

# Determining the Minimal Clinically Important Difference for Health Related Quality of Life Scores from the EORTC QLQ-C30 in Lung Cancer Patients: A Meta-Analysis of Pooled Data

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## Background

Patient assessment of Health Related Quality of Life (HRQOL) in cancer clinical trials has increased over the years. However, understanding the clinical meaning of HRQOL scores remains difficult. The objective of this study is to determine changes in HRQOL scores which correspond to the minimal clinically important difference (MCID).

## Methods

Two closed European Organization for Research and Treatment of Cancer (EORTC) randomized controlled trials enrolling in total 812 cancer patients with advanced NSCLC are analyzed. WHO performance status (PS) is chosen as a clinical anchor for 6 HRQOL scales of the QLQ-C30 questionnaire; physical (PF), social (SF) and role (RF) functioning, global health status (GH), fatigue (FA) and pain (PA). Estimates of the MCID for the scales are calculated using a combination of an anchor and distribution-based approach. Changes in clinical anchor are categorized into 3 groups; improvement, no change and deterioration. Analysis of variance is used to compare HRQOL scores between groups. The differences in the HRQOL mean of score changes between adjacent groups and effect size (difference divided by standard deviation at baseline) are calculated. Adjacent group differences corresponding to an effect size of at least 0.20 are considered for estimating the MCID.

## Results

Patients who have both HRQOL and PS scores on at least 2 time points are considered, and the 2 furthest time points used for analysis. Significant differences ( $p < 0.05$ ) in HRQOL across groups are noted for all 6 scales. The number of patients (n) used for analysis and the p-values are; PF (n=477,  $p < 0.001$ ), SF (n=483,  $p = 0.005$ ), RF (n=482,  $p < 0.001$ ), GH (n=480,  $p < 0.001$ ), FA (n=485,  $p < 0.001$ ) and PA (n=485,  $p = 0.002$ ). The ranges of adjacent group differences and effect sizes ( $> 0.20$ ) are; PF (6.1-9.9; 0.25-0.41), SF (7.7; 0.27), RF (10.9-12.3; 0.31-0.35), GH (10.2; 0.46), FA (5.9-15.7; 0.22-0.60) and PA (14.8; 0.47). These results suggest the following estimates of the MCID; PF: 6, SF: 8, RF: 11, GH: 10, FA: 6 and PA: 15.

## Conclusions

Our results suggest that for the functioning scales, global health status and fatigue, a change in score of 6 to 11 can be taken as the MCID. For pain, a relatively higher score of 15 estimates the MCID. These numbers can be used to classify patients by changes in HRQOL and symptoms over time as well as to aid sample size determination for future studies. Further validation would be required on additional data sets to confirm our findings.