Patient Testing – Sub Maximal Stress Test (6-minute walk, 6MW)

Audience All personnel in the Pulmonary Laboratories: Pulmonary Function Clinics and Center for Pulmonary Rehabilitation.

Purpose To describe the procedure to follow when a request is made for Sub Maximal stress test (6-minute walk test, 6MWT).

Contraindications

Absolute

- Unstable angina
- Syncope
- Active endocarditis
- Acute myocarditis or pericarditis
- Symptomatic severe aortic stenosis
- Acute respiratory failure
- Uncontrolled heart failure
- Thrombosis of lower extremities
- Suspected dissecting aneurysm
- Uncontrolled asthma
- Pulmonary oedema

- Acute pulmonary embolus or pulmonary infarction
- 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
- Uncontrolled arrhythmias causing symptoms or hemodynamic compromise

Relative

- Left main coronary stenosis or its equivalent
- Moderate stenotic valvular heart disease
- Severe untreated arterial hypertension at rest (200 mmHg systolic, 120 mmHg diastolic) (<90 and/or >180 systolic; <60 and/or >120 diastolic)
- Tachyarrhythmias or brady arrhythmias (<55 and/ or >120)
- High-degree atrioventricular block
- Hypertrophic cardiomyopathy
- Significant pulmonary hypertension
- Advanced or complicated pregnancy
- Electrolyte abnormalities
- Orthopedic impairment that prevents walking

Other symptoms upon patient arrival the Therapist determines through assessment.

Procedure

The following are the correct steps for performing a Sub Maximal stress test on a patient:

- Order is received from a physician requesting a Sub Maximal stress study (6-minute walk).
- Patient is checked in the clinic and all equipment is gathered for testing. Therapist will need to check the patient orders for any special instructions and contraindications and determine if test is for oxygen "TITRATION" or for "DISTANCE".
- The patient is brought back into the clinic area.
- Patient's blood pressure, heart rate, pulse oximetry, and respiratory rate are measured. If the therapist has difficulty obtaining an accurate pulse oximetry, then other oximeters may be used. Assistance may be required by another therapist in obtaining values during testing (i.e., carrying larger monitor for accurate readings during the walk). The patient is also evaluated using the Borg Dyspnea Scale.
- If any contraindications are noted, the Therapist may contact ordering physician or Medical Director for advisement.
- If patients' hands are cold, the therapist may use an infant heel warmer or warmed moist washcloth to assist in obtaining a pulse oximeter reading.
- Therapist will fully explain the test to the patient and move the patient to the hallway for testing. Therapist should instruct patient to walk at their own pace and may pause or slow down during the walks. Should patient require to sit down, testing will end. Inform patient that therapist may pause

patient during testing. Patient should notify therapist of any chest pain, dizziness, or lightheadedness during walk.

- For Titration studies, the patient's pulse oximetry and will continuously monitor heart rate and a nasal cannula will be placed on the patient.
- For Distance studies, only pre and post vitals
- Patients are to start test on room air, unless otherwise requested, and to walk as far as possible for 6 minutes with minimal encouragement.
- No jogging or running is allowed.
- If patients' resting SpO2 is < 85%, place patient on oxygen and contact ordering physician for advisement. To continue with titration, add 1L every 30 seconds until SpO2 is 90%, then walk may be started and oxygen titrated per policy.
- During walk, supplemental oxygen will be provided when the patient's SpO2 is </= 88%. At this time, the patient will be paused and placed on 1 L/min by nasal cannula.
- If the patient continues to desaturate (SpO2 < 88 %), the therapist will continue to pause the patient until SpO2 ≥ 90% has been achieved. If after 30 second pause, patient has not reached a saturation of ≥ 90%, increase liter flow by 1 L/min every 30 seconds until SpO2 ≥ 90% SpO2 has been achieved.
- The patient will then be instructed to continue walking.
- If another episode of desaturation occurs, the therapist will increase the flow rate another 1 L/min and pause the patient until SpO2 ≥ 90% is achieved. If after a 30 second pause, the patient has not reached a saturation of ≥ 90%, increase liter flow by an additional 1 L/min every 30-45 seconds until SpO2 ≥ 90% SpO2 has been achieved.
- Once SpO2 ≥ 90% has been reached, the therapist will instruct patient to continue walking at their pace.
- If patient stops to rest, the therapist will note time, distance, symptoms experienced, and how long the patient rested.
- The test ends at six minutes with recording of Borg scale, SpO2, heart rate and distance ambulated while patients being maintained on supplemental oxygen. Patient remains on end-of-test settings (O2 or RA) during recovery.
- Post-test recovery heart rate and SpO2 should be recorded every 30 seconds until patient has achieved resting pre-walk SpO2 within 3% and heart rate within 10bpm of baseline.
- If any adverse events during testing which require interventions, the ordering physician and/or Pulmonary Fellow assigned to PFTs should be contacted.
- **Patients are not allowed to sit down during walk test. If they request to sit then it ends the test.**
- **<u>If supplemental oxygen was required during the walk, oxygen should not be removed until baseline SpO2 is achieved. Weaning is not performed.</u>**

- The therapist should document in the comments all information from test including symptoms, pauses, cane or walker assistance, distance and time to return to baseline, and all required information on 6-minute walk form.
- **If the patient's oxygen saturation dropped below 90% the therapist should notify the ordering physician. If the ordering physician is unavailable the therapist should notify the pulmonary fellow assigned on the monthly rotation. If a physician has not returned a call or page, the therapist will notify the Medical Director. The patient should remain in the lab until the therapist has spoken with a physician.**
- Results are entered into Breeze software where a pulmonary fellow and faculty will interpret and finalize the report. Therapist will use "TITRATION" or "DISTANCE" at beginning of walk test data so reading fellow/faculty are aware of type of testing.
- Patients testing for Pulmonary Rehab, Pulmonary Hypertension (PAH), Post-Covid Recovery Clinic (PCRC) only require pre and post vital readings, therefore only "distance" will be documented during actual walk test. If Rehab and PAH patients are on oxygen, the patient can use it during testing at their prescribed rate.

This form documents the approval and history of the policies and procedures for the Pulmonary Function Laboratory. The Medical Director signs all policies verifying initial approval. Annually thereafter, the Director and/or designee may approve reviews and revisions.

Date	Approved by:	Signature
11/07	**V. Cardenas, MD** **Medical Director Pulmonary Laboratory**	
6/09	**V. Cardenas, MD** **No changes to the policy**	
7/10	**V. Cardenas, MD** **No changes to the policy**	
1/11	**A. Duarte, MD** **Medical Director Pulmonary Laboratory**	
2/12	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **No changes to the policy**	
5/14	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **Changes made to policy**	
8/16	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **Changes made to policy**	

11/17	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **Changes made to policy**
8/19	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **Changes made to policy**
11/21	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **Changes made to policy**
11/22	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **Changes made to policy**
9/23	**A. Duarte, MD** **Medical Director Pulmonary Laboratory** **No changes made to policy**