

HOSPITAL  
FOR  
**SPECIAL  
SURGERY**



# Safety in Medical Imaging and Ionizing Radiation Hygiene



Department of  
Radiology and Imaging

The Department of Radiology & Imaging provides safety and security of all patients, employees and visitors in regard to medical imaging including radiation hygiene, interventional procedures performed under imaging guidance and the use of contrast agents for enhanced imaging outcomes. Administrative controls and oversight are in place to establish policies and procedures which assure safety and security.

## Ionizing Radiation Exposure-Dosage

- We adhere to the American College of Radiology (ACR) Image Wisely™ (adults) and Image Gently™ (children) standards.
- Every examination utilizing ionizing radiation, i.e. Xray, fluoroscopy examinations, and CT are performed under ALARA radiation dose guidelines – As Low As Reasonably Achievable.
- All HSS standard protocols are reviewed periodically by a physicist to be within ALARA ranges.
  - Exposure values are compared to published standards and, when possible, our protocols are adjusted to be at or below these levels.
- To avoid possible duplication of orders and a potentially unnecessary examination, patients are questioned about having had a similar examination recently performed at our facility.
- Shielding of radiosensitive body parts that are not being examined (breasts, gonads, thyroid, etc ) is a standard practice at HSS.
- Collimation, i.e. restricting the area being exposed to the area of interest, is standard practice for all examinations.
- HSS medical imaging equipment undergoes intensive New York State Department of Health maintenance reviews on radiation output consistency and safety.
- Our Radiation Safety Committee, chaired by Dr.

Robert Schneider, Radiation Safety Officer and Roseann Zeldin, Assistant Radiation Safety Officer meets quarterly.

## Radiologic Technologists (RT)

- All HSS Radiologic Technologists (RT) are Licensed & Registered by the New York State Department of Health (NYSDOH).
- All of our Radiologic Technologists (RT) have passed the National qualifying exam administered by the American Registry of Radiologic Technologists (ARRT).
- HSS Radiologic Technologists receive Annual Radiation Safety In-Services.

## Shielding and Collimation

- To protect our patients, Radiology Technologists' priority is the use of lead shielding and collimation, confining the area exposed to ionizing radiation to the site of clinical concern. Patients are encouraged to ask about shielding and if the technique being used has been adjusted to the size of the patient.



## DEPARTMENT OF RADIOLOGY AND IMAGING

Headed by Helene Pavlov, MD, FACR, Radiologist-in Chief, Hospital for Special Surgery's Department of Radiology and Imaging is world renown for it's leading edge role in orthopaedic and rheumatologic imaging. Over 250,000 examinations including Ultrasound, CT, MRI, and conventional radiography (X-rays), in addition to image-guided special diagnostic and therapeutic procedures, are per-

formed annually. All examinations focus on the musculoskeletal system. The radiologists are subspecialty experts in interpreting the musculoskeletal image detail to guide, confirm or exclude a diagnosis and aid in the course of treatment for patients at Hospital for Special Surgery. Each year we re-examine and re-interpret thousands of images originally taken elsewhere.

Teleradiology services are also performed and provide our interperative expertise beyond the New York metropolitan area.

## Quality Diagnostic Images - Right the First Time

"X-rays and CT scans help diagnose conditions that save lives and initiate early and appropriate intervention. Recognizing that patient safety is of the upmost importance, HSS Department of Radiology and Imaging limits radiation exposure of all patients, especially children," says Helene Pavlov, M.D., FACR, Radiologist-in-Chief. "Non-radiation imaging techniques, such as Magnetic Resonance Imaging (MRI) and Ultrasound (US) are utilized whenever possible and when x-rays are necessary," says Dr. Pavlov, "we do it right the first time." In fact, the HSS x-ray repeat rate of only 3.5 percent is well below the national (8 percent) and regional (6.2 percent) averages.

## We Do It Right The First Time

### Pediatric Patients - Specific Policies

- Examinations for our pediatric exams are specifically protocolled to the size, age and the suspected clinical concern of the child.



If a parent or guardian MUST hold the child during an examination, they are shielded, monitored for dose, and the dose is recorded. Male parents or guardians are preferred. A female parent is screened for pregnancy, and if pregnant they are not permitted to hold.

- At HSS, all Pediatric CT protocols have exposure values lower

(less patient exposure) than the American College of Radiology published guidelines for acceptable dose.

### Computed Tomography (CT) - Specific Protocols

- All CT examinations are specifically protocolled for the clinical concern.
- Our CT protocol for evaluation of a possible Pulmonary Embolism is limited to the Chest.
  - Run off of the legs and pelvis requires a specific request with indication.



## Interventional Procedures - Specific Procedures

- Interventional Procedures performed under image (fluoro or CT) guidance are controlled for radiation exposure.
  - Technical factors are set initially at low dose and low speed with adjustments made only as needed to improve image quality.
  - A preliminary image is performed with collimation focused to the area of interest.
  - Exposures performed throughout the procedure are performed by or at the Radiologist's request using pulsed fluoroscopic guidance, (i.e. tap on the pedal) minimizing exposure time.

**RADIATION HYGIENE IS, AND ALWAYS HAS BEEN, A MAJOR CONCERN OF THE HSS DEPARTMENT OF RADIOLOGY AND IMAGING.**

**We Work To Provide Quality Medical Imaging And Accurate Interpretations To Keep You Safe, And In Good Health.**

If you have any questions, please do not hesitate to contact a Radiology representative.

*Further information can be found at [HSS.edu/imaging](https://www.hss.edu/imaging)*



### **Patient identification**

Each patient is required to have written orders from their physician specifying the requested imaging exam and/or interventional procedure. Custom order forms are generated by the Department and are offered to each referring physician and are encouraged to be used to improve efficiency and decrease the possibility of communication errors.

Correct patient identification is ensured by using two approved specific identifiers, patients must spell their name and give their date of birth at each site of hand-off to a new healthcare provider.

### **Patient Privacy and Dignity**

Information regarding imaging examinations and/or procedures is available on the hospital and Department of Radiology website for patients to review.

Each patient is given an individual dressing room. Private restroom facilities are adjacent to the radiographic rooms.

### **Patient Responsibilities**

The patient must provide, to the best of his/her knowledge, accurate and complete information regarding all matters relating to their health care.

A patient is responsible to make known whether or not he/she clearly understands the reason for the examination/procedure and their role in that process. The patient is responsible to follow established rules and regulations, especially as they affect patient care. This responsibility includes consideration for the rights of other patients and personnel and respect for their property, and assistance in the hospital's efforts to limit noise and ban smoking. It is also a patient's responsibility to be mindful of the number and behavior of those accompanying them.

All female patients of child bearing age scheduled for a conventional x-ray, CT, fluoroscopy, MR or non-US image guided interventional procedure are asked if they are or think they might be pregnant. If the possibility of pregnancy exists, the patient is informed of options, risks and alternatives. If pregnant, the patient is informed of the risks and the patient's obstetrician is consulted.

### **Conventional Radiographs - Xray**

An X-ray uses ionizing radiation to produce images demonstrating soft tissues and bone.

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### **Computed Tomography Scan (CT)**

CT Scan uses ionizing radiation (x-ray) to provide detailed cross sectional and 3D imaging of bones, joints, and soft tissues. It is also used for guiding interventional procedures.

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### **Magnetic Resonance Imaging (MRI)**

MRI uses a high strength magnet to provide cross sectional images of bone, cartilage, tendon, peripheral nerves and other soft tissue structure in exquisite detail.

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### **Ultrasound (US)**

Ultrasound uses high frequency sound waves to image soft tissues, blood flow, and guide interventional treatment procedures of neuromas, tendons, bursae, and other conditions.

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### **Spinal Procedures**

Diagnostic spinal procedures to help determine the source of back pain that requires an injection of contrast agent into the spinal canal or intervertebral disc are performed under image guidance. Treatment options for lower back pain that involve an injection into a painful facet or the epidural space are also performed under image guidance and the location of the injected medication can be confirmed.

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### **Interventional Radiology and Tissue Sampling Procedures**

Targeted aspiration of fluid; injection of medication/steroids into a joint; biopsy of bone or soft tissues are amongst some of the procedures performed under image guidance (Fluoroscopy, CT, or US). Image guidance assures precise needle placement and confirmation of the injection site.

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### **Teleradiology**

Technology is available to permit images performed elsewhere to be interpreted by our world-renowned HSS subspecialty musculoskeletal radiologists.



## Scheduling

To schedule any  
imaging examination  
other than MRI  
Monday - Friday

212.774.7149  
8:00am - 6:00 pm

To schedule an MRI

212.774.7296

Pre-certification  
for procedures:

212.606.1904

For additional  
information:

212.606.1015

Website:

[www.hss.edu/imaging](http://www.hss.edu/imaging)

Email:

[radinfo@hss.edu](mailto:radinfo@hss.edu)



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Hospital for Special Surgery is an  
affiliate of New York-Presbyterian  
Healthcare System and Weill  
Medical College of Cornell University