

Supplemental Materials: Measure 701

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APPENDIX 1:

AACVPR Outpatient Pulmonary Rehabilitation Registry Data Elements

Updated January 18, 2013

The following is a list of data elements contained in the Registry. Please note that this list is subject to change. Participating members will be notified if there are any major changes to this list.

Demographic Information

Registry ID (system)
Record creation date (system)
Program ID (system)
*Hospital medical record ID
*Last name
Gender
*DOB
Health insurance plan
Health insurer(s)
Race
Ethnicity
ZIP Code
Education level
Social support/living arrangement

Medical History Information

PR admission diagnoses
Comorbid conditions
Revised Charlson Comorbidity Index
(calculated)
Tobacco use status:
Packs/day
Years of use
Pack-year history (calculated)
Quit date

PR Intake Information

*Referral date
*Enrollment date
Age at enrollment (calculated)
of prescribed sessions/week
of education sessions
of exercise sessions

Pre/Post Clinical Assessments

Height
Weight
BMI (calculated)
Fat-free mass/method used
BODE Index (calculated)

Spirometry

FEV₁ (actual, % predicted)
FVC (actual, % predicted)
FEV₁:FVC
DLCO (actual, % predicted)
FRC (actual, % predicted)
Obstruction/restriction and severity

Functional Capacity Measures

6-Minute Walk Test parameters:
Distance (feet/meters)
Test type
METs (calculated)
Borg Rating of Perceived Exertion
Borg Dyspnea Rating
MET-mins per week (IPAQ)

Supported Assessment Tools#

Dyspnea Symptoms

Modified Medical Research Council Dyspnea
Scale
UCSD Shortness of Breath Questionnaire

Depression/Psychosocial Risk

Center for Epidemiologic Studies-Depression
Patient Health Questionnaire
Psychosocial Risk Factor Survey
Hospital Anxiety and Depression Scale
Geriatric Depression Scale (15- or 30-point)

Health-related Quality of Life

Chronic Respiratory Disease Questionnaire
St. Georges Respiratory Questionnaire
Medical Outcomes Trust-Short Form 36-v2
(Standard)
Ferrans & Powers Quality of Life Index-
Pulmonary
Dartmouth COOP
COPD Assessment Test

Oxygen Usage

Nasal cannula and/or mask usage at rest, ADLs, exercise, and sleep
Oxygen percent at rest, ADLs, exercise, and sleep (for mask usage)
Oxygen delivery system used

Healthcare Utilization

Exacerbations
Adverse events

Discharge information

Completion status
Non-completion reasons
Program discharge date
Number of exercise sessions completed

Information Relating to Participating Program

Health Care System (HCS) ID (System)
Health Care System Name
HCS address
HCS city
HCS state
HCS ZIP code

Participating program name

*Address

*City

*State

* ZIP code

*Type of program

Referrals/year

*Hospital bed number

Profit status of hospital/clinic

Maintenance program offered

Number of full-time staff equivalents

*Principal User name

*Principal User telephone number

*Principal User e-mail address

*Program Director name

*Medical Director name

*AACVPR certified/date of certification

*** "Required" fields**

Fields will be provided for scores. AACVPR will not provide actual tools. Program may choose one or more tools for assessment purposes.

Note: Some of the definitions for the above data elements are unique and have been standardized specifically for the Registry. They may be different than what you are currently using. The definitions and timing of data collection will be reviewed during the Principal User training sessions.

APPENDIX 2:

AACVPR Outpatient Pulmonary Rehabilitation Registry: Definitions and Comments for Selected Data Elements

To ensure consistency in the data entered, definitions of several of the data elements in the AACVPR Outpatient Pulmonary Rehabilitation Registry have been standardized. All data entered must conform to these definitions.

Please note the following:

1. We strongly recommend that patients have monitoring of the following outcomes pre and post (and ideally in follow-up):
 - a. Functional capacity using 6 minute walk test (6MWT) (see the PR Outcomes Toolkit for resources and competency).
 - b. Maximum dyspnea during 6MWT
 - c. Health-related Quality of life (HRQOL) using one of the six tools identified (Chronic Respiratory Questionnaire and St. George Respiratory Questionnaire have the strongest evidence base in PR.)
 - d. Depression or anxiety using one of the six tools identified
2. If you do not have data for a value, leave the field blank.
3. A zero means zero. Do not enter a zero into a field unless the value is truly zero.
4. For some clinical and functional assessments, be sure to select the appropriate units, e.g., feet/meters or pounds/kilograms, for the reported.

Regarding the symptom, QOL, and psychosocial tools, only one tool needs to be entered. It is not necessary to use all the tools displayed.

The data elements are listed in the order they may be encountered while moving through the patient record.

Referral Date	Enter the date the referral document was <i>signed by a physician</i> . For patients referred from an inpatient care team, this may be the date of the discharge orders.
Enrollment Date	Enter the date of the patient's first <i>billable exercise session</i> . An evaluation without exercise would not meet this criterion.
Admitting / Respiratory Diagnosis	Enter the diagnoses or procedures most related to the referral to PR as well as any secondary pulmonary diagnoses including past medical history. Enter all that apply and select a diagnosis/procedure as the primary diagnosis. For pulmonary procedures such as lung transplantation, enter the date of the hospital admission.
Severity of Obstruction	Use GOLD guidelines for severity based on airflow obstruction, i.e., mild > 80% predicted moderate 50-80% predicted severe 30-50% predicted very severe < 30% predicted (or 30-50% with chronic respiratory failure) All include FEV1 /FVC ratio < 70% predicted

Post-bronchodilator (pre-PB value if post value not available) Pulmonary Function Testing

Use the values from the most recent test date available.

Clinical Outcomes

Enter values (scores) for tests used for dyspnea (Maximum Borg with 6MWT, MMRC, and UCSD SOBQ, if used), health-related quality of life, and psychosocial (depression and/or anxiety) tools. If tool uses domains or subscales, enter these values.

Tobacco Status

If the patient has never used tobacco products, select the “Never smoker” option. If the patient has quit using tobacco products by the time of PR enrollment, select the “Former smoker” option. If the patient is actively using tobacco products at the time of enrollment, select the “Current smoker” option, indicating whether he/she is smoking “Every day” or “Some days.” If the patient is using tobacco products, but it is not clear how often, select the “Smoker, current status unknown” option.

If the patient is currently smoking cigars, leave the “Packs per day” field blank and enter the number of years the patient has smoked cigars.

Tobacco Status (DC/FU)

If the patient has not used tobacco products within the past seven (7) days, enter “Abstaining.” If the patient has used tobacco products within the past seven (7) days, enter “Not Abstaining.”

Medication

Long-acting beta agonists (long-acting beta2 agonists, long acting β 2-agonists, LABA) trigger smooth muscle relaxation resulting in dilation of bronchial passages with a long duration of action due to the addition of a long, lipophilic side-chain that binds to an exosite on adrenergic receptors. This allows the active portion of the molecule to continuously bind and unbind at beta2 receptors in the smooth muscle in the lungs. This class may reduce the need for shorter-acting β 2-agonists. Long-acting beta2 agonists with 12-hour duration of action include salmeterol (Serevent, combined with fluticasone in Advair), formoterol (Foradil, combined with budesonide in Symbicort and mometsone in Dulera), and arformoterol (a nebulized medicine available under the brand name Brovana). Long-acting beta2 agonists with 24-hour duration of action include indacaterol (Arcapta) and vilanterol (combined with fluticasone in Breo Ellipta).

Short-acting beta agonists (beta2 receptor agonists, SABA) trigger smooth muscle relaxation, resulting in dilation of bronchial passages. This class of drugs is often used for “rescue” or rapid relief of respiratory symptoms including dyspnea and exercise-induced bronchospasm. Examples include albuterol (salbutamol outside the United States; brand names in the United States include Ventolin, Proventil, and ProAir), levalbuterol (Xopenex), and pirbuterol (Maxair). Albuterol is available in both metered dose inhaler and nebulizer solution.

Long-acting anticholinergics (LAAC) relax and dilate the airways to control dyspnea and reduce bronchospasm. They also may reduce mucus

production. Examples include tiotropium (Spiriva), a LAAC which also reduces acute exacerbation of COPD and improves exercise capacity. Duration of action is 24 hours or longer. Tudorza Pressair (aclidinium bromide) is a LAAC used twice daily for the long-term maintenance treatment of bronchospasm in COPD.

Short-acting anticholinergics (muscarinic antagonist, SAAC) relax and dilate the airways to improve dyspnea and reduce bronchospasm. They also may reduce mucus production. Ipratropium (Atrovent) is available in inhaler and nebulizer solution (also combined with albuterol in Combivent Respimat and Duoneb nebulizer solution). Duration of action is typically 4 to 6 hours.

Inhaled corticosteroids (glucocorticosteroids, ICS) treat and prevent inflammation in the airway with minimal amounts absorbed into the body, thereby reducing systemic side effects. Examples are listed below.

Generic Name	Brand Name
Beclomethasone	QVAR
budesonide	Pulmicort
ciclesonide	Alvesco
fluticasone	Flovent
mometasone	Asmanex

Combinations of an inhaled corticosteroid and a long-acting beta2-agonist include:

Generic Name	Brand Name
budesonide and formoterol	Symbicort
fluticasone and salmeterol	Advair
mometasone and formoterol	Dulera
fluticasone and vilanterol	Breo Ellipta

Oral corticosteroids (glucocorticosteroids) reduce inflammation and swelling in the airway and treat certain inflammatory diseases including significant allergic reactions, autoimmune disorders and risk of organ rejection following organ transplantation. Patients should be instructed in correct use and potential adverse effects. Uses in obstructive lung disease may include acute treatment of exacerbation or pneumonia. Examples of oral corticosteroids include prednisone, prednisolone, and methylprednisolone.

Weight	Weigh the patient <i>prior to exercise</i> without shoes and while wearing his/her typical or usual exercise clothes. Record weight to the nearest half pound or kilogram if using a digital scale, to the nearest quarter pound if using a balance beam scale. The scale should be placed on a solid, level surface. Select the units used for measurement (pounds or kilograms).
Height	Measure the patient's height in stocking feet to the nearest quarter inch or whole centimeter. Have the patient stand erect with the heels, buttocks, back of shoulders and back of head against the vertical scale. With the patient holding their breath, bring the horizontal bar into contact with the highest point on the head. Select the units used for measurement (inches or centimeters).
6-Minute Walk Distance	Report the distance attained during the 6-minute walk test in feet or meters. (Please refer to " ATS Statement: Guidelines for the Six-Minute Walk Test " [<i>Am J Respir Crit Care Med.</i> 2002; 166: 111-117. doi: 10.1164/rccm.166/1/111] or the Guidelines for Pulmonary Rehabilitation, Fourth Edition, 2011, and Pulmonary Rehabilitation Outcomes Resource Guide [includes competency]).
Program Discharge Date	Enter the date of the last billed Phase 2 exercise session or discharge assessment session.
Completion Status	The patient is defined as having completed PR when he/she has undergone a final, formal discharge assessment session and updated treatment plan. If neither of these criteria is met, the patient has not completed PR and reason(s) for non-completion should be entered.
# of Sessions Completed	Enter the number of billed outpatient pulmonary rehab exercise sessions the patient completed.
Untoward Events	Untoward events are events that require immediate cessation of exercise, assessment by PR staff, and intervention, e.g., immediate contact of physician, transport to emergency department, rapid response call, code blue, and/or other acute intervention. It is assumed that the physician will be contacted regarding the patient's findings and disposition. These are tracked and reported during the PR program.
Exacerbation	Exacerbation is defined as an increase in or the new onset of more than one respiratory symptom (cough, sputum, sputum purulence, wheezing, or dyspnea) lasting three (3) days or more and requiring treatment with an antibiotic or a systemic corticosteroid. Exacerbations are reported during both PR and the follow-up period (six months from the start of PR).

APPENDIX 3:

PR Outcomes Resource Guide: Functional Status

Test	Link, Basic Information	Provider Considerations, Price	Sensitivity, Validity, Reliability	Minimal Important Difference (MID)
6-Minute Walk Test (6MWT)	<i>6-Minute Walk Test (6MWT)</i> The 6MWT is a practical, simple test that measures the maximal distance walked in 6 minutes. It can be used to evaluate functional capacity and the global and integrated responses of all systems involved during exercise. It has the potential to reflect the ability to perform daily activities. The test does not provide specific information of organ function. The strongest indication for the 6MWT is the measurement of the response to medical interventions in patients with chronic respiratory disease. The main outcome is the 6-minute walk distance, but the test also provides useful information regarding oxyhaemoglobin desaturation and symptoms with exercise.	• Relatively simple to perform and well tolerated. • Uses a 100 ft. level hallway or track. • The patient rests for 10 minutes before the test. • Oximetry is recommended for all patients. Modern oximeters reduce motion artifact. A finger oximeter or a handheld oximeter in a pouch should be used to avoid influencing the patient's stride. • The provider should not walk with the patient. Walking behind the patient is acceptable if care is taken not to 'pace' the patient. • Use the ATS script. The 6MWT script, worksheet and report are available by clicking here. • Public domain; no license agreement is required.	• Validated and standardized in chronic lung disease including COPD and idiopathic pulmonary fibrosis (IPF). • Correlates with pulmonary function, health-related quality of life, maximum exercise capacity, and mortality (Wise R, Brown C, 2005) and subjective improvement in dyspnea (Mungall & Hainsworth 1979). • Many sources of variability, e.g. patient motivation, height, gender, comorbidities, use of gait aids, use of oxygen, co-morbidities, course length, etc. (ATS 2002). • Testing conditions, e.g., course length, should be kept constant on repeat testing. • Learning effect is up to 17%; two tests should be performed with the best distance recorded. • Test results significantly reduced in COPD GOLD	The MID is approximately 30 meters, and definitely between 25 and 33 meters, without evidence of variation according to underlying lung disease. (Holland A 2010, du Bois R et al 2011). An ATS ERS update to the 6MWT statement is expected in 2014.

6 Minute Walk Conversion Table				
Distance (feet)	Distance (meters)	Meters/min	VO2(ml/kg/min)	METs
980	299	50	8.4784	2.42
990	302	50	8.5292	2.44
1000	305	51	8.58	2.45
1100	335	56	9.088	2.60
1200	366	61	9.596	2.74
1300	396	66	10.104	2.89
1400	427	71	10.612	3.03
1500	457	76	11.12	3.18
1600	488	81	11.628	3.32
1700	518	86	12.136	3.47
1800	549	91	12.644	3.61
1900	579	97	13.152	3.76
2000	610	102	13.66	3.90
2100	640	107	14.168	4.05
2200	671	112	14.676	4.19
2300	701	117	15.184	4.34
2400	732	122	15.692	4.48
2500	762	127	16.2	4.63
2600	792	132	16.708	4.77
2700	823	137	17.216	4.92
2800	853	142	17.724	5.06
2900	884	147	18.232	5.21
3000	914	152	18.74	5.35
Example:				
1500	457	76	11.12	3.18

COMPETENCY: SIX MINUTE WALK TEST (6MWT) IN OUTPATIENT PULMONARY REHABILITATION

Name / title / credentials _____

Evaluation date _____

ABSOLUTE CONTRAINDICATIONS	RELATIVE CONTRAINDICATIONS
• Acute myocardial infarction (3–5 days) • Unstable angina • Uncontrolled arrhythmias causing symptoms or hemodynamic compromise • 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%* • Respiratory failure • Acute noncardiopulmonary disorder that may affect exercise performance or be aggravated by exercise (i.e. infection, renal failure, thyrotoxicosis) • Mental impairment leading to inability to cooperate * Exercise patient with supplemental O₂.	• Left main coronary stenosis or its equivalent • Moderate stenotic valvular heart disease • Severe untreated arterial hypertension at rest (> 200 mm Hg systolic, 120 mm Hg diastolic) • Tachyarrhythmias or bradyarrhythmias • High-degree atrioventricular block • Hypertrophic cardiomyopathy • Significant pulmonary hypertension • Advanced or complicated pregnancy • Electrolyte abnormalities • Orthopedic impairment that compromises exercise performance

COMPETENCY: SIX MINUTE WALK TEST (6MWT) IN OUTPATIENT PULMONARY REHABILITATION

Expectation: The BLS (ACLS preferable) prepared pulmonary rehabilitation clinician will demonstrate correct methods of instructing, performing (including monitoring), documenting and reporting the 6MWT as a clinical outcome measurement.

Before the test:

- Standardize the shape of the walking course with a long, flat, straight, enclosed corridor measuring a minimum of 100 feet that is free of other traffic that may interfere with the walk. (Do not vary the location of the test for each patient).
- A medical history has been reviewed and any precautions or contraindication have been identified.

ATS, AACVPR and ACSM differ on absolute or relative contraindications for 6MWT. Rehabilitation centers need to identify which of these parameters are used and use them consistently.

ATS CPET statement (will be used in updated ATS ERS field test / 6MWT statement: * Exercise patient with SpO₂ < 85% with supplemental O₂.
AACVPR PR Guidelines, 4th edition, Chap.4: Relative precautions to exercise testing include resting heart rate > 125 beats/min after 10 min. rest, systolic BP > 200 mm Hg and / or diastolic BP > 110/100 mm Hg.

ACSM Guidelines for Exercise Testing and Prescription, 8th ed. Chapter 5, page 107: Exercise testing after MI can be performed before or soon after hospital discharge for prognostic assessment, activity prescription, and evaluation of further medical therapy or interventions, including coronary revascularization. Submaximal tests may be used before hospital discharge at 4 to 6 days after acute MI.

A short acting inhaled bronchodilator medication may be taken within 1 hour of testing or upon arrival if prescribed by the physician. Document the name and dose of inhaler used and time taken. The patient will rest at least 10 minutes before beginning the test with comfortable ambient temperature & humidity maintained. Comfortable clothes and shoes should be worn and the patient should be walking with their usual aids such as rollator, walker or cane. Document any oxygen used (type, flow rate, continuous vs. pulse and if carrying or pulling in a cart). ATS recommends repeating the test at similar times of the day if possible. Pulse oximetry is required. A finger oximeter can be used or handheld oximeter in a pouch to avoid influencing the patient's pace. Avoid walking next to the patient. Two walks should be completed with the best of two distances used.

COMPETENCY: SIX MINUTE WALK TEST (6MWT) IN OUTPATIENT PULMONARY REHABILITATION

Critical elements performed by staff person:

		Proficient	Needs review/ improvement	Inadequate
1.	Identifies appropriate patients to participate, following policy and above procedure for indications & contraindications			
2.	Prepares equipment in advance, e.g. emergency equipment (automatic defibrillator), measured 100 feet distance hallway or track, stop-watch or count-down timer, B/P cuff & stethoscope, oximeter, O2 with cart / carrier, walker, Borg scale etc. Hall is marked every 10 feet and at 'turnaround' points.			
3.	Explains the purpose of test to the patient & gives standardized instructions. Advises patient in use of Borg dyspnea tool to report maximum dyspnea with 6MWT. Borg may be used for fatigue and / or effort.			
4.	Demonstrates correct technique for advising and supervising the patient to walk alone. The patient may use their usual walking aids if needed. Resting, including sitting is permitted if necessary, while clock keeps running. If stopping during the test, the patient is advised to resume walking when able. <i>“The object of this test is to walk as far as possible for 6 minutes. You will walk back and forth in this hallway. Six minutes is a long time to walk, so you will be exerting yourself. You will probably get out of breath or become fatigued. You are permitted to slow down, to stop, and to rest as necessary. You may lean against the wall while resting, but resume walking as soon as you are able. You will be walking back and forth around the marker. You should pivot when turning around the marker and continue back the other way without hesitation. Now I'm going to show you. Please watch the way I turn without hesitation.”</i> Demonstrate by walking one lap yourself. Walk and pivot around a marker briskly. <i>“Are you ready to do that? I am going to keep track of the number of laps you complete. Remember that the object is to walk AS FAR AS POSSIBLE for 6 minutes, but don't run or jog.”</i>			

		Proficient	Needs review/ improvement	Inadequate
5.	Gives standardized encouragement (in even tones) at specific time intervals: After the first minute, tell the patient the following: "You are doing well. You have 5 minutes to go." When the timer shows 4 minutes remaining, tell the patient the following: "Keep up the good work. You have 4 minutes to go." When the timer shows 3 minutes remaining, tell the patient the following: "You are doing well. You are halfway done." When the timer shows 2 minutes remaining, tell the patient the following: "Keep up the good work. You have only 2 minutes left." When the timer shows only 1 minute remaining, tell the patient: "You are doing well. You have only 1 minute to go." Do not use other words of encouragement (or body language to speed up).			
6.	Monitors O ₂ saturation, heart rate, and Borg dyspnea before, during (at maximal level), & after the test. BP is checked before and after test. Oxygen titration should not be performed during 6MW testing.			
7.	Documents test performance and assessment of patient's responses.			
8.	Enters selected test data, e.g. distance achieved in feet or meters, number of stops etc.			
9.	Compares entry & exit results and reports findings including change in distance and clinical findings to patient and physician.			
10	Follows hospital policy for when to stop the 6MW test and documents and reports abnormal findings.			
11.	Oxygen titration should not occur during the test. – flow rate to be held constant throughout. The reason is to allow comparison of distance between tests and that can't be done unless they are done on the same flow rate.			

COMPETENCY: SIX MINUTE WALK TEST (6MWT) IN OUTPATIENT PULMONARY REHABILITATION

Programs need to have documented protocols for oxygen titration separate from 6MWT: Do not titrate oxygen during 6 MWT. If desaturation occurs at rest ($\text{SpO}_2 < 89\%$), begin oxygen per program protocol or policy and procedure (P&P). If desaturation occurs during walking ($\text{SpO}_2 < 89\%$) the patient is rested, started on O_2 , and titrated during walking based on program protocol or P&P. Patient is assessed on whatever conserving delivery device that may be used to support portability. Following 10 minute rest, perform 6MWT using oxygen. Use same oxygen flow rate and system for every walk.

For knowledge	For skills
ATS 6MWT. http://ajrccm.atsjournals.org/cgi/content/full/166/1/111	Instruction/demonstration session by expert on 6MWT
AACVPR Guidelines For Pulmonary Rehabilitation Programs 4th Ed, 2011	Practice & return demonstration on staff
JCR article: <i>COPD Stage and 6 Minute Walk Outcome</i> , Sept-Oct 2001	Observation of an actual test on a PR patient

Evaluation:

Staff signature _____ Date _____

Preceptor signature _____ Date _____

Test	Link, Basic Information	Provider Considerations, Price	Sensitivity, Validity, Reliability	Minimal Important Difference (MID)
Incremental Shuttle Walk Test (ISWT) and Endurance Shuttle Walk Test (ESWT)	<u>Incremental Shuttle Walk Test (ISWT) and Endurance Shuttle Walk Test (ESWT)</u> The Incremental Shuttle Walk Test and Endurance Shuttle Walk Test are different but related tests of functional capacity. The ISWT is a incremental, symptom limited walking test that simulates a symptom-limited cardiopulmonary exercise test. The ESWT is the equivalent of the constant workload test. The primary outcome of the ISWT is distance, measured to the nearest 10 meters. The primary outcome of the ESWT is time, consistent with other endurance tests. Other parameters monitored include, number of shuttles; Borg RPE, dyspnea and/or angina scale ratings, resting/exercise oxygen saturation, HR and BP responses. The test uses a constant acoustic signal frequency throughout the walk (Singh SJ, et al 1992). Shuttle speeds are increased every minute in the ISWT but held at a	• Relatively simple to perform and well-tolerated. • Uses an audio signal to direct the patient's walking pace on a 10-meter course. • The test ends when the patient is more than 0.5meters from the turnaround point on a seconds successive shuttle. • ISWT should be measured on two occasions to account for a learning effect, with the best result recorded. • There does not appear to be a learning effect for ESWT. The patient should rest for 30 minutes between the tests. The patient is not given encouragement during the test. • Available data suggest a safety profile similar to the6MWT, but it is less commonly reported in the literature. • The test is public domain.	• Better correlation with peak oxygen uptake than the6MWT; easier to prescribe exercise intensity for a training program from the ISWT. • Less validation, less widespread use; does not reflect common daily activities that require endurance and pacing.	ISWT estimated at 47.5 meters (Singh, S. 2008). ESWT is 45-85 meters, or a change of 13-15% from baseline (Pepin et al, Thorax 2010). Two levels of MID for the SWT represent better and much better levels.

	predetermined % of the VO₂max predicted for the ESWT. The principle outcome of the ISWT is distance walked, whereas the principle outcome of the ESWT is sub-maximal exercise capacity. The ESWT may be more sensitive to change with rehabilitation than the ISWT. ISWT: Singh S et al 1992. ESWT: Revill S, et al, 1999.			
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