

Title: Interpreting Within-Patient Changes on the EORTC QLQ-C30 and EORTC QLQ-LC13

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Online Resource 8. Proposed thresholds for interpreting meaningful improvement and deterioration on EORTC domain scores, including key sources used for each threshold and the minimum score step for each domain

- **QLQ-C30 Role Functioning:** For improvement, the ECDF and classification statistics estimates were both +16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for improvement was +16.67. For deterioration, the ECDF estimate was not viable, but classification statistics provided an estimate of -16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for deterioration was -16.67.
- **QLQ-C30 Emotional Functioning:** For improvement, the ECDF estimate was +25 and the classification statistics estimate was +16.67. However, the sensitivity and specificity diverged at +25, making it an undesirable location. The target anchor group was distinct from the 1-category improved group at +16.67 on the ECDF, and that value exceeded the SEM and the minimum score step. Thus, the proposed threshold for improvement was +16.67. For deterioration, the ECDF estimate was uninterpretable, but classification statistics provided an estimate of -16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for deterioration was -16.67.
- **QLQ-C30 Cognitive Functioning:** For improvement, the ECDF and classification statistics estimates were both +16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for improvement was +16.67. For deterioration, the ECDF estimate was not interpretable, but classification statistics provided an estimate of -16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for deterioration was -16.67.
- **QLQ-C30 Social Functioning:** For improvement, the ECDF and classification statistics estimates were both +16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for improvement was +16.67. For deterioration, the ECDF estimate was not interpretable, but classification statistics provided an estimate of -16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for deterioration was -16.67.
- **QLQ-C30 Fatigue:** For improvement, the ECDF estimate was not interpretable, but classification statistics provided an estimate of -11.11, which exceeded the minimum score step but is less than the SEM of 11.61. Thus, the proposed threshold for improvement increased by one score step to -22.22. For deterioration, the ECDF estimate was +33.33 and the classification statistics estimate was +11.11. However, the sensitivity and specificity diverged at +33.33, making it an undesirable location. The SEM was 11.61, so a value of +11.11 was too low to be reliably measured by the scale. Thus, the proposed threshold for deterioration was the next step up from the SEM at +22.22.
- **QLQ-C30 Nausea and Vomiting:** For improvement, the ECDF estimate was not interpretable, but classification statistics provided an estimate of -16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for improvement was -16.67. For deterioration, the ECDF and classification statistics estimates were both +16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for deterioration was +16.67.
- **QLQ-C30 Pain:** For improvement, the ECDF estimate was not interpretable, but classification statistics provided an estimate of -16.67, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for improvement was -16.67. For deterioration, the ECDF estimate was +33.33 and the classification statistics estimate was +16.67. However, the sensitivity and specificity diverged at +33.33, making it an undesirable location. The target anchor group was distinct from the 1-category worsened group at +16.67 on the ECDF, and that value exceeded the SEM and the minimum score step. Thus, the proposed threshold for deterioration was +16.67.
- **QLQ-C30 Dyspnea:** For improvement, the ECDF estimate was not interpretable, but classification statistics provided an estimate of -33.33, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for improvement was -33.33. For deterioration, the ECDF and classification statistics estimates were both +33.33, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for deterioration was +33.33.

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statistics estimates were both +33.33, which exceeded the SEM and the minimum score step. Thus, the proposed threshold for deterioration was +33.33.

EORTC Domain Score	Number of Items	Minimum Score Step	Proposed Improvement Threshold	Proposed Deterioration Threshold
EORTC QLQ-C30				
Role Functioning	2	16.67	+16.67 (ECDF and classification statistics)	-16.67 (classification statistics)
Emotional Functioning	4	8.33	+16.67 (classification statistics)	-16.67 (classification statistics)
Cognitive Functioning	2	16.67	+16.67 (ECDF and classification statistics)	-16.67 (classification statistics)
Social Functioning	2	16.67	+16.67 (ECDF and classification statistics)	-16.67 (classification statistics)
Fatigue	3	11.11	-22.22 (SEM)	+22.22 (SEM)
Nausea and Vomiting	2	16.67	-16.67 (classification statistics)	+16.67 (ECDF and classification statistics)
Pain	2	16.67	-16.67 (classification statistics)	+16.67 (classification statistics)
Dyspnea	1	33.33	-33.33 (classification statistics)	+33.33 (ECDF and classification statistics)
Insomnia	1	33.33	-33.33 (classification statistics)	+33.33 (ECDF and classification statistics)
Appetite Loss	1	33.33	-33.33 (classification statistics)	+33.33 (ECDF and classification statistics)
Constipation	1	33.33	-33.33 (classification statistics)	+33.33 (ECDF and classification statistics)
Diarrhea	1	33.33	-33.33 (classification statistics)	+33.33 (ECDF and classification statistics)
EORTC QLQ-LC13				
Hemoptysis	1	33.33	-33.33 (SEM)	+33.33 (ECDF and classification statistics)
Sore Mouth	1	33.33	-33.33 (classification statistics)	+33.33 (ECDF)
Dysphagia	1	33.33	-33.33 (SEM)	+33.33 (ECDF and classification statistics)
Peripheral Neuropathy	1	33.33	-33.33 (SEM)	+33.33 (ECDF and classification statistics)
Alopecia	1	33.33	-33.33 (SEM)	+33.33 (ECDF and classification statistics)
Pain in Arm or Shoulder	1	33.33	-33.33 (classification statistics)	+33.33 (ECDF and classification statistics)
Pain in Other Parts	1	33.33	-33.33 (classification statistics)	+33.33 (ECDF and classification statistics)
Take Any Medication for Pain	1	33.33	-33.33 (classification statistics)	+33.33 (ECDF and classification statistics)