NURSING PRACTICE STANDARD

NCS6318 – Cath Lab Inpatient Pre Procedure

Cardiac Cath Lab: Pre-Procedure Care of the CCU/5A Patient Undergoing Percutaneous Transcatheter Procedures and Electrophysiology Procedures

Related Standards & Resources:
1. NCS6319 - Cardiac Cath Lab: Post Procedure Care, protocol (Includes Site Management and On-going Care)

Skill Level: Basic RN

Need to Know:
Cardiac Cath Lab:

- Coronary angiography and left heart catheterization are invasive percutaneous procedures used to diagnose the nature and severity of heart disease.
- Percutaneous coronary interventions (PCI’s) refer to a collective group of interventional procedures including balloon angioplasty and stenting to treat coronary artery disease. Angioplasty involves inflation of a balloon at the site of the narrowing within the coronary artery in an attempt to increase the internal luminal diameter of the diseased artery. A stent (either bare metal or drug eluting) is routinely placed in order to maintain longer-term patency of the coronary artery.
- Other non-coronary interventions performed in the cath lab include structural heart procedures including valvuloplasty, atrial septal defect repairs, and patent foramen ovale closures which involve balloon inflations and/or placement of sealing closure devices. Transcatheter aortic valve implants and mitral leaflet clip procedures are routinely performed in the cardiac cath lab. Anesthesiology is often, but not always used in structural heart procedures.
- Coronary angiograms and PCIs are performed through the arterial system. The most frequently used site is the radial artery. Other possible approaches are the femoral artery, and rarely the brachial artery.
- Structural heart procedures (ASD, PFO repairs) are performed through the venous system and use a transeptal puncture to access the left atrium.
- Right heart catheterization is performed through the venous system. Access is most often through the femoral vein. Other approaches include the internal jugular and subclavian veins.
- Procedures are performed using fluoroscopy and patients receive injections of contrast dye during the procedures.
- Patients are routinely ordered dual or triple antiplatelet therapy. It is imperative that antiplatelet medication be administered prior to cath lab procedures, please see physician orders.
Pregnancy screening must be performed on women less than 60 years old due to potential radiation exposure in the labs. Point of care testing is performed in CSSU.

Patients who require emergent procedures (i.e. STEMI) are expedited to the Cath Lab and therefore may delay an elective outpatient or stable inpatient. For this reason, the Cath Lab cannot accurately state when a patient’s procedure time is.

Electrophysiology Lab:

- An electrophysiology study is performed in order to diagnose cardiac arrhythmias. Once a diagnosis is established and the arrhythmia is determined to be amenable to treatment, an interventional procedure involving radio frequency ablation is utilized to correct or modify the arrhythmia.
- Anesthesiology is involved with most electrophysiology cases. The patient may undergo procedural sedation or general anesthesia.
- Most electrophysiology studies are performed through the venous system, and occasionally the arterial system. The most frequently used site is the right femoral vein, and occasionally the left subclavian vein. The sheaths are removed in the Electrophysiology Lab.
- The patient is recovered in CSSU until the procedural sedation/general anesthesia discharge criteria is met and the patient is stable.
- Procedures are performed using fluoroscopy and, depending on the nature of the arrhythmia, three-dimensional mapping systems.
- As in the Cath Lab, pregnancy screening must be performed on women less than 60 years old due to potential radiation exposure in the labs. Point of care testing is performed in CSSU.

Note that Electrophysiology procedures do not require intravenous contrast and therefore the Contrast Induced Nephropathy protocol is not applicable to this patient population.

PRACTICE GUIDELINE

Assessment:

1. Complete the Admission section, patient vital signs, and vascular assessment in the Nursing Record Cardiac Cath/EP In-patients (NF232).

2. Assess the following in addition to Protocol for Physical Assessment:
   - Level of anxiety and the particular nature of this patient’s experience of chest pain in the past
   - Understanding of procedure (assess need for interpretation services), coping and support available (e.g. family members).
   - Signs and symptoms of ischemia and/or respiratory distress. Report abnormal findings.
   - Ability to lie flat for the duration of the procedure and the initial recovery period.
   - Offer Nicotine Replacement Therapy.
3. Review current medications. Inform interventional cardiologist, electrophysiologist, or delegate if warfarin was not discontinued 3 days prior to procedure, or a direct oral anticoagulant was not discontinued 2 days prior and/or if INR is more than 1.5. Note: For Atrial fibrillation ablation patients – the INR must be in therapeutic range of 2.5 to 3.5.

4. Confirm patient’s NPO status. See physician orders.

5. Please notify CSSU if the patient requires any type of isolation precautions or requires Class I telemetry monitoring.

6. Assess need to initiate Contrast Induced Nephropathy protocol.

**Interventions:**

1. **IV access and hydration:**
   - Establish 20 to 22 g IV in the left forearm. #20 is the preferred gauge.
   - Initiate Contrast Induced Nephropathy Protocol if ordered. See physician’s orders.

2. **Site prep:**
   - Femoral site skin preparation will be performed by the CSSU RNs.
   - Remove pajama bottoms/all undergarments. Ensure pt is wearing a gown without snaps.
   - Radial approach may be used in the cardiac cath labs. Remove jewelry and watch from right wrist. Attach patient identity band to left wrist.

3. If an old chart exists in hard copy format send with patient. This is especially important if patient has had previous angiographic or cardiac surgery procedures.

4. Ensure patient voids prior to procedure as necessary.

**Patient Education & Resources:**

1. Explain procedure:
   - **Cardiac Cath Lab**
     - Physician will obtain consent for procedure and will answer patient questions.
     - Patients are generally awake for angiography and PCI procedures although anti-anxiety agents are routinely administered.
     - Skin will be prepped, local anaesthesia injected and a catheter placed in the groin or wrist area.
     - Ensure patient is familiar with grading their chest pain on a scale of 1 to 10.
     - Instruct patient to inform cath lab staff of onset of pain, pressure or discomfort, shortness of breath or any other symptoms.
     - X-ray pictures and/or pressure readings will be taken.
     - A PCI may be performed immediately after the diagnostic procedure is performed. The patient may experience chest discomfort during balloon inflations or stent deployment.
The patient will be returned to CSSU or CICU for sheath removal, and post anesthetic recovery (if applicable) and will receive instructions pertaining to bed rest.

**Electrophysiology**
- Physician will obtain consent for procedure
- Anesthesiologist will assess patients in the CSSU prior to procedure
- Procedures are performed with procedural sedation or general anesthesia.
- Skin on patient chest will be prepped in the Electrophysiology lab by nursing staff and electrode patches placed.
- Once the patient is sedated the groin area is prepped, local anesthesia injected and catheters placed.
- Arrhythmia induction is the primary goal of the Electrophysiology study
- The procedural time for Electrophysiology studies and interventions can vary depending on the nature and mechanism of the arrhythmia
- 5A inpatients will recover in the CSSU until they are stable and have met the recovery criteria and discharge criteria.
- CCU inpatients may be returned to CICU immediately following the procedure for post-anesthetic recovery.

2. Patient education materials:
- Videos, brochures and pamphlets are available on all units.
- Review materials with patient and family and provide opportunity for questions and clarifications.

**Documentation:**
- NF232 Admission section and vital sign/vascular assessment section.
- All medications on MAR

**References:**

**Persons/Groups consulted:**
Clinical Nurse Leader Group: CICU, 5A and Cath Lab
Dr. J. Webb, Director Cardiac Catheterization Laboratory
Dr. J. Yeung, Director Electrophysiology Laboratory
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