


<b>Name of Policy:</b> <u>Contraindications and Test End Criteria for Cardiopulmonary Exercise Testing (CPX)</u> <b>Policy Number:</b> 3364-162-02 <b>Department:</b> Ambulatory Services-Cardiovascular and Pulmonary Rehabilitation <b>Approving Officer:</b> Chief Executive Officer - UTMC <b>Responsible Agent:</b> Director Cardiovascular Services <b>Scope:</b> Ambulatory Services	
<b>Effective Date:</b> 02/03/2022 <b>Initial Effective Date:</b>	
<input type="checkbox"/> New policy proposal <input checked="" type="checkbox"/> Minor/technical revision of existing policy <input type="checkbox"/> Major revision of existing policy <input type="checkbox"/> Reaffirmation of existing policy	

### I. Policy Statement

Guidelines will exist to outline circumstances that would prohibit a patient from undergoing a Cardiopulmonary Exercise Test and to determine criteria for stopping a Cardiopulmonary Exercise Test.

### II. Purpose of Policy

To ensure the safety of the patient during the Cardiopulmonary Exercise Test procedure.

### III. Procedure

A. Prior to proceeding with a Cardiopulmonary Exercise Test, staff will evaluate the patient for any contraindications to exercise testing. Staff may consult with the referring physician, cardiology fellow, or nurse practitioner if there are concerns with proceeding with the testing. In the presence of any absolute or relative contraindications to exercise testing, staff should only proceed with the approval of the cardiologist or cardiology fellow.

#### i. Absolute Contraindications

1. Acute myocardial infarction within 2 days
2. Ongoing unstable angina
3. Uncontrolled cardiac arrhythmia with hemodynamic compromise
4. Active endocarditis
5. Symptomatic severe aortic stenosis
6. Decompensated heart failure
7. Acute pulmonary embolism, pulmonary infarction, or deep venous thrombosis
8. Acute myocarditis or pericarditis
9. Acute aortic dissection
10. Physical disability that precludes safe and adequate testing

#### ii. Relative Contraindications

1. Known obstructive left main coronary artery stenosis

2. Moderate to severe aortic stenosis with uncertain relationship to symptoms
3. Tachyarrhythmias with uncontrolled ventricular rates
4. Acquired advanced or complete heart block
5. Recent stroke or transient ischemia attack
6. Mental impairment with limited ability to cooperate
7. Resting hypertension with systolic >200 mmHg or diastolic >110 mmHg
8. Uncorrected medical conditions such as significant anemia, important electrolyte imbalance, and hyperthyroidism

B. During a CPX test, staff will monitor the patient closely for any signs/symptoms of exercise intolerance and will use the following indications for terminating a CPX test:

i. Absolute Indications

1. ST elevation (>1.0 mm) in leads without preexisting Q waves because of prior MI (other than aVR, aVL, or V1)
2. Drop in systolic blood pressure of >10 mmHg, despite an increase in workload, when accompanied by other evidence of ischemia
3. Moderate-to-severe angina
4. Central nervous system symptoms (e.g., ataxia, dizziness, or near syncope)
5. Signs of poor perfusion (cyanosis or pallor)
6. Sustained ventricular tachycardia or other arrhythmia, including second- or third-degree atrioventricular block that interferes with normal maintenance of cardiac output during exercise.
7. Technical difficulties monitoring the ECG or systolic blood pressure
8. The individual's request to stop

ii. Relative Indications

1. Marked ST displacement (horizontal or downsloping of >2 mm, measure 60 to 80 ms after the J point in a patient with suspected ischemia)
2. Drop in systolic blood pressure >10 mmHg (persistently below baseline) despite an increase in workload, in the absence of other evidence of ischemia
3. Increasing chest pain
4. Fatigue, shortness of breath, wheezing, leg cramps, or claudication
5. Arrhythmias other than sustained ventricular tachycardia, including multifocal ectopy, ventricular triples, supraventricular tachycardia, and bradyarrhythmias that have the potential to become more complex or to interfere with hemodynamic stability
6. Exaggerated hypertensive response (systolic blood pressure >250 mmHg or diastolic blood pressure >115 mmHg)
7. Development of bundle-branch block that cannot be distinguished from ventricular tachycardia
8. SpO<sub>2</sub> ≤ 80%

C. References

- i. American College of Sports Medicine's Guidelines for Exercise Testing and Prescription, Eleventh Edition, 2021.

<p><b>Approved by:</b></p> <p><u>/s/</u> <u>3/2022</u>  Todd Korzec, RN, BSN  Director Cardiovascular Services  Date</p> <p><u>/s/</u> <u>3/2022</u>  Samer Khouri, M.D.  Associate Professor  Chief, Division of Cardiovascular Medicine  Date</p> <p><u>/s/</u> <u>3/2022</u>  Christine Stesney-Ridenour, FACHE  Chief Operating Officer – UTMC  Date</p> <p><i>Review/Revision Completed By: Todd Korzec</i></p>	<p><b>Review/Revision Date:</b>  6/01/2019  2/03/2022</p>
<p><b>Policies Superseded by This Policy:</b></p>	<p><b>Next Review Date:</b> 2/1/2025</p>