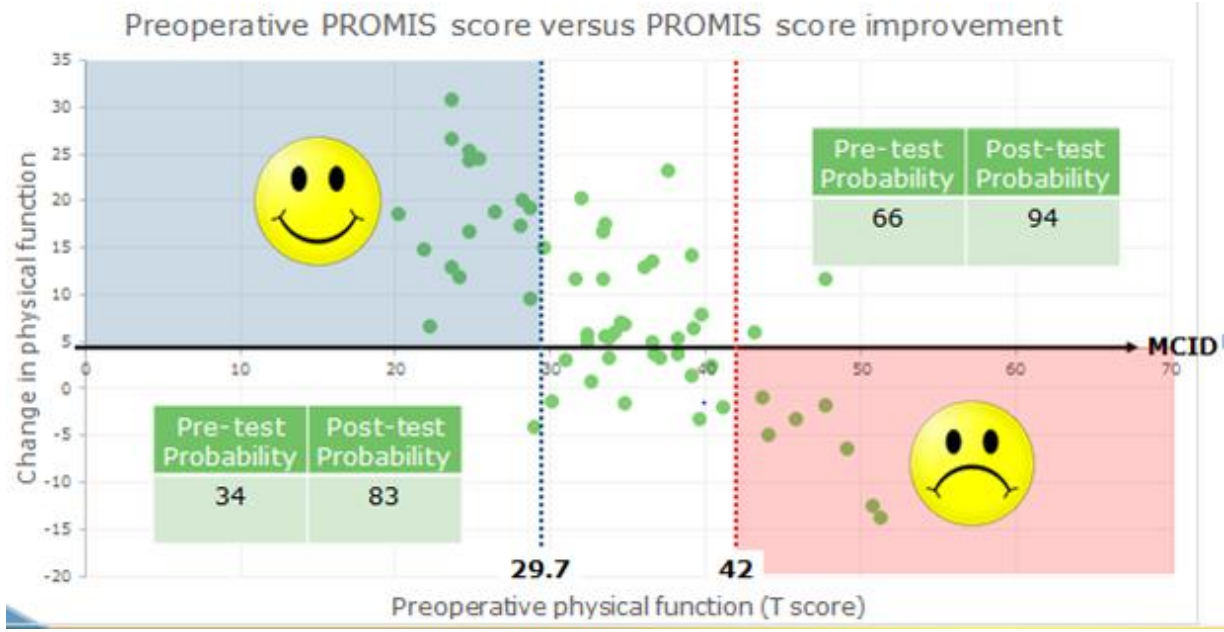
- **Patient Reported Outcomes (PROs)**
  - **Expanded beyond Research to Clinical Care**
  - **Process of obtaining the PRO has been replicated in many institutions**
    - Efficient mechanism for collecting, visualizing, and sharing PROs with Patients
  - **Widespread adoption has been challenging**
    - Translating the PRO (PROMIS) data into a clinically meaningful interpretation that can be used to improve the quality of care provided to our patients



Introduction

In 2016, our UR group determined pre-operative threshold for PROMIS Scores that could be used to determine the success or failure (MCID) of foot/ankle surgery with 83-94% probability

Ho et al. FAI 2016



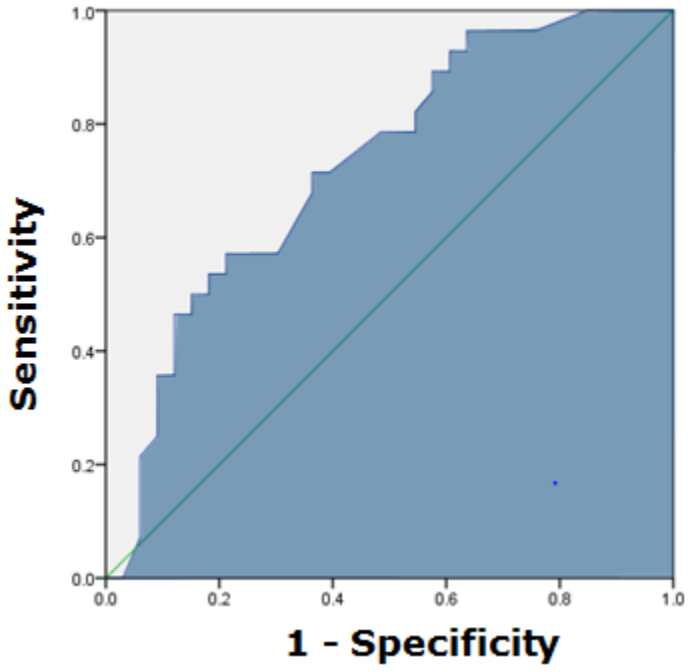
Purpose: Determine the generalizability and validity of previously published PROMIS threshold scores applied to an independent orthopaedic foot and ankle practice (University of Utah)

Methods

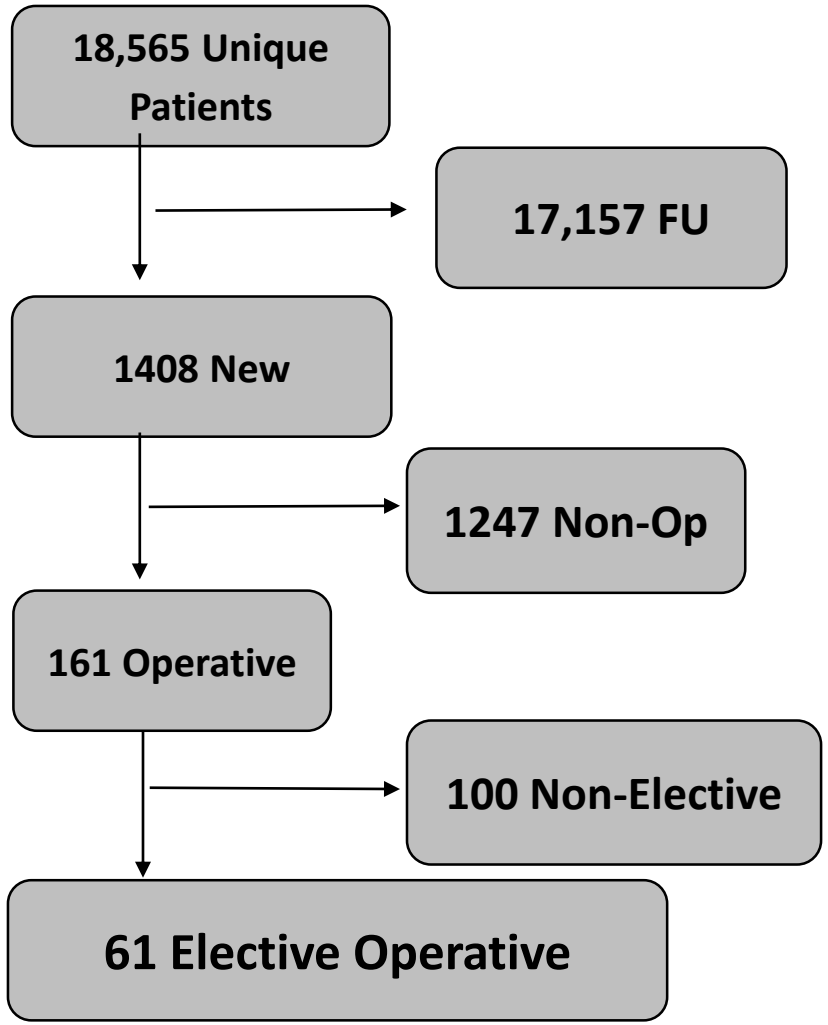
- Prospective data from consecutive F/A patients
  - Univ. of Utah Multi-surgeon Foot/Ankle Elective Practice
  - Jan 2014-Nov 2016
  - PROMIS PF and PI
    - Preoperative and minimum 6 month surgical follow up scores
  - Exclusions
    - Non-operative patients
    - Follow up patients
    - Patients without complete data sets
    - Non-Elective Surgery (Trauma, Infection, Amputations etc.)

Methods

- Statistical Analysis
  - ANOVA assessed pre/post surgery differences in PROMIS PF and PI
    - Covariates of age and gender
  - The distributive method (1/2 SD) to estimate min. clinical important difference (MCID)
  - Receiver operator curve (ROC) analysis and AUC was used to determine threshold values for achieving and failing to achieve MCID
  - Chi-square analysis
    - Compared the Utah threshold values with the previously published values
    - Assessed the % of patients achieving and failing to achieve MCID based on previous Threshold Values



Results



- 61 patients met inclusion
  - Similar age, gender to published demographics
- ANOVA Sig. Improvement over time
  - PF (6.0+/-SD 11.6)
  - PI (7.0 +/- SD 8.4)
- ROC Analysis and AUC
  - Significant PF - .77
  - Not significant for PI

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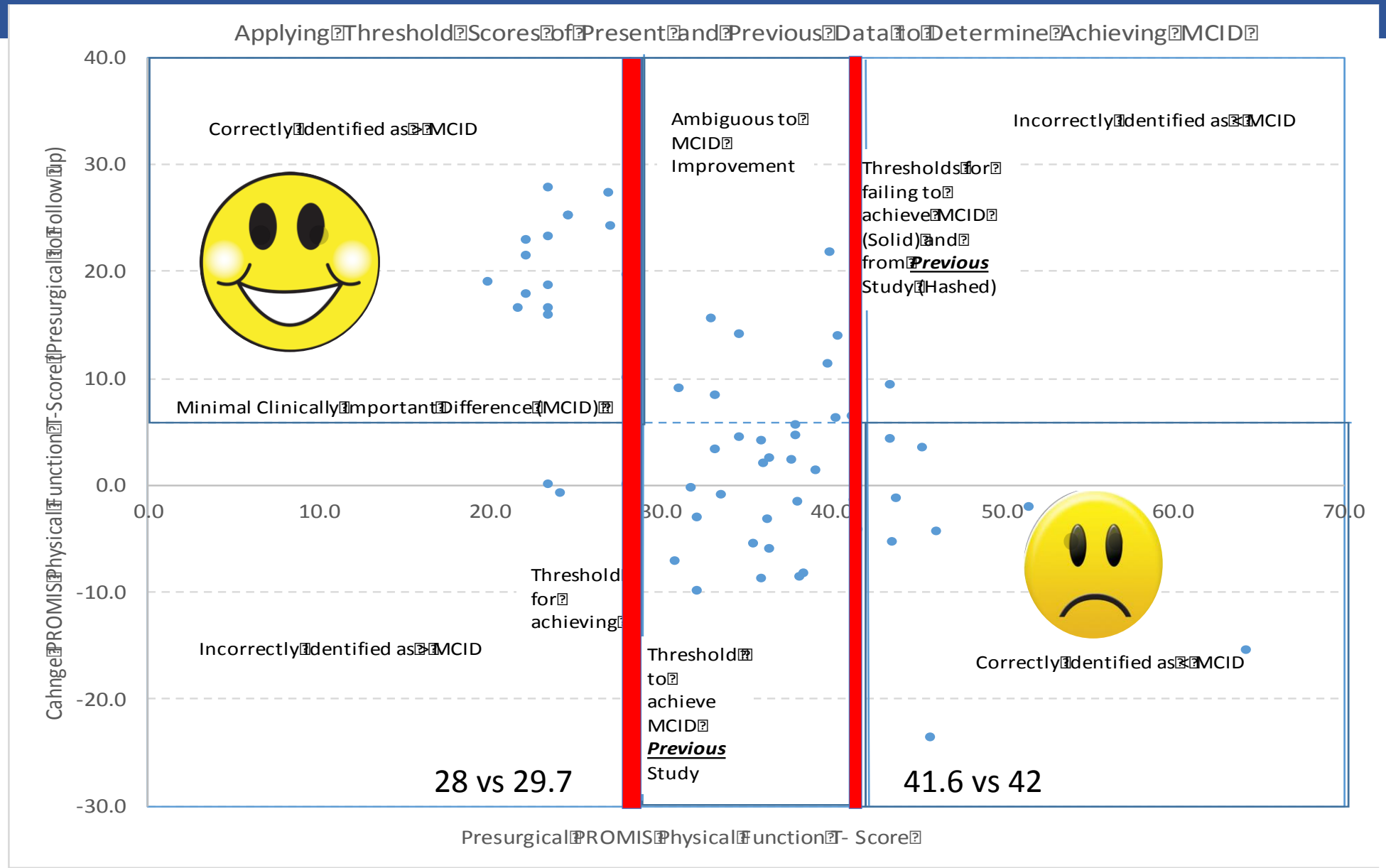

Results

	Likelihood Ratio (95% CI)	Pre-test probability (%)	Post-test Probability (%)	Change from pre-test probability (%)
Achieving an MCID	8.8 (2.2 to 35.5)	44.3	87.5	43.2
NOT Achieving an MCID	7.2 (1.0 to 53.0)	55.7	90.0	34.3

Chi square analysis of proportions using thresholds from Ho et al, 2017.

		Failed to Achieve MCID	Achieved MCID	Chi-Square	P-value
Baseline					
Physical Function					
Failed to Achieve MCID	>42.0	16 (26.2%)	3 (4.9%)		
Ambiguous Range	29.7 to 42	10 (16.4%)	23 (37.7%)		
Achieved MCID	<29.7	1 (1.6%)	8 (13.1%)	18.9	<0.001

31.1 %
1,375 patients
2016

Limitations

- Improvements in accuracy and precision could be made with:
  - Repeating methods with individual diagnoses
  - Increased sample size
  - Longer follow up (current study mean 7 months)
  - Greater capture of follow up of all patients (potential bias on those needing treatment)

Conclusions

- Previously published preop PROMIS PF threshold scores were found to be **generalizable**:
  - Different geographic area, wide array of F/A diagnoses and surgeries
- Previously published preop PROMIS PF threshold scores were found to be **valid**:
  - Nearly identical for patients **failing to meet** MCID (t-score 41-42)
    - If a patient's goal is to improve function and has a score above 41 preop, rethink if surgery will benefit this patient (probability 89-90%)
  - Similar for patients **meeting MCID** (t-score 28-30)
    - If a patient's goal is to improve function and has a score below 28 (or 30) the probability that the patient will benefit from the surgery is 84-88%

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Questions