

Cardiac Cath Lab: CICU/5A/B Patient Undergoing Percutaneous Transcatheter or Electrophysiology Procedures

Site Applicability

SPH – 5A, 5B, CICU, Cardiac Cath Labs. Electrophysiology Lab, CSSU

Practice Level

Basic Skill: Registered Nurses

Need to Know

Cardiac Cath Lab

- Coronary angiography is an invasive percutaneous procedure 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 placed in order to maintain longer-term patency of the coronary artery.
- Coronary angiograms and PCI's 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.
- Patients are routinely ordered dual or triple antiplatelet therapy. It is imperative that antiplatelet medication be administered prior to Cath Lab procedures. Please see provider orders.
- Right heart catheterization is diagnostic procedure to measure pressure waveforms inside the right side of the heart. Pressure measurements are taken are: the right atrium, right ventricle, pulmonary artery and pulmonary artery capillary wedge pressure.
- 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 vein.
- Transfemoral Transcatheter aortic valve implants and Transcatheter mitral valve edge-to-edge repair procedures are routinely performed in the cardiac cath lab. Anesthesiology is involved with these structural heart procedures. The patient may undergo local anesthesia +/- procedural sedation or general anesthesia. Refer to [BD-00-12-40065](#) for further guidance
- Non-coronary interventions performed in the Cath Lab include structural heart procedures including valvuloplasty, atrial septal defect repairs, and patent foramen ovale closures that involve balloon

inflations and/or placement of sealing closure devices. Anesthesiology is not typically used in these structural heart procedures.

- Transfemoral Transcatheter aortic valve implants and Transcatheter and TEER procedures are routinely performed in the cardiac Cath Lab. Anesthesiology is involved with these structural heart procedures. The patient may undergo local anesthesia +/- procedural sedation or general anesthesia. Refer to [BD-00-12-40065](#) for further guidance
- Procedures are performed using fluoroscopy and patients receive injection of contrast dye during the procedures.
- 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 made and the arrhythmia is determined to be amenable to treatment, an interventional procedure involving radio frequency or Cryo ablation is utilized to correct or modify the arrhythmia.
- Anesthesiology is involved with all 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 contrast and therefore the Contrast Induced Nephropathy protocol is not applicable to this patient population.

Protocol

Assessment and Interventions

1. Vital signs and vascular assessment as per unit standard.
2. Assess:
 - a. Ability to lie flat for the duration of the procedure and recovery period.
 - b. Level of anxiety and the nature of the patient's experience of chest pain in the past

- c. Signs and symptoms of ischemia and /or respiratory distress. Report abnormal findings.
 - d. Need for interpretation services, coping and support available (e.g. family members)
 - e. Offer Nicotine Replacement Therapy.
 3. Complete Perioperative Pre-procedure Checklist and COVID screening Power Forms
 4. Review current medication:
 - If patient coming for a cardiac Cath Lab procedure, Inform interventional cardiologist or delegate if:
 - a. Warfarin not discontinued 3 days prior to procedure or direct oral anticoagulant was not discontinued 2 days prior
 - b. INR is more than 1.5.
 - Patients coming for a TAVI or TEER are followed by the THV Team and will provide more specific instructions.
 - If patient coming for an electrophysiology procedure, unless otherwise specified:
 - a. The last dose of direct oral anticoagulant should be given 24 hours or more prior to the procedure.
 - b. If patient on warfarin, the goal INR is less than or equal to 1.5. Notify electrophysiologist or delegate if INR greater than 1.5.
- NOTE: These are general guidelines for EP procedures. INR goal or direct oral anticoagulant therapy may be case dependent. The EP team will follow and provide more specific instruction.
5. Maintain patients NPO status as per unit practice or as per physician order.
 6. Please notify CSSU if patient requires isolation precautions or requires Class I telemetry monitoring
 7. Ensure recent blood work (within the last 48 hours).
 8. Ensure patent IV access. Preferred sites:
 - a. Angiogram Patients: Left forearm, minimum size 22 gauge. 20 gauge preferred.
 - a. TAVI, Mitral Clip Patients: Anesthesia team will insert IV
 - b. EP Lab: Either forearm, minimum 20 gauge
 - c. If IV access is already established, ensure patency.
 9. Site prep:
 - a. Remove pajama bottoms/ all undergarments
 - b. Ensure patient is wearing a gown without snaps
 - c. Cath Lab patients – remove jewelry and watch from right wrist, apply patient ID band to left wrist (preparation for right radial access)
 10. Ensure patients voids prior to procedure as necessary.
 11. Send patient to CSSU with bedside chartlet.
 12. Provide verbal report to CSSU RN. During report please inform the following:

- Brief history of presenting chest pain, last episode of chest pain, reason for admission or reason for procedure
- Allergies
- NPO status
- Last dose of anticoagulant and INR result if patient is on warfarin
- Antiplatelet medication including loading dose
- Recent GFR result and other significant bloodwork
- Special considerations (e.g. need for interpretative services, isolation precautions,)

Documentation

Assessment, interventions and care given are documented within the Cerner electronic health record in iView and using AdHoc Charting forms. AdHoc forms include:

- Periop Preprocedure Checklist Form
- COVID-19 Patient Screening Form

Patient and Family Education

1. Explain procedure:

Cardiac Cath Lab

- Explain the procedure in simple terms. Provide patient health education materials.
 - [Preparing for a Coronary Angiogram](#)
 - [After My Coronary Angiogram/Stent or Cardiac Procedure](#)
- Interventional cardiologist will obtain consent for procedure and will answer patient questions.
- Instruct patient to inform Cath Lab staff of onset of pain, pressure or discomfort, shortness of breath or any other symptoms.
- 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 femoral sheath removal, and post anesthetic recovery (if applicable) and will receive instructions pertaining to bed rest.
- Patients from 5A/B with radial access will recover in CSSU until removal of TR band is complete. They will complete their bedrest period on 5A/B. Patients from CICU will return to CICU immediately post procedure for management of TR band removal and bedrest recovery.

Electrophysiology

- EP Physician will obtain consent for procedure in CSSU
- Arrhythmia induction is the primary goal of the Electrophysiology study

- c. The procedural time for Electrophysiology studies and interventions can vary depending on the nature and mechanism of the arrhythmia
- d. 5A/B inpatients will recover in the CSSU until they are stable and have met the recovery criteria and discharge criteria.
- e. CICU inpatients may be returned to CICU immediately following the procedure for post-anesthetic recovery.

Related Documents

- 1. [B-00-13-10063](#) - Cardiac Cath Lab: Post Procedure Care, protocol (Includes Site Management and On-going Care)
- 2. [B-00-13-10090](#) – Cardiac Short Stay: Admission and Discharge
- 3. [BD-00-12-40065](#) – Transfemoral, Transcatheter Aortic Valve Implantation, Post Procedure Care

References

- 1. Morton, J. Kern (2011). The Cardiac Catheterization Handbook (5th Ed.). Philadelphia: Saunders
- 2. Perpetua, E. M., Keegan, P. A., (2021). Cardiac Nursing (7th Ed.). Philadelphia: Wolters Kluwer.

Groups/Persons Consulted:

Director Cardiac Catheterization Lab
 Director Electrophysiology Lab
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