

**SUNY DOWNSTATE MEDICAL CENTER**  
**UNIVERSITY HOSPITAL OF BROOKLYN**  
**POLICY AND PROCEDURE**

**Subject:** Administration of IV Contrast for Imaging Studies and Certification Requirements for Radiologic Technologists

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**Committee Approval:** Executive Performance Improvement Council  
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**No. Rad-Con 3**

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**Supersedes:** **NEW**

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**TJC Standards:** HR.01.02.05: The hospital verifies staff qualifications. EP1 When law or regulation requires care providers to be currently licensed, certified, or registered to practice their professions, the hospital both verifies these credentials with the primary source and documents this verification when a provider is hired and when his or her credentials are renewed.

**Issued by: Regulatory Affairs**

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**I. Purpose:**

To ensure adequate and appropriate training of licensed Radiologic Technologists (RT) to achieve competency in inserting peripheral intravenous (IV) access lines and the injection of contrast material for imaging studies.

**II. Definition:**

The State of New York permits licensed Radiologic Technologists to insert IV's and inject contrast material after successfully completing a training program as defined by the institution (Article 35 Public Health Law).

### **III. Policy:**

Radiographic imaging utilizes contrast agents to render the anatomy radio-opaque for improved visualization. Agents commonly used include Omnipaque, Visipaque, and Omniscan. All contrast material utilized by radiology will be listed on the radiology's formulary and approved by the P&T committee.

The decision to use contrast agents will be determined in consultation with the referring clinician, the attending radiologist and/or the radiology resident.

All agents will be administered following the guidelines outlined in UHB's Policy # N-4, "Medication Administration/Documentation".

Licensed RT's will be permitted to insert IV access and inject contrast material only after the successful completion of the hospital's established training program and demonstration of competency in all defined elements. RT's shall only be permitted to insert IV access and inject contrast material if there is a physician in the vicinity.

The RTs shall also be required to assess and identify signs of IV infiltration and/or contrast extravasation. The incidence of extravasation related to power injection for CT scan averages 0.24% - 0.9% (reference 1).

#### **Procedures/Guidelines:**

The Technologist must meet the following criteria to become certified:

- Maintain current licensure in the State of New York to Practice as a Radiologic Technologist
- Complete and maintain Basic Life Support (BLS) certification
- Successful completion of the intuitional-sponsored training program
- Demonstration of competency in IV insertion and all related components
- Submission of an application to the New York State Department of Health and receipt of for certification for IV insertion

#### **Training program:**

- Attend the in-service education lectures on:
  - intravenous contrast material
  - limited review of the anatomy and physiology of the venous system at defined insertion sites
  - intravenous access sites
  - assessing and identifying IV infiltration/extravasation of contrast material
- Assess all patients for signs of infiltration during the initial flushing stage of injection
- Understand when to terminate the injection if signs of extravasation appear, i.e., swelling/tightening around the injection site, painful or burning sensation at injection site

The RT should follow the steps outlined below for all extravasations:

- Contact the attending radiologist or radiology resident to examine the patient
  - If indicated following examination by the clinician, a surgical consult may be ordered to rule out compartment syndrome
  - Apply treatment as indicated by the clinician. Most extravasation can be treated with either warm or cool compresses
  - Elevate the affected extremity
  - The RT will contact the patient's nursing unit and inform the charge nurse of the extravasation and treatment. The technologist will document in RIS: the type, amount of contrast, treatment applied, and the site of extravasation. The technologist will complete a patient incident report and forward it the Associate Administrator. This event will be logged into the Patient Incident Log maintained in the CT/MRI suite
- Minimum passing grade of 80%
  - Attend a Practical educational session on proper IV insertion techniques
  - Successfully insert 12 IV's using a practice mannequin
  - Complete 3 successful insertions on live patients as observed and documented under the direct supervision of a Physician, Nurse or a Physician Assistant

Following completion of the above, the technologist must submit an application for Certification to the State Department of Health to obtain the formal IV certification.

**Annual Competency Requirements:**

- The technologist must remain in good standing with the ARRT and New York State Department. of Health
- The technologist must maintain certification in BLS
- The technologist must successfully perform (6) IV insertions annually under the direct supervision of a Physician, Nurse, or Physician Assistant

**III. Consent must be obtained prior to the administration of contrast agents.**

It is the responsibility of either the Radiology Resident or the Attending Radiology Physician to obtain consent for all hospital inpatients and outpatients.

Emergency Department clinicians will obtain consent for all ED patients. The consent form acknowledges the patient's permission to proceed with the procedure, and also serves to assist in identifying potential risk factors which may cause a reaction to the contrast.

Prior to the administration of contrast, the patient's lab values will be evaluated by the radiology resident or attending physician to ensure the following values are within the defined acceptable ranges:

Bun = 12 - 25 mg/dL

Serum Creatine = 0.6 - 1.4 mg/dL

Values greater than the above-referenced levels will require a consultation between the radiologist and the referring/ordering clinician.

**Bun/Creatine levels must be verified within the past 48 hours for in - patients, and within 4 weeks for outpatients.**

**Patients must be NPO for 4 hours prior to the procedure.**

- Patients with a history of the following conditions must have a Creatine and GFR within 4 weeks of the procedure:
  - Age over 60
  - History of kidney disease or transplant
  - Diabetes
  - Hypertension
  - Myeloma
  - Collagen
  - Recent chemotherapy
- Patients with a GFR < 30 will require a risk / benefit analysis. This will require a consultation between the attending Radiologist or Radiology Resident and the ordering attending physician. Nephrology may be consulted if deemed necessary
- Patients taking Metformin or any biguanide class of oral anti-diabetic medications (refer to list below), should not take that medication the morning of the exam and for 48 hours after the completion of the exam. Note: Prior to stopping any medication, the patient must confer with their primary care physician:

**Medications containing Metformin\***

**Generic Ingredients Trade Names**

Metformin Glucophage  
Glucophage XR  
Fortamet  
Glumetza  
Riomet  
Glyburide/metformin Glucovance  
Glipizide/metformin Metaglip  
Linagliptin.metformin Jentadueto  
Pioglitazone/metformin ActoPlus Met  
ActoPlus Met XR  
Repaglinide/metformin Prandimet  
Rosiglitazone/metformin Avandamet  
Saxagliptin/metformin Kombiglyze XR  
Sitagliptin/metformin  
Janumet  
Janumet XR

- Pediatric Emergency room patients do not require confirmation of creatine levels unless indicated by the following risk factors:
  - a. Renal disease

- b. Kidney transplant
  - c. Renal cancer
  - d. Renal surgery
  - e. Single kidney
  - f. Hypertension
  - g. Diabetes mellitus
  - h. Currently taking metformin or metformin containing medications
- Patients cleared for intravenous injection must have an 18-20 gauge needle inserted in the anti-cubital area. Note: 20 gauge is required for all PE studies
  - Following IV insertion, the technologist will flush the line using saline to confirm line integrity
  - Post- procedure, the technologist will remove the needle and cover the site with a bandage
  - Patients will be provided post procedure discharge instructions (attachment 1)

All patients must be assessed for allergies. If there is any concern about severe allergies, the technologist must inform the attending Radiologist or the radiology resident.

**Note: Patients with known allergic reaction to contrast must be premeditated with Prednisone and Diphenhydramine (Benadryl).**

- Prednisone: 50mg P.O. to be taken 13 hrs. 7 hrs., and 1 hr. prior to the exam.
- Diphenhydramine (Benadryl): 50mg P.O. to be taken 13hrs, 7 hrs. and 1 hr. prior to the exam.

**For emergent studies:** The clinician may consider administering Dexamethasone (Decadron) 4-8 mg IV and Benadryl 125mg IV 15 minutes prior to the start of the exam.

#### **IV. Extravasation**

The RT should follow the steps outlined below for all extravasations:

- Contact the attending radiologist or radiology resident to examine the patient
- If indicated following examination by the clinician, a surgical consult may be ordered to rule out compartment syndrome
- Apply treatment as indicated by the clinician. Most extravasations can be treated with either warm or cool compresses
- Elevate the affected extremity
- The RT will contact the patient's nursing unit and inform the charge nurse of the extravasation and treatment. The technologist will document in RIS: the type, amount of contrast, treatment applied, and the site of extravasation. The technologist will complete a patient incident report and forward it the Associate Administrator. This event will be logged into the Patient Incident Log maintained in the CT/MRI suite

**V. Responsibilities:**

CT/IR/MRI Staff technologist, Attending Radiologist, Radiology Resident and referring physician/clinicians

**VI. Reason for Revision**

- Change in regulatory or Statutory Standards
- System failure
- Institutional or Organizational changes

**VI. ATTACHMENTS**

None

**VII. REFERENCES**

Joint Commission Standards

Date Reviewed	Revision Required (Circle One)		Responsible Staff Name and Title
9/2016	(Yes)	No	Donna McKenzie
	Yes	No	
	Yes	No	
	Yes	No	