

## Research Corner

# Outcomes in Cardiopulmonary Physical Therapy: Chronic Respiratory Disease Questionnaire (CRQ)

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### INTRODUCTION

In today's medical system, limited resources are available for patient care. For this reason, it is important to evaluate the outcomes of various interventions to ensure that patients are receiving the most efficient and best available care. Recently, clinicians and payers are recognizing that physiological measures do not necessarily relate to function, and functional outcomes need to be measured independently.<sup>1-3</sup> Measuring health related quality of life (HRQL) is one method of evaluating functional outcomes. HRQL is commonly assessed through self or interviewer administered questionnaires, and may be discriminative (evaluating cross-sectional differences between patients at a single point in time) or evaluative (measuring longitudinal changes within patients over a period of time).<sup>1</sup> For a HRQL instrument to be effective and useful it must be valid, reliable, responsive, and interpretable.<sup>4</sup> In general, disease specific measures of HRQL are more responsive than generic tools and may have more face validity to both the patient and clinician.<sup>1,5</sup>

The Chronic Respiratory Disease Questionnaire (CRQ) is the most commonly used disease specific measurement tool to assess HRQL in patients with chronic respiratory disease.<sup>5</sup> The developers suggest that this tool be used to evaluate the effects of treatment in clinical trials as well as in clinical practice.<sup>2</sup> As it is so widely used, it is important to understand the psychometric properties of this tool in order to truly understand its effectiveness and practical application. This paper describes the current research regarding the reliability, validity, responsiveness, minimally clinical important difference, and suggested use of the Chronic Respiratory Disease Questionnaire in clinical practice.

### DEVELOPMENT OF THE CRQ

The original version of the CRQ was developed in 1987 by Guyatt et al<sup>2</sup> and followed Kirshner and Guyatt's 7 principles of questionnaire development.<sup>6</sup> Items believed to be important to patients with chronic respiratory disease were selected through a process that included reviewing the current literature, consulting with clinical respiratory special-

ists, and interviewing patients.<sup>2</sup> Subsequent item-selection-questionnaires and patient interviews were completed. Based on these interviews, items were rated on their importance and grouped into 1 of 4 categories: dyspnea, fatigue, emotional function, and mastery, or a feeling of control over the disease. Items within the dyspnea domain varied extensively, so the developers of the tool individualized this section, requesting patients to determine the 5 most important activities in their life that are affected by dyspnea. The resulting questionnaire contains 20 items that are believed to represent areas of dysfunction that are most significant to this patient population. All questions were pretested to finalize structure and wording. Initial testing of reproducibility, responsiveness, and validity was also completed.

Subsequent versions of the test have been developed to improve time and ease of administration. All subsequent versions were developed in coordination with the original author,<sup>7,8</sup> and psychometric properties were evaluated and compared to the original CRQ. According to the office of the developer (written communication, October, 2007) there are currently 4 different formats of the CRQ available for clinical use: the original interviewer administered CRQ, an interviewer administered CRQ with a standardized dyspnea domain (CRQ-IAS), a self-administered CRQ with a standardized dyspnea domain (CRQ-SAS), and the self-administered CRQ with an individualized dyspnea domain (CRQ-SAI). The use of any format of the CRQ does require a license agreement.

### INTENDED POPULATION

The CRQ was developed to assess quality of life in patients with chronic respiratory disease, including COPD of longer than 3 months and other disease processes that lead to chronic airflow limitations.<sup>2</sup> Airflow limitation is defined as FEV<sub>1</sub> less than 80% of predicted value and FVC less than 70% of predicted value,<sup>9</sup> though typical patients measured with this tool tend to have FEV<sub>1</sub> between 40% and 65% of predicted value and FEV<sub>1</sub>/FVC ratios less than 60% of predicted value.<sup>3,10</sup> The age of the targeted patient population varies, but typically patients with chronic respiratory disease are older. In studies of the CRQ, mean patient age has typically been reported around 67 years;<sup>3,11,12</sup> however, patients as young as 35 have been studied.<sup>13</sup> The patient population targeted by this test typically experiences pulmonary symptoms, such as shortness of breath (SOB) and fatigue, with mild physical activity.<sup>3</sup>

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## TEST ADMINISTRATION

The CRQ is valuable as a HRQL tool because it incorporates patient perceptions of both physical and emotional health.<sup>2</sup> Four aspects of HRQL are evaluated: dyspnea, fatigue, emotional function, and mastery. Each domain includes 4 to 7 items, with each item graded on 7-point Likert scale; item scores within a domain are summated to provide a total score for each domain.<sup>2,14,15</sup> Higher scores indicate better HRQL. The 4 domains are scored separately and can illustrate changes in individual domains of HRQL.<sup>16</sup> The developers do not recommend using a full test score as a means of comparison.

The original interviewer administered CRQ requires 20 to 25 minutes for the first administration and 10 to 15 minutes for each follow up visit.<sup>2,17</sup> The time required for administration is thought to be a major disadvantage to the CRQ.<sup>7</sup> In the individualized dyspnea domain, the interviewer guides the patient to elicit the 5 most important activities during which they have experienced SOB in the past 2 weeks. The patient is prompted with a list of 25 common activities such as "taking care of your basic needs (bathing, showering, eating, or dressing)" if they cannot identify 5 on their own.<sup>2</sup> The remaining 3 domains are all standardized. According to the office of the developer, (written communication, October, 2007) using the CRQ-IAS, in which the dyspnea section is also standardized, reduces the administration time to 8 minutes.

The self administered CRQ is a written version of the tool that the patient completes independently; the wording, content, structure and scoring are exactly consistent with the original version.<sup>7,8</sup> The office of the developer reported that the self administered CRQ significantly decreased the time taken to complete the questionnaire (written communication, October, 2007). Furthermore, with a standardized dyspnea scale, the time to complete the questionnaire ranged from 5 to 8 minutes.<sup>7</sup>

## RELIABILITY

In order for a test to be useful in the clinic, the instrument must be consistent in its measurements. Reliability, or reproducibility, can be determined in 3 ways: intra-rater, inter-rater, and test-retest.<sup>18</sup> The evidence has generally shown the CRQ to be a reliable and reproducible tool for measuring HRQL; however, only test-retest reliability has been addressed; intra-rater and inter-rater reliability were not discussed in the available literature.

Test-retest reliability of the CRQ has been found to be high. Guyatt et al<sup>2</sup> the authors of the CRQ, established the test-retest reliability of the tool prior to its release. They administered the questionnaire 6 times in a 2-week interval to 25 patients with stable COPD. They found that mean scores were similar in all 4 domains over all administrations, and there did not appear to be a tendency for either improvement or decline. The coefficients of variation were reported as 6% for the dyspnea domain, 9% for fatigue and emotional function domains, and 12% for mastery domain. From these results, the researchers concluded that the CRQ has excellent reliability. Martin<sup>11</sup> found high test-retest reliability for only 3 of the 4 domains of the CRQ. Pearson

correlation coefficients were used to determine consistency over time of both individual item scores and domain total scores. High reliability was found for the domains of dyspnea, mastery, and emotional functioning with scores as follows: dyspnea ( $r = 0.90$ ); emotional function ( $r = 0.84$ ); and mastery ( $r = 0.68$ ). The fatigue domain was not found to be reliable and had an insignificant correlation ( $r = 0.20$ ). Individual item scores were examined using the Kendall tau correlation coefficient. In the dyspnea and mastery domains, only one item was found to lack significant correlation over time. In the emotional function domain, 2 of the 7 items were found to lack significant correlation. In the fatigue domain, which was not reliable as a whole, 3 of the 4 individual items showed insignificant correlation. Harper et al<sup>13</sup> also examined CRQ measurements in clinically stable patients over time. He found no evidence of bias in either the initial 6 month period or a second 6 month period. Lower correlation scores were noted in the second 6 month period; however, they were not significant enough to indicate that bias existed between assessments. Wijkstra et al<sup>10</sup> used the Spearman-Brown reliability coefficient ( $\rho$ ) to determine test-retest reliability with  $\rho > 0.7$  considered reliable. The researchers found that the domains of fatigue, mastery, and emotional function produced high test-retest reliability scores, ranging from  $\rho = 0.90-0.93$ ; whereas, the dyspnea domain produced a moderate test-retest reliability score of  $\rho = 0.73$ .

Many studies reported internal consistency of the questionnaire to be high over all domains<sup>3,9,13,19</sup> with Cronbach's alpha coefficients ranging from 0.64 to 0.94. Wijkstra et al<sup>10</sup> found that the internal consistency of the dyspnea domain to be much lower than the other 3. Internal consistency was determined using Cronbach's  $\alpha$  with a significance level set at  $\alpha = 0.7$ . Scores were reported as ranging from  $\alpha = 0.71$  to  $\alpha = 0.88$  over 2 administrations for the fatigue, emotion, and mastery domains. The internal consistency of the dyspnea domain was reported as  $\alpha = 0.51$  and  $\alpha = 0.53$  for the first and second administrations, respectively, indicating a low internal consistency most likely due to the individualized aspect of this domain. Harper et al<sup>13</sup> directly contradicted this finding by reporting that "the internal consistency of the dyspnea domain was as high as that of the other domains of the CRQ."<sup>13</sup>

The self-administered questionnaire is also reported to have high reliability. Williams et al<sup>7</sup> examined both the short term and long term test-retest reliability of the self-reported version and found that there was no statistically significant and/or clinically important difference in either the short or long term reliability between the two administrations of the questionnaire in any of the 4 domains. ICCs of short term reliability ranged from 0.83-0.95 and ICCs of 0.83 – 0.90 were reported for long term test-retest reliability.<sup>7</sup>

Available literature has repeatedly illustrated the ability of the CRQ to generate results that are reproducible in a variety of settings. This degree of test-retest reliability has been shown for both the individualized and standardized forms of the CRQ. The limited availability of literature regarding intra-rater and inter-rater reliability indicates the need for further research in these areas.

## VALIDITY

In order for a questionnaire to be considered practical, it must assess what it claims to measure. The evidence has shown that the CRQ is a valid tool to assess health related quality of life in patients with chronic respiratory disease. There is currently no gold standard for determining HRQL,<sup>20</sup> so the validity of the CRQ has been assessed primarily through construct and convergent validity. Construct validity refers to an instrument's ability to measure the constructs, or abstract concepts, that it intends to measure.<sup>18</sup> Construct validity is supported when convergent validity is present, ie, when significantly correlated results are obtained by instruments that are believed to measure the same underlying constructs. Construct validity was maximized during the original development of the questionnaire by using a multistep process to determine and incorporate the significant aspects of HRQL that are affected by pulmonary disease.<sup>2</sup> It was determined that the constructs of dyspnea, emotion, mastery, and fatigue encompassed the key aspects of HRQL in this population.<sup>2</sup>

To determine convergent validity, the CRQ was compared with various other tools that measure HRQL. In comparison with global ratings of change, the CRQ was found to have moderate to high correlations<sup>2</sup> which were significantly stronger than those of generic health measures. Guyatt et al<sup>21</sup> determined that the CRQ dyspnea domain had a correlation of 0.61 with the global rating of dyspnea, while the fatigue domain had a correlation of 0.53 with the global rating of emotions. Both the mastery and emotional domains were found to be moderately correlated with the global rating of dyspnea with *r* values of 0.57 and 0.46 respectively. Guyatt et al<sup>2</sup> reported that each of the CRQ domains was more closely correlated to the Transitional Dyspnea Index (TDI) than any other HRQL instrument that was studied. Functional measures were also well correlated with CRQ change scores. Singh et al<sup>5</sup> reported improvements in the treadmill endurance test were correlated to improvements in the CRQ total score and improvements in the domain scores of dyspnea, fatigue, and mastery. Fatigue domain scores also improved as shuttle walk test scores improved. Six minute walk test scores, however, were found to be only weakly correlated with all domains of the CRQ.<sup>21</sup>

Many studies have examined the correlation between CRQ scores and the physiologic factors believed to contribute to dysfunction in patients with pulmonary disease. The majority of physiologic factors, including FVC, FEV<sub>1</sub>, FEV<sub>1</sub>/FVC and pack years, were found to have weak or no correlation with CRQ scores;<sup>9,19,22</sup> however, Hajiro et al<sup>19</sup> found the dyspnea domain to be significantly correlated with FVC (*r*=0.25) and Shawn et al<sup>14</sup> found moderate correlation with FEV<sub>1</sub>. Guyatt<sup>20</sup> completed a study focusing solely on the dyspnea domain and found a stronger correlation with "spirometry, walk test scores, dyspnea following the walk test, and global ratings of dyspnea than either the oxygen cost diagram or the medical research council dyspnea questionnaire." The author concluded that these results suggest the CRQ is more valid than other instruments in assessing the extent of dyspnea during activities

of daily life. With the domains of emotion and mastery, the CRQ places a strong emphasis on psychologic status as a component of HRQL. Hajiro et al<sup>9</sup> examined this construct and found that anxiety has a higher coefficient of determination in the CRQ than in other measures (CRQ  $R^2=0.22$ , SGRQ  $R^2 = 0.13$ ).

The most common HRQL tool studied against the CRQ was the St. George's Respiratory Questionnaire (SGRQ). Many studies found strong correlations between the change in scores of the CRQ and the SGRQ. Correlations of 0.72, 0.74, -0.63, and 0.88 have been reported.<sup>3,9,19,23</sup> Hajiro et al<sup>9</sup> also found strong correlations between the CRQ and the Breathing Problems Questionnaire (BPQ) (*r*=0.75). The CRQ also correlates well with generic measures. Wijkstra<sup>10</sup> determined that significant correlations exist between the CRQ fatigue domain and the depression and somatisation domain of the Symptom Checklist 90 (SCL-90). Other domains of the CRQ including emotion and mastery significantly correlated with somatisation, anxiety, and depression domains of the SCL-90. Tsukino et al<sup>22</sup> found the CRQ to be significantly correlated with the Nottingham Health Profile (NHP) with correlations ranging from 0.42 to 0.67. However, correlations between the CRQ and other specific measures of pulmonary disease were found to be significantly higher than correlations with generic measures.<sup>21</sup>

With the development of the self-administered CRQ, validity of the newer instrument was established by comparing it to the gold standard of the original version. Validity was determined to be strong; no statistically significant difference between the 2 instruments was found in the fatigue and mastery domains, and the small mean differences found in the dyspnea (0.36, *p*=.006) and emotional domains (0.22, *p*=0.04) were clinically insignificant. Although the authors determined that the self-administered version of the CRQ perceives analogous levels of mastery, emotional function, and fatigue, they state that the different versions of the test should not be used interchangeably.<sup>7</sup> The self-administered version of the test was also compared to the SGRQ and generic measures of health status in a study by Schunemann et al,<sup>8</sup> and moderate to high correlations were found both cross-sectionally and longitudinally with change scores.

The validity of the CRQ is strengthened by the study performed by Shawn et al<sup>14</sup> which found statistically significant differences in CRQ scores between patients who had a relapse of their pulmonary condition and those who did not. Further, Harper et al<sup>13</sup> reported that CRQ scores remained stable over time in clinically stable patients while CRQ scores improved in patients who were expected to have clinical improvements. There was good agreement between the predicted and actual correlations in both these cases. In a study by Redelmeier et al,<sup>24</sup> CRQ score differences were also found to be moderately correlated with subjective comparison ratings made by patients regarding themselves and others.

The evidence has shown the CRQ to be a valid test of HRQL, with moderate to strong correlations with global ratings as well as both generic and disease specific convergent measures. The CRQ scores also follow predicted

tracts and correlate well with clinical status. The fact that correlations with physiologic measures are not strong suggests that HRQL instruments such as the CRQ may provide additional information that should be used alongside physiologic tests in determining the health status of a patient.

## RESPONSIVENESS

Another important characteristic of an assessment tool is its ability to detect change. Knowledge of an outcome measure's sensitivity to change is crucial. When less responsive tools are used, it is likely that the treatment effects can be underestimated. The CRQ has been consistently shown to be one of the most responsive tools in measuring pulmonary HRQL and is able to detect small changes in HRQL reported by patients.<sup>15</sup> The high sensitivity of the CRQ is attributed to the ability to assess impairments outside pulmonary symptoms.<sup>23</sup> In the initial psychometric evaluation of the CRQ, Guyatt et al<sup>2</sup> performed 2 separate responsiveness studies to ensure the tool's sensitivity. In both studies, the CRQ was used to evaluate patients who were predicted to improve with initiation or modification of treatment. In the first assessment, the tool was administered to 13 patients all diagnosed with chronic lung disease and the patients were then reassessed 2 to 6 weeks later after treatment had been initiated. The developers found that the CRQ scores at the follow-up assessment were, to a large extent, better than at the initial distribution of the questionnaire, even though spirometry values were only slightly improved. This indicates that the CRQ was able to detect the change in patient condition that occurred with treatment. In the second responsiveness assessment, the developers administered the CRQ in conjunction with other questionnaires. Twenty-eight patients with chronic lung disease received initial and follow-up questionnaires 2 weeks later after treatment had been initiated. Again, considerable improvements in the scores were seen in all domains of the original version. Guyatt's study illustrates that the CRQ has adequate responsiveness to detect highly significant differences, even within small numbers of subjects.

Many studies have compared the responsiveness of the CRQ to that of other measures of HRQL. Consistently, the CRQ has been shown to be more responsive than other measures. Guyatt et al<sup>2</sup> found that the CRQ has similar responsiveness to the Transitional Dyspnea Index and superior responsiveness to the Rand dyspnea questionnaire, the oxygen cost diagram, and the Rand physical and emotional function questionnaires. When compared to other tests, such as the Nottingham Health Profile (NHP)<sup>22</sup> and the St. George's Respiratory Questionnaire (SGRQ),<sup>9,23,25</sup> the CRQ was found to be more sensitive in detecting change. In fact, Guyatt et al<sup>20</sup> demonstrated that the dyspnea domain of the CRQ was the only HRQL instrument that showed statistically significant responsiveness when tested over 2 known interventions in reducing dyspnea in day-to-day activities. Rutten-van Molken et al<sup>13</sup> found that both the SGRQ and the CRQ were statistically significant in detecting changes within subjects; however, the CRQ was able to detect changes in the health status

of the patient that the SGRQ could not pick up. The total domain and the emotion domain scores were determined to be the most responsive to these changes. Puhan et al<sup>12</sup> used standardized response means (SRMs) to assess the responsiveness of the CRQ opposed to the t-test because it is independent of sample size. In comparison to the other domains, the dyspnea domain had larger SRMs indicating that this individual dyspnea domain was more responsive than the other domains, and the standardized dyspnea domain was determined to be more responsive than the preference-based and generic tools that were also assessed in the study.

The CRQ was also evaluated to determine if it could detect short-term changes in dyspnea following an acute exacerbation of COPD. Aaron et al<sup>14</sup> used the responsiveness statistic to assess the sensitivity. If the score is > 1.5, a tool is considered highly responsive.<sup>14</sup> Analysis of the data revealed the following results: 2.2 for dyspnea, 4.1 for fatigue, 2.5 for emotion, and 4.2 for mastery. From these results, the researchers concluded that the CRQ was responsive across all domains for detecting short-term changes.

The self-administered CRQ is shown to have more sensitivity when compared to the interviewer-administered CRQ, most likely due to lower baseline scores for the CRQ-SR. These lower baseline scores and greater sensitivity of the self-report questionnaire can be attributed to the fact that patients are more likely to report the severity of the impairment when asked to fill out the questionnaire in private, as opposed to being asked by the interviewer. Williams et al<sup>26</sup> used standardized response means to assess the sensitivity and also found the CRQ-SR to be highly sensitive across all domains of the questionnaire indicating that it is able to detect changes following a treatment program. Schunemann et al<sup>8</sup> performed a similar procedure using a t-test to determine the responsiveness of the CRQ-SR by comparing it to the CRQ-IL. They also found that the baseline scores for the self-reported test were significantly lower across all domains than for the interviewer-administered questionnaire. Following treatment, CRQ-SA change scores tended to be larger than CRQ-IA scores, however, these differences were not found to be statistically significant.

## MINIMALLY CLINICALLY IMPORTANT DIFFERENCE

In the clinic, it is not only necessary to measure outcomes of treatment regarding the intervention process, but it is also essential to measure the extent to which the patient feels the treatment has influenced their condition and quality of life. Minimally clinically important difference (MCID) is a resource available to gauge if a patient deems intervention effective or not. The MCID is defined as "the smallest difference in a score in a domain of interest that patients perceive as beneficial and that would mandate, in the absence of side-effects, a change in the patient's management."<sup>27</sup> In health care especially, the MCID is imperative to recognize, because the goal of most medical treatment is to improve a patient's quality of life, alleviate their symptoms, and improve their functional status.<sup>15</sup> The only way to determine if the work of health

care professionals is valuable to the patient is to determine measurements such as the MCID. This property can also aid researchers when gathering resources to conduct studies by enabling them to calculate appropriate sample sizes. Other useful means of the measure are interpreting studies that show significant findings and improvement of expressing results.<sup>24</sup>

Jaeschke et al<sup>28</sup> established a report using data from three separate studies to determine the MCID of the CRQ by comparing it to global ratings of change (GROC). The 3 studies included: 31 patients participating in an inpatient pulmonary rehabilitation program, a trial examining effects of inhaled salbutamol and oral theophylline in 24 patients, and a trial of digoxin in 20 patients with heart failure. After their second visit, patients from each study were asked to report global ratings of change in shortness of breath on daily activities, level of fatigue, and emotional status. Responses were based on a 7-point Likert scale ranging from 7, "a very great deal worse," to a 1, which was "almost the same, hardly any worse at all" and these GROC responses were compared to change in scores of the CRQ. The MCID of the CRQ was consistently around 0.5 per question with a 0.43 on the dyspnea domain, 0.64 for fatigue, and 0.49 for emotional function. A mean change per question of 0.81 to 0.96 indicates a moderate effect and a large effect is indicated by a change of 0.86 to 1.47 per question.

Redelmeier et al<sup>24</sup> conducted a study using the CRQ to determine if a new method they developed to estimate the MCID compared to the MCID results of the traditional method. The conventional method of determining the MCID relies on the patient's report as to the degree of change they have experienced in comparison to themselves; whereas, the method by Redelmeier et al<sup>24</sup> requires the patient to report the status of their condition in comparison to other patients with the same condition. One hundred twelve patients participated in the study. Considering all of the domains with the exception of the Dyspnea scale, the MCID for the CRQ was found to be 0.53 per question. When all 4 of the domains were included, the MCID was 0.42 per question. The researchers estimated that on average, scores on the CRQ needed to change by about 0.5 per question for the patient to determine an important difference. This is consistent with the MCID reported by Jaeschke et al<sup>28</sup> using the conventional approach. Rutten-Van Molken et al<sup>3</sup> completed a study to determine the MCID using both methods of between patient comparison and within patient comparison. He also found that the MCID correlated with a change of 0.5 per item score.

Wyrwich et al<sup>15</sup> used triangulation methods to identify clinically important differences based on both patient and primary care provider (PCP) perceived differences. The study considered the opinions of an expert panel of physicians, patients with COPD, and their primary care physicians (PCPs). Patients were administered the CRQ before pulmonary rehab and again every 2 months after baseline. The PCPs assessed the patients at baseline and at all follow-up visits throughout the year. They were also contacted following each office visit. The researchers found

that according to the patient, a 1-2 point decrease in a specific domain score of the CRQ reflected small declines in HRQL, and that according to both patients and PCPs, a 1-5 point increase on the domain scores of the CRQ reflected a small, but clinically important improvement in HRQL. The expert panel recommended that MCID be associated with a change greater than 2 points in the domain score. In general, patient determined clinically important differences were associated with smaller changes in CRQ domain scores than those determined by the expert panel and PCPs. Results of the study reflected a disagreement between patients, primary care physicians, and experts' opinions of clinically important change in individual patients.

Wyrwich et al<sup>29</sup> described the importance of determining the physician's definition of the MCID in order to better understand and support the use of HRQL measurement tools in the clinic. A 9 person expert panel was created to attempt to determine the MCID from the physician's point of view regarding the CRQ and SF-36 HRQL outcome tools. Using 2 rounds of the Delphi method, one in person meeting and a repetitive enhancement process for circulating and correcting the final report, they were able to determine the values of change for each domain that would result in a small, moderate, and large MCID. The following results were reported: for the dyspnea domain, which contains 5 items, 3, 6, and 9 point changes in the scores indicate a small, moderate, and large change respectively; for the fatigue domain, which contains 4 items, 2, 4, and 6 point changes in the scores indicate a small, moderate, and large change respectively; for the emotional function domain, which has 7 items, 5, 10, and 15 point changes in the scores indicate a small, moderate, and large change respectively; and finally for the mastery domain, which has 4 items, 3, 6, and 9 point changes in the scores indicate a small, moderate, and large change respectively. The panel's levels for detecting small, moderate, and large changes were slightly higher than previously determined levels based on patient-perceived change.

## SUGGESTED USE

The developers suggest that the CRQ be used both in clinical research and in clinical practice to monitor changes in HRQL in patients with chronic respiratory disease. In order to ensure that reliability across clinics is preserved, the health care profession should come to an agreement on the process of administration. Important considerations for questionnaires such as CRQ include the ease and cost of administration. The CRQ requires a licensing agreement as well as a significant time commitment for administration. The newer version of the CRQ, the self administered standardized CRQ-SAS, reduces the need for resources and time in the clinic.<sup>8</sup> The interview administered CRQ may take as long as 30 minutes to complete for the initial interview, while the CRQ-SAS takes only 5 to 10 minutes and can be given to the patient to do at home. This may also increase the chances of the patient answering more honestly.<sup>26</sup> Another aspect to consider is that 3 months of treatment, which is often typical in clinical situations, may

not be sufficient time for patients with COPD to recognize an improvement or decline in their condition. Also, in this specific patient population, improvements in breathlessness or exercise tolerance may not be noticed since these patients are accustomed to avoiding activities that stimulate these symptoms. This may be a factor to consider when administering the CRQ.<sup>3</sup>

Current evidence suggests that the CRQ is one of the instruments of choice to measure HRQL in patients with COPD and that condition specific questionnaires such as the CRQ are very feasible for use in an outpatient setting. It is known that mortality risk is not associated with the CRQ,<sup>30</sup> however, CRQ change scores associated with clinically important differences may be used to highlight significant changes in function and HRQL. These changes might be missed if physiological measures are used alone. High response rates to this type of questionnaire have been achieved in outpatient settings; however, the interview form is quite expensive<sup>13</sup> and time consuming. It is recommended that both general and condition specific HRQL questionnaires be administered alongside physiologic tests since each of these contribute unique information regarding disease state and quality of life.<sup>22</sup>

## CONCLUSION

The Chronic Respiratory Disease Questionnaire has been supported in the evidence to be one of the most optimal instruments to measure HRQL in patients with chronic respiratory disease. It has high internal consistency and test-retest reliability, as well as moderate to strong construct and convergent validity. It correlates well with other disease specific and generic measures of HRQL as well as with global ratings of change. It is not strongly correlated with physiologic measures related to dyspnea, indicating the need to administer HRQL tools alongside physiologic measures in order to gain the full picture of the patient's disease state. The CRQ exhibits responsiveness that is as good or superior to all other measures looked at, and it is able to detect significant differences even in small populations. This is most likely due to the fact that it includes domains of both physical and emotional health. Patient determined minimal clinically important differences typically are associated with smaller change scores than physician or expert determined MCIDs, but in general small clinically important changes are associated with score differences of 0.5 per item.

In the clinic, the CRQ should be used alongside physiologic tests and generic measures of health related quality of life to provide a complete picture of the patient's health status. Limitations to its use in the clinic might include cost and the time required for administration. The self-administered version may assist with the latter as it is associated with greatly decreased administration time. This review has found that until a gold standard of HRQL assessment is developed, the CRQ is an optimal tool to utilize in determining HRQL in patients with chronic respiratory disease.

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## Congratulations to the following presenters for awards received at CSM, 2008!

### **Research Award, Best Platform Presentation**

“Inspiratory muscle strengthening in difficult to wean, ventilator dependent patients: interim analysis of a controlled trial”

Authors: Martin, Daniel; Smith, Barbara, Paul Davenport, Gabrielli, Andrea

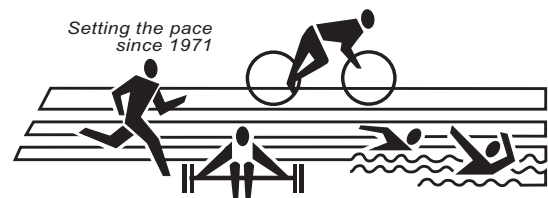
### **Research Award, Best Poster Presentation**

“The relationship of anthropometric measures, physical performance, and demographic characteristics in patients with morbid obesity undergoing bariatric surgery”

Authors: Cohen, Meryl I.; Shields, Patrick; Kirk-Sanchez, Neva

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