

## GENERAL GUIDELINES FOR APNEA CHALLENGE

### DESCRIPTION:

The criteria and procedure for diagnosis of brain death are defined in LSUMC Hospital Administration Policy. The purpose of these guidelines is to clarify the procedure for performing the "apnea challenge" portion of the brain death evaluation.

Diagnosis Test 'IF': There is absence of spontaneous breathing when the patient is disconnected from the mechanical ventilator. Hypocapnia should be excluded and oxygen should be administered by airway when the ventilator is disconnected.

### NOTE:

This test shall be performed only by physician order, and the physician must be present during the actual apnea challenge.

### INDICATIONS:

The only indication for performing an apnea challenge is in conjunction with a brain death evaluation.

### CONTRAINDICATIONS:

Depressant drugs, neuromuscular blockers, hypothermia or metabolic disturbances are responsible for the patient's comatose state.

### ADVERSE EVENTS:

1. Possible hypoxia if O<sub>2</sub> is not administered properly.
2. Bradycardia, hypotension

### PREPARATION:

1. Place pulse oximeter to monitor oxygenation while patient is disconnected from ventilator.
2. Obtain a baseline ABG on current ventilator settings.
3. If the PaCO<sub>2</sub> is less than 40 mmHg, it may be necessary to adjust the ventilator settings to increase the PaCO<sub>2</sub> above 40 mmHg. This should prevent a lengthy time of disconnection from the ventilator as calculated below.

### TECHNIQUE:

1. Saturate the blood with O<sub>2</sub> by giving 100% O<sub>2</sub> via the ventilator for 10 minutes.
2. Disconnect the patient from the ventilator, but supply 100% O<sub>2</sub> (at 6 LPM) via a cannula loosely placed in the endotracheal tube. This would provide O<sub>2</sub> exchange by diffusion in spite of apnea (apneic oxygenation). (In the event that the pulse oximeter SaO<sub>2</sub> decreases below 90%, or other adverse events occur, stop the test and return the patient to the ventilator)
3. The number of minutes required for observation for presence of spontaneous respirations (usually less than 10 minutes) =

$$(60 - \text{patient's PaCO}_2) / 3$$

4. After the time interval calculated above, obtain an ABG. Verify that the PaCO<sub>2</sub> has reached 60 mmHg. (Note: It may take 5 to 10 minutes for the ABG to be processed).
5. Record the absence or presence of spontaneous respirations while the patient is disconnected from the ventilator.
6. Return the patient to the ventilator at pre-test settings.

7. If the PaCO<sub>2</sub> does not reach 60 mmHg, repeat the test possibly adjusting the ventilator to provide a higher baseline PaCO<sub>2</sub>. This time it may be recommended to wait one minute longer than the calculated time interval to obtain the ABG.

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