

# Air Embolism Protocol

## PURPOSE

Prevention of life-threatening complications in a WITNESSED event of air entering into the vascular system.

## POLICY

1. The RN shall be competent to insert, manage, and remove all types of IV catheters toward the goal of preventing air emboli.
2. Luer-locking connections shall be used on all catheter-administration junctions.
3. Air may enter the bloodstream through the catheter in several ways:
  - a. If any of the IV connections pull apart.
  - b. If the needleless connector, IV tubing or syringe is removed without first clamping the catheter (when applicable).
  - c. If the needleless connector separates from the catheter.
  - d. If the catheter hub or needleless connector cracks or breaks.
  - e. Physical defects in the IV tubing, needleless connector, syringe or catheter.
  - f. If the patient takes a deep breath while the tubing or needleless connector is being changed, particularly with a subclavian or a jugular catheter.
4. The nurse should suspect air embolism with the sudden onset of dyspnea, continued coughing, breathlessness, chest pain, hypotension, jugular venous distension, tachyarrhythmias, wheezing, tachypnea, altered mental status, altered speech, changes in facial appearance, numbness, and paralysis. Clinical events from air emboli produce cardiopulmonary and neurological signs and symptoms.
5. If the catheter damage occurs too close to the skin to permit repair, the catheter must be removed and replaced by the physician. The physician should be notified immediately.

## EQUIPMENT

Occlusion clamp

1 pair of gloves

50ml luer lock syringe

Syringe of appropriate size pre-filled with heparin or 0.9% sodium chloride (USP) flush solution

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## PROCEDURE

1. In a **WITNESSED EVENT**, the following sequential actions must be taken quickly by the professional:
2. **The flow of air through the catheter must be stopped immediately.** Clamp the catheter if possible proximal to any noted breaks or leaks.
3. Position patient on the left side with the heart lower than the hips (left lateral steep Trendelenburg). Several pillows under the left hip may be needed to attain this position. This causes the air to rise in the right atrium, preventing it from entering the pulmonary artery.
4. **Immediately call the physician and emergency help if necessary.**
5. When possible, luer-lock a 50ml syringe onto the catheter; release the clamp and draw back air until 15-20ml of blood is returned. (Initially air, then foam, then blood will be returned.) Clamp the catheter again and remove the syringe.
6. At this point, flush the repairable catheter if possible. Inject the dosage and amount of heparin flush following the usual technique to maintain catheter patency. Short-term rigid catheters will need to be replaced by the physician.
7. Document interventions and follow-up treatment in the patient's medical record. Document the air embolism event on a Quality Assessment Report (QAR) or record the data in appropriate outcomes database for further evaluation as part of the Performance Improvement process.

## RESPONSIBILITY

The Clinical Specialist has the responsibility for approval of, compliance with, and revisions to this policy.

## MODIFICATION/REVISION

This policy is subject to modification or revision in part or its entirety to reflect changes in conditions subsequent to the effective date of this policy.

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## REFERENCES

1. Infusion Nursing Standards of Practice – Revised 2016; Journal of Infusion Nursing, Supplement to January/February 2016, Volume 39, Number 1S.
2. Infusion Nursing: An Evidence-Based Approach, Third Edition edited by Mary Alexander, Ann Corrigan, Lisa Gorski, Judy Hankins, and Roxanne Perucca.
3. INS (Infusion Nurses Society) Policies and Procedures for Infusion Nursing, 3<sup>rd</sup> Edition.