Infection Prevention Invasive Imaging

I. Description
Describes policies and practices followed in certain procedural areas (i.e., Vascular Interventional Radiology (VIR), Cardiac Catheterization lab, Electrophysiology Lab) to reduce the risk of healthcare-associated infections and prevent work-related exposures to infectious diseases.

II. Policy

A. Definition of Areas

- These procedural areas may consist of procedure rooms, control rooms, scrub areas, with contiguous areas that may include the hallway, holding bays, staff lounge, clean and dirty utility rooms, offices, outpatient exam and waiting areas, conference area, and storage areas.

B. Staff

1. Staff should adhere to guidelines established by Occupational Health Services (OHS); see the Occupational Health Services policy: Infection Prevention and Screening Program – Occupational Health Service.

2. Staff must also adhere to the Infection Prevention policy: Infection Prevention Guidelines for Safe Patient Care.

C. Procedure Area Environment

Procedural areas are broken down into several zones. The unrestricted, semi-restricted, and restricted zones vary based on the activities performed, how the area is accessed (i.e., pathway),
the attire worn, the HVAC parameters needed, and the surface requirements.

1. Zones:

   a. **Unrestricted Zone**: Defined as the hallway, holding bays, staff lounge, clean and dirty utility rooms, offices, outpatient exam and waiting areas, conference area, and storage areas.

   b. **Semi-restricted Zone**: If applicable per department specific processes, is defined as areas directly connected to the Restricted Zone.

   c. **Restricted Zone**: Defined as the procedure room. Procedure rooms (restricted zone) may be entered either through an Unrestricted or Semi-Restricted zone depending on the department specific processes.

2. Restricted Zone:

   • Access will be limited to the minimum number of persons needed to safely perform the procedure and on occasion, observers. The physician in charge of the procedure, the Technical Supervisor or the procedure RN is responsible for controlling the number of persons present by approving observers, consultants, product representatives, etc.

   i. **Observers**: All persons not included above in the procedure team will be considered observers. These will include consultants, students, photographers, police guards, parents approved to accompany children, and others wishing to watch procedures.

      ◦ If a control room exists, observers should be encouraged to always remain in the control areas. Observers will be asked to perform hand hygiene.

      ◦ If the observer(s) must enter the restricted area, the appropriate attire (disposable jumpsuit or clean scrubs, hair cover, and mask. Gown, if involved in the procedure) must be worn.

      ◦ Observers exhibiting obvious signs of illness will not be allowed.

   ii. **Air control**: The procedure rooms will be maintained at positive pressure with respect to the corridors. Movement in and out of the procedure room should be kept to an absolute minimum. Doors are to remain closed at all times.

3. Surgical Attire:

   a. Refer to the Infection Prevention policy: [Infection Prevention Guidelines for Attire in Semi-Restricted and Restricted Zones](http://unchealthcare-uncmc.policystat.com/policy/14710645/).
b. Radiology aprons will be worn under sterile gowns. These will be cleaned with an EPA-registered disinfectant on a routine basis (e.g., weekly) and when visibly soiled.

4. **Surgical Hand Antisepsis:**
   
a. Surgical hand antisepsis, using either an alcohol-based waterless surgical hand antiseptic or an antimicrobial soap, will be performed before donning sterile gloves when performing surgical procedures. Refer to the Infection Prevention policy: [Hand Hygiene and Use of Antiseptics for Skin Preparation](http://unchealthcare-uncmc.policystat.com/policy/14710645/).

b. All rings, watches, and bracelets must be removed prior to performing surgical hand antisepsis.

5. **Cleaning:**
   
a. **Procedure Rooms:**

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<th>Frequency</th>
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| **Before and after** (i.e., between every patient) | Shared cleaning (clinical staff and/or Environmental services staff) | • Clean and disinfect high touch surfaces inside the patient zone (e.g., procedure table/station, countertops, external surfaces of fixed equipment)  
  • Clean and disinfect surfaces that are visibly soiled with blood or body fluids.  
  • Wet mop floors if visibly soiled.  
  • Pull trash                                                                 |

| After the last patient (terminal clean) | Shared cleaning (clinical staff and Environmental services staff) | • Clean and disinfect high and low touch surfaces (e.g., procedure table/station, countertops, external surfaces of fixed equipment, light switches, door handles)  
  • Clean and disinfect any surface that is visibly soiled with blood or body fluids. |
b. Other Spaces in the Procedural Suite:
   i. Hallways, contiguous spaces, and patient prep/recovery areas will be cleaned daily by Environmental Services (ES) per the Infection Prevention policy: Environmental Services.
   ii. Offices, conference rooms, and other spaces will be cleaned per the Infection Prevention policy: Environmental Services.

D. Patient Management

1. Patient Attire
   a. All patients entering the semi-restricted and restricted zone should be dressed in a clean hospital gown. Pediatric patients may have clean pajamas or diapers and clean t-shirts.
   b. A patient's personal clothes should not accompany the patient into the restricted area.
   c. All patients will have their head covered with a cap.
   d. Patients who are undergoing a procedure near the head or neck (i.e., central line insertion) should wear a surgical mask until covered with a sterile drape. After draping, the mask may be removed if the patient is able to keep the head turned away from the site.

2. Skin Preparation and Drape: Sites to be used will be identified by the physician in charge of the procedure.
   a. If hair removal is necessary, it will be removed by using hair clippers.
   b. The site will then be cleansed with an appropriate antimicrobial agent. Refer
Please refer to Infection Prevention policy: Hand Hygiene and Use of Antiseptics for Skin Preparation.

c. A sterile drape will be used to isolate the site as well as to cover the patient and any hardware attached to the procedure table.

3. Patients on isolation precautions will be managed per the Infection Prevention policies: Isolation Precautions and the Tuberculosis Control Plan.

E. Equipment

1. Patient care equipment is divided into three general categories, according to the Spaulding classification system, based upon the potential risk of infection involved in the use of the items and are cleaned accordingly. Manufacturer instructions for use (MIFU) must be followed for processing all reusable instruments and devices between each use.

   a. Non-Critical Equipment: Instruments or objects that contact intact skin but not mucous membranes. Examples include, but not limited to, bed pans, blood pressure cuffs, and stethoscopes. Refer to the Infection Prevention policy: Cleaning and Disinfection of Non-Critical Items.

   b. Semi-Critical Equipment:

      • Semi-critical items are instruments or objects that contact mucous membranes or non-intact skin. Semi-critical items require at least high-level disinfection. Examples include, but not limited to, some endoscopes, endocavitary probes, diaphragm fitting rings, laryngeal blades. High-level disinfection must be preceded by meticulous physical cleaning at the point of use following MIFUs. Refer to the Infection Prevention policies: High-Level Disinfection (HLD) - Manual Reprocessing of Reusable Semi-Critical Medical Devices and Endoscope.

   c. Critical Equipment:

      • Critical items are instruments or objects that contact sterile tissues or the vascular system. These items must be sterilized after each use. Examples: flexible or rigid endoscopes that are used percutaneously; surgical instruments, intravascular devices, vasectomy sets, biopsy forceps, graspers, etc. Refer to the Infection Prevention policy: Sterilization of Reusable Patient-Care Items.

2. Instrument Control

   a. While setting up the procedure tray, the technologist will use aseptic
technique.

b. Procedure trays are set up immediately prior to case.

c. Once trays are set up for a procedure, if not being used immediately, they must be covered with a sterile drape to prevent contamination of opened supplies. Upon completion of the case, all open, unwrapped supplies are to be discarded.

d. While a case is in progress in the procedure room, the instrument table with open instruments is considered "off limits" to unscrubbed individuals.

e. In VIR, an electric teakettle may be utilized to boil sterile water. The steam from the teakettle is used to modify the shape of certain catheters. To ensure sterility of the water vapor, the water must be boiled at a vigorous, rolling boil for 5 minutes prior to use. After each use, the kettle is emptied, rinsed out and dried. The external surface will be cleaned with an EPA-registered disinfectant (i.e., MetriGuard or Sani-Cloth) and stored in an upside-down position in a designated clean area.

f. Sterile disposable supplies opened but not used due to cancellation of a case can be used for the following case only if:
   i. Canceled case never entered the room and
   ii. Sterile disposable supplies have not been left unattended.

g. Reuse of Single Use Catheters/Equipment
   i. Single use items should not be reused.
   ii. If catheters are reprocessed it must be done in accordance with the Infection Prevention policy: Reuse of Single Use Devices (SUDs).
   iii. Equipment which has been used and is going to be sent for reprocessing by a third party must be marked as used and stored in a manner which will prevent the accidental reuse prior to reprocessing.

h. Pressure Monitoring Flush System
   i. Sterile disposable transducers are utilized for pressure monitoring.
   ii. The transducer cable must be disinfected between uses with an EPA-registered disinfectant (i.e., Sani-Cloth)
   iii. Hand hygiene should be performed before handling the pressure monitor set.
   iv. Set-up of the system takes place in a clean area, away from sinks
and other possible contaminants.

v. Retrograde back-up of blood is prevented by frequently checking for leaks and loose connections and by maintaining a continuous adequate pressure within the flush system.

3. IV Fluids
   a. New IV fluids and connectors will be opened for each case in the procedure room. The flush used for cases is supplied to the table in a closed tubing system.
   b. A new bottle of IV contrast is opened at the beginning of each case and is only used for one patient.

F. Implementation and Monitoring

The responsibility for both the implementation and monitoring of this policy belongs to the Physician, Technologist and Nursing Leadership of the individual procedure area.

III. References


Cardiac Catheterization and Electrophysiology, APIC, 2014, text.apic.org/toc/infection-prevention-for-practice-settings-and-service-specific-patient-care-areas/cardiac-catheterization


Tessarolo F, Caola I, Caciagli P, Guerrera, G, Nollo G. Sterility and Microbiological Assessment of Reused
IV. Related Policies

Infection Prevention Policy: Endoscope

Infection Prevention Policy: High-Level Disinfection (HLD) - Manual Reprocessing of Reusable Semi-Critical Medical Devices

Infection Prevention Policy: Cleaning and Disinfection of Non-Critical Items

Infection Prevention Policy: Environmental Services

Infection Prevention Policy: Infection Prevention Guidelines for Attire in Semi-Restricted and Restricted Zones

Infection Prevention Policy: Infection Prevention Guidelines for Safe Patient Care

Infection Prevention Policy: Reuse of Single Use Devices (SUDs)

Infection Prevention Policy: Sterilization of Reusable Patient-Care Items

Infection Prevention Policy: Hand Hygiene and Use of Antiseptics for Skin Preparation

Occupational Health Services Policy: Infection Prevention and Screening Program – Occupational Health Service

Approval Signatures

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<tr>
<td></td>
<td>Thomas Ivester: CMO/VP Medical Affairs</td>
<td>12/2023</td>
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Applicability

UNC Medical Center