

**APPENDIX: Q**

**TITLE: VAGAL MANEUVER PROCEDURE**

**REVISED: 15 April 2006**

**I. BACKGROUND:**

Vagal maneuvers are non-pharmacologic interventions used to terminate and diagnose tachy-dysrhythmias. Vagal maneuvers increase parasympathetic tone and slow conduction through the AV node.

The most common methods for stimulating the vagus nerve are Valsalva's maneuver and Carotid Sinus Massage (CSM). A safer variant of carotid sinus massage is Carotid Sinus Pressure (CSP).

Facial immersion in ice water is an acceptable alternative for pediatric patients.

**II. INDICATIONS:**

- Treatment of symptomatic supraventricular tachycardia (decreased level of consciousness, angina, hypotension, congestive heart failure).
- Treatment of tachycardia of unknown etiology (supraventricular vs. ventricular) with hypoperfusion.
- To differentiate supraventricular tachycardia from ventricular tachycardia in the symptomatic/decompensated patient. (Use of vagal maneuvers in this setting shall not delay synchronized cardioversion)

The Valsalva maneuver and CSM shall only be attempted when the patient's EKG is being monitored and venous access has been established. Generally, CSM shall only be attempted after the patient has failed to respond to pharmacological intervention.

**III. COMPLICATIONS & SPECIAL NOTES:**

- Dysrhythmias are common after conversion by vagal maneuvers. Note: Treatment is indicated only if persistent (greater than 3-5 minutes).
- Other potential complications include:
  - Asystole.
  - Stroke from dislodged carotid artery thrombus in persons with atherosclerotic disease.
  - Brain ischemia from occlusion of carotid artery or compromise of marginally perfused areas of brain.
- It is difficult to differentiate congestive heart failure caused by tachycardia from a tachycardia caused by CHF. The symptoms of a patient with a pulse under 160 are usually not the result of a rate related problem.
- Pediatric patients may respond better to facial immersion in ice water. The diving reflex causes peripheral vasoconstriction and a vagally induced decrease in heart rate.
- Sometimes Vagal Maneuvers can be used to diagnose tachy-dysrhythmias.

Tachycardia	Expected Response to Vagal Maneuvers
Sinus Tachycardia	No response or gradual slowing
Paroxysmal Atrial Tachycardia	No response or conversion to sinus rhythm
Atrial Flutter increasing block	Ventricular slowing revealing flutter waves
Atrial Fibrillation	Variable slowing
Ventricular Tachycardia	No response

**IV. PROCEDURE:**

**Patients should have continuous EKG monitoring and IV access. A 12-lead EKG is preferred prior to initiation.**

**Valsalva's maneuver:** Performed by the patient (patient must be conscious and cooperative)

- Document the dysrhythmia before treating
- Explain the procedure to the patient
- Instruct the patient to inhale and hold their breath and:
  - Bear down as if to have a bowel movement, and to hold this position for 20-30 seconds.
- OR**
- Blow forcefully through a straw (or IV catheter/similar device) for as long as possible (at least 20 seconds)
- Monitor rhythm continuously.
- Stop maneuver immediately if:
  - Patient becomes confused
  - HR drops below 100 BPM
  - Asystole occurs

**Carotid sinus pressure**

- Patients with high cholesterol, previous strokes, or other significant risk factors for thrombus should not have CSM performed.
- Document the dysrhythmia before treating
- Explain the procedure to the patient
- Place the patient in supine position
- Expose the neck and hyperextending slightly.
- Gently palpate for carotid pulses on one side, then the other. Proceed only if bilateral carotid pulses are palpable.
- Auscultate for bruits over both carotid arteries.
  - Do not perform the procedure if a bruit is heard on either side.**
- Turn the patient's head to the left side.
- Turn the paper recorder on and leave on until the procedure is completed.
- Apply procedure:
  - (CSP) Gentle and steady pressure over the right carotid sinus and hold for 5-10 seconds.
- OR**
- (CSM) Gentle and steady messaging motion over the right carotid sinus for 5-10 seconds
- Pressure should be firm but should not totally occlude blood flow.
- Monitor rhythm constantly throughout procedure.
- Release pressure immediately if:
  - Patient becomes confused or shows signs of brain ischemia
  - HR drops below 100 BPM
  - Asystole occurs
- If asystole occurs and persists for longer than 15 sec:
  - Begin CPR
  - See asystole protocol
- If no response to the right side carotid sinus pressure, wait 2-4 minutes and repeat the procedure on the left side.