

### Brief Pain Inventory – Facial: Calculation of the Minimal Clinically Important Difference in Trigeminal Neuralgia

Casey H. Halpern MD; Sukhmeet Sandhu BA; Venus BS Vakhshori; Keyvan Mirsaeedi-Farahani BS; Marie Kerr CCRP; John Y.K. Lee MD

University of Pennsylvania, Philadelphia, PA



#### Introduction

Due to the nature of pain disorders, it is important to use a patient-reported outcome tool to evaluate the change in a patient's clinical status. The Brief Pain Inventory (BPI)-Facial is a reliable tool for measuring pain in patients with trigeminal neuralgia (TN). While the BPI-Facial does measure change in pain and level of interference, a statistically significant change in score does not necessarily represent a meaningful difference to patients. The minimal clinically important difference (MCID) is the threshold value that patients would characterize as a meaningful clinical change. The goal of this study is to find the MCID for patients with TN.

### **Patient Global Impression** of Change (PGIC)

- 1- Very much improved
- 2- Much improved
- 3- Minimally improved
- 4- No change
- 5- Minimally worse
- 6- Much worse
- 7- Very much worse



### Results

• Single center, single surgeon cohort analysis of facial pain patients seen between 2006-2011.

Methods

- BPI-Facial was administered at initial visit and via followup phone call (mean followup period is 3.9 years). The patient global impression of change (PGIC) was used as a gold standard, external criterion.
- Three methods were used to calculate the MCID: 1) mean change score, 2) standard error of measurement (SEM), and 3) optimal cutoff point.
- 144 interviews have been conducted. 95 patients underwent at least one procedure

Summary of MCID values						
Method	NRS-average	NRS-worse	BPI	BPI-Facial		
Mean change	3.52	4.77	3.48	4.05		
SEM method	1.124	1.64	1.24	1.53		
Optimal cut-off	2.75	3	3.24	4.0		

Refer to the table below, Summary of MCID values. There was concordance among the MCID values determined by the mean change score and optimal cut-off point method, suggesting validity of those values. The SEM method appeared to underestimate the MCID in all groups.

The majority of patients (55%) were "very much improved." Moreover, 84% of these patients rated themselves as being 100% better.



PGIC score versus the mean change on the NRS-average, NRS-worst, BPI-general interference, and BPI-facial interference. The MCID was determined by PGIC group 2 (much improved) subjects

## method 95% CI MCID SEM

Standard error of the mean

NR3-				
average				
PGIC 1, 2	4.54			
PGIC 3, 4, 5	1.88	0.41	1.08-2.69	1.12*
PGIC 6, 7	-1.25			
VRS-worst				
PGIC 1, 2	6.51			
PGIC 3, 4, 5	2.33	0.59	1.16-3.49	1.24*
PGIC 6, 7	-1.83			
BPI				
PGIC 1, 2	4.79			
PGIC 3, 4, 5	2.21	0.45	1.33-3.09	1.53*
PGIC 6, 7	0.76			
BPI-Facial				
PGIC 1, 2	5.75			
PGIC 3, 4, 5	2.30	0.5*	1.21-3.40	1.64*
PGIC 6 7	-3.14			

Patients categorized as unchanged (groups 3, 4, and 5 on the PGIC) determined the MCID for this method.

# **Optimal Cut-off point method**



Receiver operating characteristic curves for subjects categorized as "better" (groups 1 and 2 on the PGIC). The "better" group determined the MCID values for this method.

### Conclusions

A critical step in validating an outcome tool like the BPI-Facial is calculating the MCID. We have calculated the MCID using three methods and conclude that two of the methods are best suited for TN, mean change score and optimal cut-off point. Future steps will involve prediction of benefit stratified by procedure type, facial pain classification, and other predictor variables. We encourage practitioners who see patients with TN to measure pain before and after treatment using the BPI-Facial.

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