I. Purpose
This policy is designed to serve as a guideline for the delivery quality patient care via arterial punctures.

II. Policy
A. A physician’s order must be obtained to perform arterial blood gas punctures.
B. Respiratory Therapists must be deemed competent annually by the Medical Director of Respiratory Care or his or her designee.
C. Licensed respiratory care practitioners may routinely perform arterial blood gas punctures on the radial and brachial arteries. Femoral arterial punctures may be performed only during a medical emergency under the direct supervision of a treating physician.
D. Arterial blood gas punctures are indicated for the:
   1. Assessment of general cardiopulmonary status to aid in evaluation of ventilatory, acid-base and oxygen status.
   2. Assessment of effects of therapy on ventilatory, acid-base and oxygen status.
E. Arterial blood gas aspirations are purposed to:
   1. Provide a record, for interpretation by the treating physician, of the following values:
      a. pH: negative logarithm of the hydrogen ion
      b. PaCO₂: arterial carbon dioxide tension
      c. PaO₂ arterial oxygen tension
      d. SaO₂ arterial oxygen saturation
      e. HCO₃⁻ plasma bicarbonate concentration
      f. Base excess/deficit: number of milliequivalents per liter of bicarbonate above and below the normal base buffer.
   2. Establish measured and calculated values for correlation with other diagnostic data to determine the ventilatory, acid-base and oxygenation status of a patient.
F. A positive Allen’s test demonstrates adequate collateral, circulation to the hand via the ulnar artery; indicating that the radial artery should be the puncture site of choice.
G. A negative Allen’s test demonstrates inadequate collateral circulation: indicating that the brachial artery should be the puncture of choice.
SUBJECT: Arterial Puncture

H. The puncture site must be thoroughly cleansed with betadine, alcohol and the arterial puncture procedure performed with strict adherence to aseptic techniques.
I. Numerous variations of the arterial puncture technique exist. One should be selected which best assures optimum prevention of bleeding, arterial obstruction and infection while providing an acceptable, anaerobic sample.
J. Upon completion of the arterial puncture, direct pressure should be applied to the puncture site for a minimum of 5 minutes for radial and brachial arteries, and 10 minutes for femoral arteries.
K. All samples should be transported to the appropriate laboratory site in an ice bath.
L. Universal Precautions should be practiced during the entire process.

III. Procedure
Clinical skill procedures for arterial blood gas sampling may be found in Appendix A.
A. Arterial Blood Gas Puncture: Radial and Brachial