



## Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to sub criterion 1b).

### Brief Measure Information

**NQF #:** 0701

**Corresponding Measures:**

**De.2. Measure Title:** Functional Capacity in COPD patients before and after Pulmonary Rehabilitation

**Co.1.1. Measure Steward:** American Association of Cardiovascular Pulmonary Rehabilitation

**De.3. Brief Description of Measure:** The percentage of patients with COPD who are found to increase their functional capacity by at least 25 meters (82 feet), as measured by a standardized 6 minute walk test (6MWT) after participating in pulmonary rehabilitation (PR).

**1b.1. Developer Rationale:** While there are treatments that can help optimize health for persons with COPD, there is evidence of suboptimal care of persons with COPD, including limited use of national and international evidence based guidelines (Bourbeau J, Sebaldt RJ, Day A, et al.2008, Yawn, B., Wollan, P.2008). The GOLD Guidelines recommend that pulmonary rehabilitation be a part of the treatment plan for patients with moderate to severe COPD (<http://www.goldcopd.org/guidelines-global-strategy-for-diagnosis-management.html>). Pulmonary rehabilitation improves several patient-centered outcomes, including quality of life, dyspnea, and functional capacity. Multiple studies have revealed improvement in functional capacity following pulmonary rehabilitation, as measured by increased six minute walk distance (6MWD) of 48 meters; 95% CI: 32 to 65; n = 16 trials. (Pulmonary rehabilitation for chronic obstructive pulmonary disease, Lacasse Y, Goldstein R, Lasserson T, Martin S Cochrane ReviewPublished Online: 18 OCT 2006) However, there is wide variation in improvement in 6MWD among pulmonary rehabilitation programs, based on data from the American Association of Cardiovascular and Pulmonary Rehabilitation Pulmonary Rehabilitation Registry which reveals that 21% of patients enrolled in PR that meet the measure criteria do not improve by the minimum distance of at least 25 meters as specified in this measure. Additionally, there are significant age and insurance related gaps, with patients under 65 years and patients with private insurance (as opposed to Medicare/Medicaid) demonstrating better improvement in 6MWT distances.

Changes in pulmonary rehabilitation exercise programs can impact changes in a patient's functional capacity, for example by individualizing exercise prescription and progression and/or titrating supplemental oxygen during exercise. This performance measure allows pulmonary rehabilitation programs to assess the impact of interventions on a clinically meaningful assessment of functional capacity.

**S.4. Numerator Statement:** Number of patients who are found to increase their functional capacity by at least 25 meters (82 feet), as measured by 6MWT distance at PR program entry and completion.

**S.6. Denominator Statement:** All patients with clinician diagnosed COPD at PR program entry who completed PR during the measurement period and who completed at least 10 PR sessions within 3 months of PR program entry.

**S.8. Denominator Exclusions:** Patients for whom a 6MWT would be contraindicated due to acute or unstable medical conditions

Patients who are unable to perform a 6MWT due to orthopedic, neurological, cognitive or psychiatric impairments and/or safety reasons.

Patients who have not completed at least 10 PR sessions within 3 months of program entry.

**De.1. Measure Type:** Outcome

**S.17. Data Source:** Management Data, Registry Data

**S.20. Level of Analysis:** Clinician : Group/Practice, Clinician : Individual, Facility

**IF Endorsement Maintenance – Original Endorsement Date:** Jan 17, 2011 **Most Recent Endorsement Date:** Jul 07, 2015

**IF this measure is included in a composite, NQF Composite#/title:**

IF this measure is paired/grouped, NQF#/title:

**De.4. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?**

## 1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. **Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria.**

### 1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form

[NATIONAL\\_QUALITY\\_FORUM\\_10\\_1\\_14\\_evidence\\_6MWT-635600209300857153-635733282833597044.doc](#)

#### 1a.1 For Maintenance of Endorsement: Is there new evidence about the measure since the last update/submission?

Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. Please use the most current version of the evidence attachment (v7.1). Please use red font to indicate updated evidence.

### 1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- Disparities in care across population groups.

**1b.1. Briefly explain the rationale for this measure** (e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)

*If a COMPOSITE (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and answer the composite questions.*

While there are treatments that can help optimize health for persons with COPD, there is evidence of suboptimal care of persons with COPD, including limited use of national and international evidence based guidelines (Bourbeau J, Sebaldt RJ, Day A, et al.2008, Yawn, B., Wollan, P.2008). The GOLD Guidelines recommend that pulmonary rehabilitation be a part of the treatment plan for patients with moderate to severe COPD (<http://www.goldcopd.org/guidelines-global-strategy-for-diagnosis-management.html>). Pulmonary rehabilitation improves several patient-centered outcomes, including quality of life, dyspnea, and functional capacity. Multiple studies have revealed improvement in functional capacity following pulmonary rehabilitation, as measured by increased six minute walk distance (6MWD) of 48 meters; 95% CI: 32 to 65; n = 16 trials. (Pulmonary rehabilitation for chronic obstructive pulmonary disease, Lacasse Y, Goldstein R, Lasserson T, Martin S Cochrane ReviewPublished Online: 18 OCT 2006) However, there is wide variation in improvement in 6MWD among pulmonary rehabilitation programs, based on data from the American Association of Cardiovascular and Pulmonary Rehabilitation Pulmonary Rehabilitation Registry which reveals that 21% of patients enrolled in PR that meet the measure criteria do not improve by the minimum distance of at least 25 meters as specified in this measure. Additionally, there are significant age and insurance related gaps, with patients under 65 years and patients with private insurance (as opposed to Medicare/Medicaid) demonstrating better improvement in 6MWT distances.

Changes in pulmonary rehabilitation exercise programs can impact changes in a patient's functional capacity, for example by individualizing exercise prescription and progression and/or titrating supplemental oxygen during exercise. This performance measure allows pulmonary rehabilitation programs to assess the impact of interventions on a clinically meaningful assessment of functional capacity.

**1b.2. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis.** *(This is required for maintenance of endorsement. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.*

*The data source was from a one-year sample (August 13, 2013 to August 14, 2014) from the AACVPR PR Registry.*

Overall change in 6 minute walk test. Mean  $\pm$  standard deviation

| CCI group | n*   | Intake        | Discharge      | Change        | p-value† | Increase=25 m |
|-----------|------|---------------|----------------|---------------|----------|---------------|
| Overall   | 2435 | 903 $\pm$ 355 | 1089 $\pm$ 372 | 185 $\pm$ 225 | <.0001   | 79%           |
| 0-1       | 1502 | 927 $\pm$ 354 | 1112 $\pm$ 367 | 185 $\pm$ 233 | <.0001   | 79%           |
| 2+        | 841  | 853 $\pm$ 355 | 1037 $\pm$ 376 | 184 $\pm$ 214 | <.0001   | 79%           |

CCI-Charlson Comorbidity Index

\* 233 (8.7%) patients are excluded from overall groups due to missing 6MWT at intake or discharge and an additional 92 patients are excluded from the CCI subgroups due to missing CCI.

† p-value from paired t-test testing for change from intake to discharge.

**1b.3. If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.**

The AACVPR PR Registry reports that 21% of patients did not meet the measure specification of 25-meter improvement for the 6-minute walk (6MW). Reasons for the limited performance may be related to patient factors (lack of functional gain during PR), health care provider factors (non-adherence to the ATS 6MW guidelines) or other factors. The majority of the literature describing the 6MW reports a valid and reliable tool. In a study of 761 COPD patients who were enrolled in the National Emphysema Treatment Trial, Sciurba, et al. (2003) noted that 6MW course layout may have influenced test results. In 2002, the American Thoracic Society published guidelines for conducting 6 minute walk testing (Crapo, et al. 2002). Reference equations for prediction of total distance walked in 6 minutes by healthy adults were first reported in 1998 by Enright and Sherrill, providing predictive reference for the 6MW. A recent review by Singh et al. (2014) in the Eur Respir J, 2014 states that "The 6-min walking distance (6MWD) is a reliable measure (intra-class correlation coefficients ranged from 0.82 to 0.99 in seven studies)...The 6MWD correlates more strongly with peak work capacity ( $r = 0.59-0.93$ ) and physical activity ( $r = 0.40-0.85$ ) than with respiratory function ( $r = 0.10-0.59$ ). Responsiveness was moderate to high for the 6MWD, with greater responsiveness to interventions that included exercise training. The findings of this review demonstrate that the 6MWT...is a robust tests of functional exercise capacity in adults with chronic respiratory disease."

Crapo RO, Casaburi R, Coates AL, Enright PL, MacIntyre NR, McKay RT, et al. (2002). ATS Statement: Guidelines for the six minute walk test. American Journal of Respiratory and Critical Care Medicine 166, 111-117.

Enright PL, & Sherrill DL. (1998). Reference equations for the six-minute walk in healthy adults. American Journal of Respiratory and Critical Care Medicine 158, 1384–1387.

Sciurba F, Criner GJ, Lee SM, Mohsenifar Z, Shade D, Slivka W, et al. (2003). Six –minute walk distance in chronic obstructive pulmonary disease: reproducibility and effect of walking course layout and length. American Journal of Respiratory and Critical Care Medicine 167, 1522-1527.

Singh et al. (2014) An official systematic review of the European Respiratory Society/American Thoracic Society: measurement properties of field walking tests in chronic respiratory disease. Eur Respir J, 2014; in press, DOI: 10.1183/09031936.00150414.

**1b.4. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability. (This is required for maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.) For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b1) under Usability and Use.**

The data source for disparities was from a one year sample (August 13, 2013, to August 14, 2014) from the AACVPR PR Registry. The characteristics are below and the sample size is in the data chart.

Demographics of Patients with 6MWT Data

|                                     | n Total<br>Pre/Post | n Without | n With Pre/Post |
|-------------------------------------|---------------------|-----------|-----------------|
| Total Patients                      | 2668                | 233       | 2435            |
| Charlson Comorbidity Index          |                     |           |                 |
| Missing                             | 108                 | 16        | 92              |
| 0 or 1                              | 1625                | 123       | 1502            |
| 2+                                  | 935                 | 94        | 841             |
| Sex                                 |                     |           |                 |
| Missing                             | 14                  | 0         | 14              |
| Female                              | 1355                | 129       | 1226            |
| Male                                | 1299                | 104       | 1195            |
| Race                                |                     |           |                 |
| Missing                             | 54                  | 4         | 50              |
| Am. Indian or Alaskan Native        | 2                   | 0         | 2               |
| Asian                               | 7                   | 2         | 5               |
| Black or African American           | 135                 | 3         | 132             |
| Ethnic category not listed          | 14                  | 0         | 14              |
| Native Hawaiian or Pacific Islander | 3                   | 0         | 3               |
| Non-white Hispanic/Latino ethnicity | 38                  | 2         | 36              |
| White                               | 2415                | 222       | 2193            |
| Education                           |                     |           |                 |
| Missing                             | 583                 | 93        | 490             |
| Unknown or prefer not to say        | 609                 | 45        | 564             |
| Did not graduate high school        | 134                 | 5         | 129             |
| High school grad.                   | 534                 | 34        | 500             |
| Some coll./univ./tech. training     | 377                 | 23        | 354             |
| Coll./university graduate           | 431                 | 3         | 398             |
| Insurer Type                        |                     |           |                 |
| Medicare/Medicaid                   | 1813                | 154       | 1659            |
| Private                             | 852                 | 79        | 773             |
| Unknown                             | 3                   | 0         | 3               |

## Demographics of Patients with 6MWT Data - mean±SD (min to max)

|                                | Without<br>All      | Without<br>Pre/Post Data | With<br>Pre/Post Data |
|--------------------------------|---------------------|--------------------------|-----------------------|
| CCI-Charlson Comorbidity Index |                     |                          |                       |
| CCI                            | 1.6 ± 1.5 (0-11)    | 1.9 ± 1.7 (0-11)         | 1.6 ± 1.5 (0-11)      |
| Age                            | 68.5 ± 10.8 (0-99)  | 69.5 ± 9.6 (22-91)       | 68.4 ± 10.9 (0-99)    |
| Program Length                 | 88.3 ± 38.5 (0-406) | 97.3 ± 47.6 (17-333)     | 87.4 ± 37.4 (0-406)   |
| Number Of Sessions             | 22.8 ± 8.5 (2-86)   | 20.7 ± 8.1 (4-41)        | 23 ± 8.5 (2-86)       |

Table 13: Unadjusted comparison of six minute walk between patient groups.  
Estimates are mean ± standard deviations.

Increase  
n\* Intake Discharge Change† > or = 25 m†

## Charlson Comorbidity Index

|                   |      |           |            |           |     |
|-------------------|------|-----------|------------|-----------|-----|
| Missing           | 92   | 978 ± 326 | 1171 ± 373 | 193 ± 184 | 84% |
| 0 or 1            | 1502 | 927 ± 354 | 1112 ± 367 | 185 ± 233 | 79% |
| 2+                | 841  | 853 ± 355 | 1037 ± 376 | 184 ± 214 | 79% |
| p=0.9406 p=0.5318 |      |           |            |           |     |

## Age

|                   |      |           |            |           |     |
|-------------------|------|-----------|------------|-----------|-----|
| Missing           | 14   | 939 ± 275 | 1108 ± 317 | 169 ± 180 | 86% |
| Age<65            | 721  | 982 ± 367 | 1212 ± 386 | 230 ± 256 | 83% |
| Age>=65           | 1700 | 870 ± 346 | 1036 ± 354 | 166 ± 208 | 77% |
| p=<.0001 p=0.0098 |      |           |            |           |     |

## Sex

|                   |      |           |            |           |     |
|-------------------|------|-----------|------------|-----------|-----|
| Missing           | 14   | 946 ± 331 | 1123 ± 293 | 177 ± 194 | 86% |
| Female            | 1226 | 880 ± 357 | 1066 ± 372 | 186 ± 223 | 79% |
| Male              | 1195 | 927 ± 353 | 1112 ± 371 | 185 ± 227 | 79% |
| p=0.9840 p=0.8156 |      |           |            |           |     |

## Race

|                                  |      |            |            |           |      |
|----------------------------------|------|------------|------------|-----------|------|
| Missing                          | 50   | 885 ± 395  | 1111 ± 385 | 226 ± 205 | 86%  |
| Amer. Indian or Alaskan Native   | 2    | 638 ± 371  | 916 ± 722  | 278 ± 351 | 100% |
| Asian                            | 5    | 1036 ± 415 | 1195 ± 460 | 158 ± 188 | 60%  |
| Black or African-American        | 132  | 851 ± 339  | 1040 ± 396 | 188 ± 287 | 76%  |
| Ethnic category not listed       | 14   | 1106 ± 405 | 1278 ± 433 | 172 ± 257 | 71%  |
| Native Hawaiian or Pac. Islander | 3    | 747 ± 167  | 1060 ± 140 | 313 ± 202 | 100% |
| Non-white Hispanic/Latino        | 36   | 929 ± 328  | 1197 ± 340 | 269 ± 271 | 83%  |
| White                            | 2193 | 905 ± 355  | 1088 ± 370 | 183 ± 220 | 79%  |
| p=0.3066 p=0.5830                |      |            |            |           |      |

## Education

|                                |     |           |            |           |     |
|--------------------------------|-----|-----------|------------|-----------|-----|
| Missing                        | 490 | 933 ± 329 | 1099 ± 342 | 166 ± 223 | 79% |
| Unknown or prefer not to say   | 564 | 867 ± 363 | 1037 ± 370 | 171 ± 224 | 75% |
| Did not graduate high school   | 129 | 884 ± 370 | 1098 ± 373 | 213 ± 234 | 83% |
| High school graduate           | 500 | 867 ± 354 | 1072 ± 379 | 205 ± 233 | 82% |
| Some coll./univ./tech training | 354 | 905 ± 351 | 1097 ± 367 | 192 ± 210 | 80% |
| College or Univ.graduate       | 398 | 970 ± 366 | 1160 ± 394 | 189 ± 226 | 81% |
| p=0.0290 p=0.0597              |     |           |            |           |     |

## Insurer Type

|                   |      |           |            |           |     |
|-------------------|------|-----------|------------|-----------|-----|
| Medicare/Medicaid | 1659 | 883 ± 347 | 1054 ± 354 | 171 ± 214 | 78% |
| Private           | 773  | 947 ± 370 | 1165 ± 396 | 218 ± 244 | 81% |
| Unknown           | 3    | 723 ± 195 | 516 ± 127  | -207 ± 86 | 0%  |
| p=<.0001 p=0.0011 |      |           |            |           |     |

## Program Type

|                   |      |            |            |           |     |
|-------------------|------|------------|------------|-----------|-----|
| Free Standing     | 136  | 1034 ± 334 | 1367 ± 310 | 334 ± 272 | 93% |
| Hospital Based    | 2090 | 895 ± 349  | 1067 ± 361 | 172 ± 212 | 78% |
| Unknown           | 209  | 906 ± 413  | 1126 ± 435 | 220 ± 271 | 80% |
| p=<.0001 p=<.0001 |      |            |            |           |     |

\* excludes patients missing 6MWT at intake or discharge

† p-values estimated by one way ANOVA.

‡ p-values estimated by Chi-Squared test

**1b.5. If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4**

Not applicable - see section 1b.4

## 2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. **Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.**

**2a.1. Specifications** The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

**De.5. Subject/Topic Area** (check all the areas that apply):

[Respiratory, Respiratory : Chronic Obstructive Pulmonary Disease \(COPD\)](#)

**De.6. Non-Condition Specific**(check all the areas that apply):

[Health and Functional Status : Change](#)

**De.7. Target Population Category** (Check all the populations for which the measure is specified and tested if any):

[Elderly](#)

**S.1. Measure-specific Web Page** (Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)

[The material from the American Association of Cardiovascular and Pulmonary Rehabilitation \(AACVPR\) website is proprietary for members. We have attached the pertinent information in the Appendix.](#)

**S.2a. If this is an eMeasure**, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)

[This is not an eMeasure](#) Attachment:

**S.2b. Data Dictionary, Code Table, or Value Sets** (and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)

Attachment Attachment: [PR\\_Registry\\_definitions\\_and\\_comments-635600209293681153-635733282826108900.pdf](#)

**S.2c.** Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

Attachment:

**S.2d.** Is this an instrument-based measure (i.e., data collected via instruments, surveys, tools, questionnaires, scales, etc.)? Attach copy of instrument if available.

**S.3.1. For maintenance of endorsement:** Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.

**S.3.2. For maintenance of endorsement**, please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.

[The age range has been specified at 40 and above.](#)

[This is to clarify the typical population found in pulmonary rehabilitation.](#)

**S.4. Numerator Statement** (Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome) DO NOT include the rationale for the measure.

IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).

[Number of patients who are found to increase their functional capacity by at least 25 meters \(82 feet\), as measured by 6MWT distance at PR program entry and completion.](#)

**S.5. Numerator Details** *(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)*

*IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).*

Assessments of 6MWT are to be performed within one week of PR program entry and again within one week of PR program completion. The time period between tests should be no more than 3 months.

To perform the 6MWT the patient is instructed to walk as fast and as far as they can in 6 minutes, but they are allowed to stop and rest during the test, if needed. The total distance covered in 6 minutes is measured (in meters or feet). All patients who increase the distance walked by at least 25 meters (82 feet), as measured by the 6MWT performed at PR entry and again at PR completion, should be included in the numerator.

The 6 minute walk test (6MWT) is a practical, simple, standardized, and validated test that measures the distance that a patient can quickly walk on a flat, hard surface in a period of 6 minutes (6MWD). It evaluates the global and integrated responses of all the systems involved during exercise, including the pulmonary and cardiovascular systems, systemic circulation, peripheral circulation, blood, neuromuscular units, and muscle metabolism. The 6MWT provides specific testing related to the activity of daily living, walking. (Guyatt, G.H., et al., 1984. Guyatt, G.H., et al., 1985, Sciruba, F.C. and W.A. Slivka, Steele, B). In performing the 6MWT, it has been reported that a 54 meter (176 feet) difference in 6MW difference is clinically significant (identified as clear change in clinical status) when compared to differences in self-rating of walking ability (Redelmeier, D.A., et al). The strongest indication for the 6MWT is for measuring the response to medical interventions in patients with moderate to severe heart or lung disease.

Specific instructions regarding the administration of the 6MWT have been developed and published by the American Thoracic Society (ATS, 2002).

American Thoracic Society: Statement Guidelines for the Six-Minute Walk Test. Am J Resp Crit Care med, 2002;155:111-117.

Guyatt, G.H., et al., Effect of encouragement on walking test performance. Thorax, 1984. 39(11): p. 818-22.

Guyatt, G.H., et al., The 6-minute walk: a new measure of exercise capacity in patients with chronic heart failure. Canadian Medical Association Journal, 1985. 132(8): p. 919-23.

Redelmeier, D.A., et al., Interpreting small differences in functional status: the six minute walk test in chronic lung disease patients. American Journal of Respiratory and Critical Care Medicine, 1997. 155: p. 1278-1282.

Sciruba, F.C. and W.A. Slivka, Six minute walk testing. Seminars in Respiratory and Critical Care Medicine, 1998. 19(4): p. 383-392.

Steele, B., Timed walking tests of exercise capacity in chronic cardiopulmonary illness. Journal of Cardiopulmonary Rehabilitation, 1996. 16: p. 25-33.

Additional information added 12/4/14 as requested - ICD9 & ICD10 CODES:

Chronic Bronchitis ICD-9 codes 490, 491 = ICD-10 code J42

Emphysema ICD-9 code 492 = ICD-10 code J43.9

Bronchiectasis ICD-9 code 494 = ICD-10 code J47.9

Chronic Airway Obstruction ICD-9 code 496 = COPD ICD-10 code J44.9

**S.6. Denominator Statement** *(Brief, narrative description of the target population being measured)*

All patients with clinician diagnosed COPD at PR program entry who completed PR during the measurement period and who

completed at least 10 PR sessions within 3 months of PR program entry.

**S.7. Denominator Details** (All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)

*IF an OUTCOME MEASURE, describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).*

COPD (chronic obstructive pulmonary disease includes a clinician diagnosis of COPD, chronic bronchitis and / or emphysema (ICD-9 Codes include 490-492, 494, 496: Chronic obstructive pulmonary disease (COPD) includes chronic bronchitis (ICD-9 codes 490-491), emphysema (ICD-9 code 492) ), and chronic airway obstruction (ICD-9 code 496). These diseases are commonly characterized by irreversible airflow limitation.

Patients for whom no 6MWT is recorded at either PR program entry or PR program completion who would otherwise qualify for the denominator, and for whom no exclusions apply, should be included in the denominator.

Additional information added 12/4/14 as requested - ICD9 & ICD10 CODES:

Chronic Bronchitis ICD-9 codes 490, 491 = ICD-10 code J42

Emphysema ICD-9 code 492 = ICD-10 code J43.9

Bronchiectasis ICD-9 code 494 = ICD-10 code J47.9

Chronic Airway Obstruction ICD-9 code 496 = COPD ICD-10 code J44.9

**S.8. Denominator Exclusions** (Brief narrative description of exclusions from the target population)

Patients for whom a 6MWT would be contraindicated due to acute or unstable medical conditions

Patients who are unable to perform a 6MWT due to orthopedic, neurological, cognitive or psychiatric impairments and/or safety reasons.

Patients who have not completed at least 10 PR sessions within 3 months of program entry.

**S.9. Denominator Exclusion Details** (All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)

Acute myocardial infarction (3–5 days), unstable angina, uncontrolled arrhythmias, syncope, active endocarditis or pericarditis, symptomatic severe aortic stenosis, uncontrolled heart failure, acute pulmonary embolus or pulmonary infarction, thrombosis of lower extremities, suspected dissecting aneurysm, uncontrolled asthma, pulmonary edema, room air desaturation at rest < 85% (requires oxygen titration), respiratory failure, acute noncardiopulmonary disorder that may affect exercise performance or be aggravated by exercise (i.e. infection, renal failure, thyrotoxicosis), and / or mental impairment leading to inability to cooperate.

**S.10. Stratification Information** (Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b.)

Data are to be assessed by individual and group outcomes, can be reported as aggregate group data, and can also be stratified and reported for the group by age (by decade of life), race and sex (male, female).

**S.11. Risk Adjustment Type** (Select type. Provide specifications for risk stratification in measure testing attachment)

No risk adjustment or risk stratification

If other:

**S.12. Type of score:**

Rate/proportion

If other:

**S.13. Interpretation of Score** (Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)

Better quality = Higher score

**S.14. Calculation Algorithm/Measure Logic** (Diagram or describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period for data, aggregating data; risk adjustment; etc.)

- 1) Identify the initial patient population: (All patients who completed PR during the measurement period).
- 2) Identify patients within the initial patient population who qualify for the Denominator: (All patients > age 40 with clinician diagnosed COPD at PR program entry who completed at least 10 PR sessions in the 3 months after program entry).
- 3) From the patients within the denominator, identify the patients who qualify for the Numerator (All patients in the denominator who increased their functional capacity by at least 25 meters (82 feet), as measured by 6MWT distance at PR program entry and completion).
- 4) From the patients in the denominator who did not meet the numerator criteria, determine if the physician or clinician has documented that the patient meets any criteria for exclusion and remove these patients from the denominator.

If the patient does not meet the numerator and a valid exclusion is not present, this case represents a quality failure.

To calculate performance rate:

Number of patients in the Numerator ÷ Number of patients in the Denominator after all exclusions are applied × 100

**S.15. Sampling** (If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)

If an instrument-based performance measure (e.g., PRO-PM), identify whether (and how) proxy responses are allowed.

All eligible patients during the measurement period should be included.

**S.16. Survey/Patient-reported data** (If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.)

Specify calculation of response rates to be reported with performance measure results.

Not applicable

**S.17. Data Source** (Check ONLY the sources for which the measure is SPECIFIED AND TESTED).

If other, please describe in S.18.

Management Data, Registry Data

**S.18. Data Source or Collection Instrument** (Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc., and describe how data are collected.)

If instrument-based, identify the specific instrument(s) and standard methods, modes, and languages of administration.

The measure can be submitted to the AACVPR Outpatient Pulmonary Rehabilitation Registry or another data base for quality improvement on a standardized data collection form, as recommended in the American Thoracic Society (ATS) guidelines for administration of the 6MWT. The guidelines for administration are provided to all programs in the AACVPR PR Outcomes Resource Guide (included in Appendix), as well as published in ATS guidelines.

**S.19. Data Source or Collection Instrument** (available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)

Available in attached appendix at A.1

**S.20. Level of Analysis** (Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)

Clinician : Group/Practice, Clinician : Individual, Facility

**S.21. Care Setting** (Check ONLY the settings for which the measure is SPECIFIED AND TESTED)

Outpatient Services

If other:

**S.22. COMPOSITE Performance Measure** - Additional Specifications (Use this section as needed for aggregation and weighting rules,

or calculation of individual performance measures if not individually endorsed.)

## **2. Validity – See attached Measure Testing Submission Form**

[Final\\_Draft\\_Testing\\_2014-635600209306005153-635733282839369155.doc](#)

### **2.1 For maintenance of endorsement**

*Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.*

### **2.2 For maintenance of endorsement**

*Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. Please use the most current version of the testing attachment (v7.1). Include information on all testing conducted (prior testing as well as any new testing); use red font to indicate updated testing.*

### **2.3 For maintenance of endorsement**

*Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes social risk factors is not prohibited at present. Please update sections 1.8, 2a2, 2b1, 2b4.3 and 2b5 in the Testing attachment and S.140 and S.11 in the online submission form. NOTE: These sections must be updated even if social risk factors are not included in the risk-adjustment strategy. You MUST use the most current version of the Testing Attachment (v7.1) -- older versions of the form will not have all required questions.*

## **3. Feasibility**

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

### **3a. Byproduct of Care Processes**

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

#### **3a.1. Data Elements Generated as Byproduct of Care Processes.**

[Generated or collected by and used by healthcare personnel during the provision of care \(e.g., blood pressure, lab value, diagnosis, depression score\), Abstracted from a record by someone other than person obtaining original information \(e.g., chart abstraction for quality measure or registry\)](#)

If other:

### **3b. Electronic Sources**

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

**3b.1. To what extent are the specified data elements available electronically in defined fields (i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields)** Update this field for **maintenance of endorsement.**

[ALL data elements are in defined fields in electronic clinical data \(e.g., clinical registry, nursing home MDS, home health OASIS\)](#)

**3b.2. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources. For **maintenance of endorsement**, if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).**

**3b.3. If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL. Please also complete and attach the NQF Feasibility Score Card.**

**Attachment:**

### 3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

**3c.1. Required for maintenance of endorsement.** Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

**IF instrument-based,** consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

The 6MWT is a test that is straightforward to perform, interpret and report, and is used in a large percentage of PR programs.

To help reduce provider variability, and to determine test - retest reliability, in the administration of the 6MWT, a standardized test protocol is utilized in each PR program, and audits of inter- and intra-observer variability can be performed on a regular basis. Resources are available from the American Association of Cardiovascular and Pulmonary Rehabilitation and the American Thoracic Society to help pulmonary rehabilitation clinicians understand how to perform a standardized 6MWT and to use the results in quality improvement efforts.

We have not identified any areas of concern or made any modifications to the measure as a result of testing and operational use of the measure in relation to data collection, availability of data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, or other feasibility issues unless otherwise noted. However, it is noted that determination of test-retest reliability needs to be documented. Additionally, the documenting of missing data as well as exclusions needs to be improved.

**3c.2. Describe any fees, licensing, or other requirements to use any aspect of the measure as specified (e.g., value/code set, risk model, programming code, algorithm).**

There are no fees for the 6MWT, and this measure can be used by PR programs to assess improvement in their patients' functional capacity without participating in the AACVPR PR Registry.

## 4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

### 4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

#### 4.1. Current and Planned Use

*NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.*

| Specific Plan for Use | Current Use (for current use provide URL)                                                                                                                                                                                                                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Public Reporting      | Quality Improvement (Internal to the specific organization)<br>AACVPR PR Data Registry<br><a href="http://www.aacvpr.org/Resources/OutpatientDataRegistries/OutpatientPulmonaryRehabDataRegistry/tabid/659/Default.aspx">http://www.aacvpr.org/Resources/OutpatientDataRegistries/OutpatientPulmonaryRehabDataRegistry/tabid/659/Default.aspx</a><br>AACVPR Program Certification |

<https://www.aacvpr.org/Certification/AACVPRProgramCertification/ProgramCertificationHomepage/tabid/496/Default.aspx>

**4a1.1 For each CURRENT use, checked above (update for maintenance of endorsement), provide:**

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included
- Level of measurement and setting

**Quality Improvement**

Name of program and sponsor: AACVPR PR Data Registry and AACVPR Program Certification

**Purpose:**

- Data Registry - Collect data on the only national level registry for patients in pulmonary rehabilitation
- Program Certification - The purpose of AACVPR Program Certification is to encourage quality improvement efforts by pulmonary rehabilitation programs.

**Geographic area and number and percentage of accountable entities and patients included:**

- Data Registry - open to all PR programs in the US. See list below for number of states currently represented.

States Reporting 6MWT: CA,CO,FL,IA,ID,IL,IN,KS,KY,MA,MD,ME,MI,MN,MO,MT, NC,ND,NJ,OH,PA,SC,SD,TN,TX,VA,WA,WI,WV

AACVPR Program Certification: Measurement of program outcomes, including improvement in functional capacity, is stressed, and programs are expected to use process improvement strategies to improve patient outcomes. AACVPR Program Certification is open to all pulmonary rehabilitation programs in the United States. Currently there are 482 certified programs, out of an estimated 1758 nationwide.

**4a1.2. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons? (e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?)**

We are continuously seeking opportunities to expand use of this measure in government or other programs, including those intended for accountability or public reporting. The AACVPR does not have any policies that would restrict access to the performance measure specifications or results or that would impede implementation of the measure for any application. We would welcome its implementation in emerging applications such as accountable care organizations (ACO), Medicare Advantage insurance plans or health plans selling on the new insurance marketplace.

**4a1.3. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement. (Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.)**

The first step in the public reporting plan is to determine and publish benchmarking data now that the AACVPR PR Registry has over one year of data. This information will be publicly available on the AACVPR website

Step two will be to pilot program reporting via the AACVPR PR registry.

Ultimately, as stated above, we would welcome its implementation in emerging applications such as accountable care organizations (ACO), Medicare Advantage insurance plans or health plans selling on the new insurance marketplace. The goal is to encourage pulmonary rehabilitation professionals to measure, track, and improve functional status of patients with chronic obstructive lung disease.

**4a2.1.1. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.**

How many and which types of measured entities and/or others were included? If only a sample of measured entities were included, describe the full population and how the sample was selected.

**4a2.1.2. Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.**

**4a2.2.1. Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.**

**Describe how feedback was obtained.**

**4a2.2.2. Summarize the feedback obtained from those being measured.**

**4a2.2.3. Summarize the feedback obtained from other users**

**4a2.3. Describe how the feedback described in 4a2.2.1 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.**

#### **Improvement**

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

**4b1. Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included.)**

**If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.**

[Significant improvement was demonstrated through the data analysis.](#)

#### **4b2. Unintended Consequences**

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

**4b2.1. Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.**

[No unintended negative consequences have been identified via our testing nor have any been reported to us by users of the measure.](#)

**4b2.2. Please explain any unexpected benefits from implementation of this measure.**

### **5. Comparison to Related or Competing Measures**

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

#### **5. Relation to Other NQF-endorsed Measures**

Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.

[Yes](#)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>5.1a. List of related or competing measures (selected from NQF-endorsed measures)</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>5.1b. If related or competing measures are not NQF endorsed please indicate measure title and steward.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>5a. Harmonization of Related Measures</b><br/> The measure specifications are harmonized with related measures;<br/> <b>OR</b><br/> The differences in specifications are justified</p> <p><b>5a.1. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):</b><br/> <b>Are the measure specifications harmonized to the extent possible?</b></p> <p><b>5a.2. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.</b><br/> <a href="#">Not applicable</a></p> |
| <p><b>5b. Competing Measures</b><br/> The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);<br/> <b>OR</b><br/> Multiple measures are justified.</p> <p><b>5b.1. If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):</b><br/> <b>Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)</b><br/> <a href="#">Not applicable</a></p>       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Appendix</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><b>A.1 Supplemental materials may be provided in an appendix.</b> All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.<br/> <a href="#">Attachment Attachment: APPENDIX_-_Measure_701-635600209317705153-635733282850913377.pdf</a></p>                                                                            |
| <p><b>Contact Information</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Co.1 Measure Steward (Intellectual Property Owner):</b> <a href="#">American Association of Cardiovascular Pulmonary Rehabilitation</a><br/> <b>Co.2 Point of Contact:</b> <a href="#">Kate, Murphy, kmurphy@aacvpr.org, 651-788-1012-</a><br/> <b>Co.3 Measure Developer if different from Measure Steward:</b> <a href="#">American Association of Cardiovascular Pulmonary Rehabilitation</a><br/> <b>Co.4 Point of Contact:</b> <a href="#">Kate, Murphy, kmurphy@aacvpr.org, 651-788-1012-</a></p>                                                                                                                                                                     |
| <p><b>Additional Information</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>Ad.1 Workgroup/Expert Panel involved in measure development</b><br/> <b>Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.</b><br/> <a href="#">Workgroup Chair: Steven W. Lichtman, EdD, MAACVPR, Helen Hayes Hospital.</a><br/> <a href="#">Workgroup Members:</a><br/> <a href="#">Chris Garvey, FNP, MSN, MPA FAACVPR, Seaton Pulmonary and Cardiac Rehabilitation;</a><br/> <a href="#">Gerene Bauldoff, PhD, RN, FAACVPR, Ohio State School of Nursing;</a><br/> <a href="#">Marjorie King, MD, FACC, MAACVPR, Helen Hayes Hospital and Columbia University;</a></p> |

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**Measure Developer/Steward Updates and Ongoing Maintenance**

**Ad.2** Year the measure was first released: 2009

**Ad.3** Month and Year of most recent revision: 11, 2011

**Ad.4** What is your frequency for review/update of this measure? 3 years

**Ad.5** When is the next scheduled review/update for this measure? 11, 2014

**Ad.6** Copyright statement: © 2014 by the American Association of Cardiovascular and Pulmonary Rehabilitation

**Ad.7** Disclaimers: This measure and specifications are provided “as is” without warranty of any kind. AACVPR shall not be responsible for any use of these performance measures.

**Ad.8** Additional Information/Comments: