Radiology Services

3460 South 4155 West
West Valley City, UT 84120
Phone 801.964.3888 • Fax 801.964.3889
www.pioneervalleyhospital.com
# Table of Contents

**IMAGING SERVICES**

- Introduction ................................................ 1
- Department Phone Numbers ............................... 2
- Appointment Times by Modality ......................... 3
- Pre-exam Considerations & Information .............. 4
- Insurance Authorization ................................ 6
- CT Exam Prep ............................................. 8
- Mammography & DEXA Prep ............................. 10
- MRI EXAM Prep .......................................... 12
- Nuclear Medicine Preps ................................ 13
- Radiology Exam Prep .................................. 20
- Ultrasound Exam Prep .................................. 21
- Pediatric Exams Prep .................................. 22
- Special Procedure Preps ............................... 26
- Preventative Imaging Services ......................... 27
Introduction

Pioneer Valley Hospital offers all imaging modalities, including x-ray, ultrasound, mammography, breast biopsy, bone densitometry, nuclear medicine, pain management, special procedure exams, MRI and CT. We also have a cardiac catheterization laboratory accommodating both diagnostic and interventional heart and vascular procedures. Patient satisfaction, safety, timeliness and rapid interpretation of your patients’ exams are our key goals.

All of our radiographic technologists are registered with the American Society of Radiologic Technologists (ARRT). As a member of this group we are bound by a strict code of ethics in the practice of radiology and principles of professional behavior. A major ethical concern for imaging staff is to protect patient rights at all times.

Our facility serves as a clinical site for both Weber State University and Salt Lake Community College for such modalities as radiologic technology, ultrasound, nuclear medicine, MRI and CT. The Joint Review Committee on Education in Radiologic Technology (JRCERT) accredits the Pioneer Valley Hospital Imaging Department, and our entire technology staff is active in the education process.

In addition, our board-certified Radiologists and staff participate in the clinical proctoring of students enrolled in a Radiology Physician Assistant program. This emphasis on education ensures staff is familiar with the latest developments in the imaging sciences.

Included in this handbook are department phone numbers, scheduling and registration information, exam preparation instructions and forms, patient education sheets, and other helpful information.
Department Phone Numbers

Centralized Scheduling 964-3888
The scheduling clerks will make the appointment and verify insurance authorization information, obtained by the doctor’s office, if required, prior to imaging exam(s).

Physician Order Fax 964-3889
Radiology Control 964-3358
Film File Room 964-3611
Ultrasound 964-3969
CT Scanning 964-3617
Nuclear Medicine 964-3968
Mammography 964-3134
MRI Scanning 964-3955
Bone Densitometry 964-3134
Cardiac Catheterization Lab 964-3961

Director of Imaging Services
Gwen Wawers, mEd, RT(R), ARDMS 964-3618

Radiologists
Dr. Edgar J. Booth 964-3430
Dr. Karen Dittrich 964-3621
Dr. Peter Frech 964-3620
Dr. Evelyn Garcia 964-3430
Dr. Don H. Nichols 964-3358

Imaging Hotline 964-3679
• To schedule same day exams
• If you are unable to contact centralized scheduling
• You wish to speak to a Radiologist
• To obtain a report
Appointment Times by Modality

Diagnostic Imaging
7:00 am – 5:30 pm  (Exam coverage 24/7)

CT
7:00 am – 5:30 pm  (Exam coverage 24/7)

MRI
7:00 am – 6:00 pm, Monday - Friday

Ultrasound
Routine Exams  7:00 am – 12:00 am, Monday - Friday
On call  12:00 am – 7:00 am

Nuclear Medicine
Routine Exams  7:30 am – 3:30 pm, Monday - Friday

Mammography
8:00 am – 4:30 pm, Monday – Friday & some Saturdays

Bone Densitometry
9:30 am – 1:30 pm, Tues, Wed, Thurs & some Saturdays

Cardiac Cath Lab
Routine Procedures  7:00 am – 4:30 pm, Monday - Friday
On Call  4:30 pm – 7:00 am

Special Procedures
7:00 am – 4:30 pm, Monday - Friday
Pre-exam Considerations & Information

Registration
A physician order, including patient history and symptoms, is required for exams to be completed. Patients must present picture identification and insurance information at the time of registration. For patients without insurance, payment is due at the time of service or other payment arrangements should be made in advance.

Patients will register in the Imaging Department. A hospital volunteer will escort patients to the department. After 5:30 pm daily and on weekends, patients will register at the Outpatient Desk in the Emergency Room Lobby. Maps of the hospital are provided in the forms section of this binder.

Imaging Reports
The Radiologists will be happy to call with a preliminary report as soon as the study is completed if requested. Reports are faxed to physician offices daily. Unless we are waiting for comparison films, most reports are ready within 12 hours. Following an exam the patient may take hardcopy films or a CD with them upon request. Please allow 24 hours to have films copied or a CD of an exam created. We charge for the second copy of a study unless it is on a CD. A signed medical records release form and proof of identification are necessary for us to release films to a patient or their designee if requested at a later date. Imaging reports can also be obtained through Physician Portal or via the dictation line.

To obtain reports on the dictation line dial extension 2999 (inside hospital) or 964-3999.

Enter the following:
- User ID 1252# or 1253#
- Patient date of birth (mm/dd/yy)
- Press 8 to advance to next report

Exams Requiring Contrast
Patients over age 55 must have BUN and creatinine lab results drawn within seven days of the exam. If the patient is diabetic they should not take their diabetic medication for 48 hours after contrast has been injected. Patients should be instructed to contact their personal physician regarding lab studies prior to resuming diabetic medication.

Patients will be asked to sign an oral contrast consent form when they pick up Readi-Cat prior to a CT study. Consent forms are also required for MRI patients injected with contrast media and will be presented to the patient at the time of registration.

Pregnant Patients
Female patients between the age of 10 and 55 will be asked if they are pregnant. A urine pregnancy test to confirm if required, will be completed on female patients having an imaging study that involves radiating the abdomen.
CT & MRI Body Weight and Size Limitations
The CT table weight limit is 425 pounds. But patient body habitus may preclude them fitting into the gantry of the machine. MRI table weight limit is 300 pounds. Again, depending on patient stature, they may not fit into the bore of the machine.

Thyroid Studies
Patients having Nuclear Medicine thyroid studies will need to present T₃, T₄ and/or TSH lab results prior to the exam.

Exam Sequencing
Ideally exam ordering will follow the sequence listed below for patients requiring more than one imaging study. Ensuring visible contrast material has cleared the system determines the order in which studies are completed. Exam sequence is as follows:

1. Ultrasound and/or Nuclear Medicine exams
2. IVP/Cystourethrogram/VCUG
3. CT/MRI examinations
4. Barium enema
5. Upper GI/Barium Swallow/Small Bowel Follow Through

If urinary tract studies are required one or two days following a barium exam or if an Upper GI/Small Bowel follow through exam is ordered one or two days after a Barium enema, the patient will need to be prepared with an enema and phosphosoda the evening prior to the exam. The patient should then follow the regular exam prep included in this notebook. Call 964-3358 with questions.

Acceptable contrast exam combinations:

- Upper GI series, esophagram and small bowel series
- IVP and colon exam
- Nuclear medicine and ultrasound

Special Procedures Scheduling
Barium, contrast exams and special procedure studies (i.e. myelograms, arthrograms) are scheduled starting at 8:00am. Pain injections and cardiac cath lab procedures may be scheduled at 7:00am. Since many of our patients have not been able to eat prior to their exam every effort is made to complete exams early in the day.
Insurance Authorization

A number of imaging exams require pre-authorization by the insurance company. To avoid payment issues please review the following information on obtaining permission from insurance companies.

Patients with insurance coverage:

At the time the hospital verifies the patient’s insurance, we also receive information on the benefit level the patient has with their insurance company. The patient’s financial responsibility could be a co-pay, a deductible or both. We then notify the patient of their financial responsibility and our expectation of payment at the time of service. We discuss with them possible payment plan arrangements if they are unable to pay the full amount at the time of service.

If at the time of service the patient is unable to make payment, we again offer the patient possible payment arrangements and services are performed as scheduled.

If the patient has dual insurance coverage, no payment is required.

For a list of accepted insurance carriers, please see the table on the following page.

Patients with no insurance coverage:

If the patient has no insurance they are considered self-pay and are required to pay 50% of the estimated total charges at time of service. If the patient presents at the hospital for the procedure without the required payment they are informed that we need to reschedule the procedure.
In-Network Insurances and Authorizations
Pioneer Valley Hospital currently accepts members of the following plans:

- Altius Health Plans
- Altius Medicare Advantage
- CCN
- Cigna Healthcare of Utah
- Concentra Preferred Systems
- Corvel
- Deseret Mutual Benefits Administrators (DMBA)
- Deseret Secure
- First Health/Coventry
- Focus
- Great West Healthcare
- Health Management Network (HMN)
- Health Utah/Tall Tree Administrators
- HealthyU
- Humana (Choice Care)
- Humana Gold Choice
- Humana Medicare Advantage
- Mailhandlers
- Medicaid
- NPPN (Plan Vista)
- Medicare HMO
- Medicare Complete Molina Advantage
- Molina/American Family Care
- MultiPlan
- One Call Medical
- Private Healthcare Systems (PHCS)
- Public Employees Health Plan (PEHP)
- Quality Medical Systems
- Regence Blue Cross Blue Shield of Utah
- Valuecare
- Healthwise
- HMO Blue
- Regence Medicare Advantage (BCBS)
- Secure Horizons
- Sterling Life Medicare Select
- Three Rivers Network
- Tri-Care/Tri-West (CHAMPUS)
- UHC Medicare Complete (Medicare HMO)
- Unicare (Medicare Replacement Plan)
- Universal Health Network
- University of Utah Health Plan (UUHP)
- Wise Provider Network
- Workers Compensation

Some procedures may have limited coverage or require prior authorization. Please check with the insurance provider for detailed information.
CT Exam Preparation

Include patient history, symptoms, and a current medications list with the order. All patients over 55 years of age must have BUN and creatinine lab results prior to scan.

Diabetic Patients – Patients with diabetes will be instructed to NOT take their medication containing gluophage, glucovance or any generic metformin drug for 48 hours after the contrast injection. They will further be directed to contact their physician to arrange any lab work prior to resuming their medication.

CT Abdomen/Pelvis

Ordering abdomen and/or pelvis CT exams requires patient symptoms and/or medical history supporting area(s) of interest. Patient preparation and contrast administration is the same for both exams. Abdominal CT includes the area between the diaphragm and the bifurcation of the aorta. The pelvis encompasses the region inferior to the bifurcation through the floor of the pelvis.

The CT technologist reviews the order and the scan with the Radiologist. Before the patient leaves the exam room the Radiologists make a determination if the cuts included in the order provide the information necessary for a report to be generated. Orders should be written to provide the radiologist latitude to include the abdomen or pelvis if indicated.

Patients will be billed for both exams. One report is generated as the studies are read together. If you have questions or wish to discuss your patient’s history prior to ordering an exam please contact the radiologist at 964-3358.

1. Nothing to eat after midnight
2. Drink oral contrast (available at the Imaging Department of Pioneer Valley Hospital without charge) one (1) hour prior to exam time. Patient should arrive in the Imaging Department one hour prior to exam to drink contrast. IV contrast is administered at time of the exam.
3. This study does not require cleansing enemas UNLESS the patient had an exam using barium sulfate (i.e., UGI, barium enema) within the last three days.
4. Please specify the organ(s) of interest and report all pertinent history.

CT Chest or Lung:

No prep required

CT Extremities

No prep required
CT Facial Bones & Sinuses:
No prep required

Pioneer Valley Hospital Department of Radiology offers the standard sinus examination with the protocol consisting of thin slice coronal images filmed in bone. If requested axial and reconstructed sagittal images can also be obtained. For patients undergoing endoscopic sinus surgery we can provide the referring physician with 3D information on a CD that can be used in the hospital surgical suite or at a surgical center of his/her choice.

The brief time required to obtain the CT sinus images means the exam can be done on short notice. Scheduled exams can be done seven days a week.

CT Head:
All CT scans of the brain will be done both unenhanced and enhanced (with the injection of iodine contrast) unless:
   1. Patient refuses
   2. Patient is allergic to contrast agent
   3. Patient has head trauma

CT Chest Angiogram with or without contrast:
No prep required

CT Soft Tissue Neck:
No prep required

CT Cervical, Thoracic, Lumbar Spine
No prep required
Mammography & Bone Densitometry (DEXA) Preparation

**Mammography**
Patients should refrain from wearing underarm deodorant the day of their exam. Deodorant may be applied after exam is finished.

In the event the patient’s previous exam was completed at another facility, arrangement should be made for those films to be sent to Pioneer Valley Imaging Department prior to their appointment. The final report will be delayed until films are received so the studies can be compared.

Patients may wish to schedule a bone densitometry appointment in conjunction with their mammography exam.

**Bone Densitometry (DEXA):**
Do not take calcium supplements 24 hours prior to exam.
Guidelines for Ordering Mammography Studies:

(Reference, American College of Radiology, ACR)

**Screen mammography**
Performed on a patient having a yearly or first time mammogram. The patient must be asymptomatic and cannot have implants or a history of breast cancer.

**Diagnostic mammography**
A diagnostic mammogram is performed on a patient with any of the following:

- Implants
- Personal history of breast cancer
- All unilateral exams
- Call back after a screening (findings on a screening exam that requires additional films)
- All short term follow-up (findings on a screening exam that requires a 6 month return for follow-up films)
- Symptoms of:
  - lump/mass
  - dimpling
  - nipple inversion or discharge
  - skin changes
  - enlarged, red, hot or sore breast tissue
  - fibrocystic changes – may be either screening or diagnostic per Physician/Radiologist request

All diagnostic mammography orders must include a diagnosis. The registration staff will attempt to obtain a revised order from the physician’s office if necessary. If after 15 minutes they are unable to have the order revised the patient will be rescheduled until the correct order is received.

Acceptable terminology for mammography prescriptions:

a. Mammogram
b. Screening mammogram
c. Yearly or annual mammogram
d. Routine mammogram
e. Spot compression views (specify R/L or bilateral)
f. Additional views (specify R/L or bilateral)
g. Magnification views specify (R/L or bilateral)

*a thru d may be screening or diagnostic but must have an appropriate diagnosis if ordered as a diagnostic exam.*

*e thru g are always diagnostic and require a diagnosis on the mammogram orders. Orders are good for one year.*
MRI Exam Preps

**MRI Abdomen:**
Nothing to eat for 4 hours prior to exam

There is no prep for other MRI exams. Patients will be asked to complete a screening questionnaire before scanning. Some exams require an injection of contrast media for visualization of anatomical structures. Patients will be given a consent form to sign if their exam requires such an injection. (Copies of both are included in this handbook.)
Nuclear Medicine Exam Preps

This information is designed to assists physicians offices order and prepares the patient for a Nuclear Medicine exam. Not all Nuclear Medicine exams are in this handbook.

If there is any information that is unclear, or if you have any question, please contact either a Nuclear Medicine Technologist at 964-3968 or one of the radiologists.

Before ordering a Nuclear Medicine study, be aware of some situations that may conflict with performing an exam.

Some barium or I.V. contrast may cause interference with the Nuclear Medicine studies. Please check with the Nuclear Medicine Technologist.

Two Nuclear Medicine exams cannot be done on the same day. Example: Lung Scan and Bone Scan. Please check with the Nuclear Medicine Technologist.

The table limit is 400lbs.

It may take an hour to receive Isotopes from the radio-pharmacy.

All other restrictions will be listed on the specific exam listed in this manual.

One way the Isotope is eliminated from the patient is through their urine. Empty Foley bags often for the first 24 hours to reduce the exposure to the patient, visitors, and staff.

**BONE SCAN**

<table>
<thead>
<tr>
<th>Diet:</th>
<th>No Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication Restriction:</td>
<td>None</td>
</tr>
<tr>
<td>Usual Indication for exam:</td>
<td>R/O Mets, R/O Fracture, and R/O various disease process</td>
</tr>
<tr>
<td>Exam Description and Duration:</td>
<td>Patient will be injected with Isotope. 3-4 hours post injection, the scan will be done. Scans take about 1 hour with the patient lying supine on the table for the entire time.</td>
</tr>
<tr>
<td>Prep:</td>
<td>Saline lock or venous access (size does not matter)</td>
</tr>
<tr>
<td>Ordering in HBOC:</td>
<td>NM Bone Scan, Total Body</td>
</tr>
</tbody>
</table>
BONE SCAN 3 PHASE

Diet: No Restrictions
Medication Restriction: None
Usual Indication for exam: R/O Fracture, R/O Stress Fracture, or R/O Osteomyelitis
Exam Description and Duration:

Part 1-
A flow and blood pool study is done. Prior to injection of isotope. This takes approximately 30 minutes to 1 hour.

Part 2-
Delayed Images are done about 3-4 hours after the injection and will take 30 minutes to 1 hour. At this time the Radiologist will do a preliminary check of the images and decide if other delayed images are needed. In case of Osteomyelitis, another delayed scan may be needed in 18-24 hours after the injection. This portion can also take up to 1 hour.

Prep: Saline Lock or venous access (size does not matter)
Ordering in HBOC: NM Bone/Joint imaging 3 phase
NOTE: For this exam we must know exactly what the ordering Physician is looking for and what area of the body is their primary concern.

CARDIOLITE REST/STRESS TEST

Diet: Nothing to eat after midnight or minimum of 6 hours
Medication Restriction: Asthma medications, certain heart medications (Please check with the Physician or Radiologist), and caffeine. (At least 12 hours without)
Usual Indication for exam: R/O Ischemia, R/O MI
Exam description and Duration:

Rest Stage
Patient will be injected with the Isotope. About 30 minutes later the patient will be scanned which takes about 30 minutes.

Stress Stage
The patient will either walk on the treadmill or receive Adenosine I.V. The Physician should indicate the method of stress. While being stressed the patient will receive a second injection of the Isotope. 30 minutes to 1 hour after the stress is done scanning will begin and last about 30 minutes.

Prep: Saline Lock or venous access (at least 20 gauge)
Ordering in HBOC: NM Spec Cardiolite Rest/Stress
NOTE: Hospital policy is that a qualified Physician must be present for the stress portion of the exam. This is NOT the responsibility of the Nuclear Medicine Technologist to have a Physician present. The ordering Physician is responsible to oversee or arrange for qualified Physician.

An ACLS-certified nurse needs to monitor the patient during the stress part of the exam.
Notify the Nuclear Medicine Technologist of the method of stress, i.e. Adenosine or treadmill.
If patient is to be stressed with Adenosine, we need to know the patients weight.
### GASTRIC EMPTYING

**Diet:** Nothing to eat for 12 hours  
**Medication Restriction:** Propulsid, or anything that affects gastric motility.  
**Usual Indication for exam:** Constant vomiting.  
**Exam Description and Duration:** Patient will eat scrambled eggs that will be tagged with an Isotope. After eating the meal, the patient will be imaged every 10 minutes up to 2 ½ hours to see how well the stomach empties. Exam can take up to 3 hours.  
**Prep:** Nothing to eat  
**Ordering in HBOC:** NM Gastric Emptying  
**NOTE:** Medications need to be cleared by the radiologist.

### G.I. BLEED

**Diet:** No restriction  
**Medication Restriction:** None  
**Usual Indication for exam:** Rectal Bleeding  
**Exam Description and Duration:** Patient will have 3-5 mL of blood drawn with a Heparinized syringe, and tagged with an Isotope. After the blood is prepared, it will be re-injected into the patient. Patient will lie supine on the table and scanning will start. This will take about 2 hours. Delayed images may be taken at 6 hours and 24 hours after injection as per radiologist discretion.  
**Prep:** Saline Lock or venous access (at least 20 gauge)  
**Ordering in HBOC:** NM Acute GI Blood Loss

### HIDA

**Diet:** Nothing to eat after midnight. At least 4 hours preferably 6 hours.  
**Medication Restriction:** All narcotics especially morphine  
**Usual Indication for exam:** Abd pain, RUQ pain  
**Exam Description and Duration:** Patient will be injected with an Isotope while lying supine on the imaging table. Images are taken every ten minutes until the gallbladder is visualized. The patient is given CCK which will cause the gallbladder to contract and empty. This part is 40 minutes long. The whole exam takes about 1 ½ to 2 hours.  
**Prep:** Saline lock or venous access (size does not matter). **NO NARCOTICS!** Must have patient weight.  
**Ordering in HBOC:** NM Hepatabiliary with EF  
**NOTES:** MUST have patient weight. This determines the amount of CCK to be given.  
Patient must have an abdominal ultrasound to verify there are no gallstones.
LIVER HEMANGIOMA IMAGING

Diet: No Restrictions  
Medication Restrictions: None  
Usual Indication for exam: Detection of Hepatic Hemangioma  
Exam Description and Duration: With a heparinized syringe at least 3 mL of blood is drawn from the patient. After the blood is prepped, it will be injected back into the patient (approximately 20 minutes later). Scanning begins immediately after injection. Patient will lie supine on imaging table. Static images and a SPECT images will be performed. The exam will take about 60-90 minutes.  
Prep: Saline Lock or venous access (at least 20 gauge)  
Ordering in HBOC: NM Hemangioma Imaging

LIVER –SPLEEN SCAN

Diet: No Restrictions  
Medication Restrictions: None  
Usual Indication for exam: Diagnosis of abnormalities such as hepatomegaly, splenomegaly, metastasis, abscess and cysts.  
Exam Description and Duration: Patient is injected with Isotope and imaging begins 15-20 minutes later. Patient will lie supine on imaging table. Exam takes approximately 1 hour.  
Prep: Saline Lock or venous access (size does not matter)  
Ordering in HBOC: NM Liver and Spleen Scan

MECKEL’S

Diet: Nothing to eat at least 8 hours  
Medication Restriction: None  
Usual Indication for exam: Detection of Meckel’s Diverticulum  
Exam Description and Duration: Patient will lie supine on imaging table. Injection and imaging will begin at the same time. Exam will run about 60 minutes.  
Prep: Saline Lock or venous access (at least 20 gauge)  
Ordering in HBOC: NM Meckels  
NOTE: Barium in bowel could interfere with imaging.
PARATHYROID SCAN

Diet: No Restriction
Medication Restriction: None
Usual Indication for exam: Hypocalcaemia or elevated PTH levels.
Exam Description and Duration: The patient is injected with an Isotope. After 10 minutes imaging begins with patient lying supine on table. Two hours later the patient returns for delayed images. Again the patient lies supine. This portion takes about 1 to 1 ½ hours.
Prep: Saline Lock or venous access (size does not matter)
Ordering in HBOC: NM Parathyroid

RENAL SCAN

Diet: No Restriction but patient needs to be well hydrated.
Medication Restriction: None unless the scans includes the use of captopril. (Refer to Renal scan with Captopril.
Usual Indication for exam: Evaluate Renal Function, Renal Flow and perfusion.
Exam Description and Duration: Patient will void prior to lying supine on imaging table. Injection of Isotope and imaging begins at the same time. Patient will void again after scan is complete and then 1 more image is taken. Exam will take about 1 hour.
Prep: Saline Lock or venous access (at least 20 gauge)
Ordering in HBOC: NM Renal Scan (Renogram Function)
NOTE: Sometimes exam is done with Lasix. Physician should specify. If it is to be done with Lasix indicate under “comment” when ordering exam.

RENAL SCAN WITH CAPTOPRIL

Diet: No Restriction but patient needs to be well hydrated.
Medication Restriction: ACE Inhibitors usually 24 hours depending on the ACE Inhibitor, Captopril for 48 hours, Lysinopril, Analapril, Zestril for 72 hours.
Usual Indication for exam: Renal vascular hypertension or R/O Renal artery stenosis
Exam Description and Duration: Patient will be given Captopril by mouth. Blood pressure will be monitored for 40 minutes then the scan will begin with the patient lying on the table for about 30 minutes. The entire exam is about 90 minutes.
Prep: Saline Lock or venous access (at least 20 gauge)
Ordering in HBOC: NM Renal Scan. Under comments note with Captopril.
NOTE: The Physician should specify if Captopril is to be used in this exam. Lasix may be used for this exam.
**THYROID UPTAKE AND SCAN**

Diet: No Restriction  
Medication Restriction: Any thyroid medication example: Synthyroid, Levthyroid, L-Thyroxin (off 6 weeks), No IV contrast exam in the past 6 weeks example: CT, MRI, or IVP, Cardiac Cath/Coronary Angiogram  
Usual Indication for exam: Hyperthyroidism, Graves Disease, and Multinodular Goiter.  
Exam Description and Duration: Patient will receive three I-123 capsules orally. Four hours later the patient will have an uptake reading. The patient will lie supine on the table and the scan will be done. This takes about 1 hour. The patient will return in 24 hours and one more uptake measurement is done. This will only take about 10-15 minutes.  
Prep: Must have TSH, T3, and T4 lab values.  
Ordering in HBOC: NM Thyroid Scan W/Uptake

**V/Q LUNG SCAN**

Diet: No Restriction  
Usual Indication for exam: None  
Exam Description and Duration: Ventilation- Patient will lie upon table with a nose clamp. Patient will breathe through. Their mouth using a large tube. Xenon gas, will be injected into the tube and will circulate in patients lung. The gas is then exhaled into the tube. This portion takes about 7-8 minutes. Perfusion-Isotope is injected into patient. The patient will lie supine on the table. The Camera will move completely around the table visualizing the lungs. This portion takes about 45 minutes.  
Prep: Saline Lock or venous access (size does not matter)  
Ordering in HBOC: NM Lung Ventilation study and NM Lung Perfusion (Both must be ordered).  
NOTES: Must have had chest x-ray within last 24 hours and preferably within the last 4 hours.

**INDIUM-111 WHITE BLOOD CELL SCAN**

Diet: No Restriction  
Usual Indication for exam: Detection and localization of inflammatory disease fever of unknown origin, infection.  
Exam Description and Duration: The Nuclear Medicine Technologist will draw 40-50 mL of blood from the patient. The blood will be sent to the Radiopharmacy for tagging. This will take 3-4 hours. Labeled white blood cells will be re-injected into the patient. Scanning will be done 18-24 hours after the injection with another possible scan 48 and 72 hours later. The scan will take about 1 hour.  
Prep: Saline Lock or venous access (at least 20 gauge).  
Ordering in HBOC: NM WBC Local, Whole Body. Under comments specify Indium-111.  
NOTES: Before ordering call the Nuclear Medicine Technologist. The Technologist will have to call the Radiopharmacy to confirm they have Indium-111 on hand.
GALLIUM-67 WHOLE BODY SCAN

Diet: No Restrictions
Medications Restrictions: None
Usual Indication for exam: Diagnosis or Staging Lymphoma, Non-Hodgkin’s Disease, or to detect infection.
Exam Description and Duration: After the patient is injected with the Isotope, the patient will be imaged at 24, 48 and 72 hours. With the patient lying supine the whole body will be scanned. This takes about 1 hour.
Prep: Saline Lock or venous access (size does not matter).
Ordering in HBOC: NM Abscess Localize, Whole Body. Under comments add Gallium and reason for the exam.
NOTE: Note what the Physician is looking for i.e. tumor or infection.
Usually not other Nuclear Med imaging for about 1 month due to long ½ life of the Gallium
Radiology Exam Preps

**Barium Enema**
Use the Fleet Prep Kit, available from Pioneer Valley Hospital Imaging Department without charge. Follow the 24-hour instructions for best results. When this is impossible because of the time element, use 12-hour prep instructions. Nothing to eat after midnight.

**Intra-venous pyelogram (IVP)* / Cystogram / Voiding Cystouretherogram (VCUG)**
Use Fleet Prep Kit, available from Pioneer Valley Hospital Imaging Department without charge. Follow the 24-hour instructions for best results.

Alternatively use four (4) Dulcolax tablets after the evening meal, approximately 6:00pm. Nothing to eat after midnight. Use Dulcolax rectal suppository at 6:00am the morning of the exam.

*For IVP exam, patients over 55 years of age must have lab order for BUN and creatinine levels prior to exam. Results must be available before intravenous contrast can be administered.

**Upper GI:**
Nothing to eat after midnight.
Ultrasound Exam Preps

Include patient history, lab results and symptoms in exam order

Aorta
Nothing to eat after midnight.

Breast
No prep required

Gallbladder
Nothing to eat after midnight or 8 hours prior to exam.

Extremities
No prep required

Kidney
Drink 32 ounces of water one to two hours prior to exam.

Abdominal organs
Nothing to eat for 8 hours.

Pelvic or Obstetrical studies
This examination requires the urinary bladder to be full. One hour prior to the exam the patient should drink 32 ounces of liquid. Patient should not urinate until exam is complete. If the patient is unable to drink or is suffering from nausea and vomiting the patient may be catheterized immediately prior to the exam.

Thyroid
No prep required

Vascular studies, including carotid artery and DVT evaluation
No prep required
Imaging Exam Preps – Pediatrics

Pediatric patients will be shielded with lead to protect them from unnecessary radiation.

Radiographic films
Ultrasound
CT
Nuclear medicine
MRI

For these exams please contact the modality at the number in this handbook for preparation instructions that may apply.
Radiology Exam Preps – Pediatrics

Pediatric patients will be shielded with lead to protect them from unnecessary radiation.

**IVP (under 2 years)**
The patient should be fasting 2 to 4 hours prior to exam.
Bring formula or appropriate feeding to department with patient.

**IVP (over 2 years)**
Unless contraindicated, a laxative as ordered by the physician should be used prior to the exam.
The patient should have nothing to eat or drink after midnight. If the child is dehydrated fluids may be given per physician request.
If there are no results from the laxative a fleets enema should be used early AM prior to exam.

**Cystourethrogram (up to 14 years)**
No preparation.
Patient is catheterized prior to exam.

**Barium Enema (0 – 6 months)**
12 hours of clear liquid

**Barium Enema (6 – 12 months)**
24 hours of clear liquid

This preparation is for the following clinical evaluations:

- Chronic abdominal pain
- Colitis (not acute)
- Rectal bleeding
- Polyps
- Reduced intussusception

There is no preparation for the following suspected diagnoses:

- Constipation
- Megacolon
- Ulcerative colitis
- Appendicitis
- Hirshsprung’s
- Intussusception
- Diarrhea
- Bowel obstruction
- Encopresis
- Stool incontinence
## Barium Enema (children 1 to 14 years)

*Exam prep starts the day prior to the exam. Child may eat ONLY from the following list:*

<table>
<thead>
<tr>
<th>Time</th>
<th>Menu/Instructions</th>
</tr>
</thead>
</table>
| 12:00 noon | 1 cup of bouillon soup with crackers  
1 chicken or turkey meat sandwich (no butter, mayonnaise, lettuce or other additive)  
½ cup of clear apple or grape juice  
1 serving of plain Jell-O (no cream, fruit or other additive)  
1 8 oz glass of skim milk |
| 1:00 pm    | Child drinks 8 oz of water, if possible |
| 3:00 pm    | Child drinks 8 oz of water, if possible |
| 5:00 pm    | 1 cup of bouillon soup  
1 cup of clear apple or grape juice  
1 serving of plain Jell-O (no cream, fruit or other additive) |
| 7:00 pm    | Child drinks 8 oz of water, if possible |
| 8:00 pm    | Child drinks the amount of Phospho-soda (cold) as shown below appropriate for age:  
1 thru 5 years  none  
6 thru 9 years  1 teaspoon  
10 thru 13      2 teaspoons |
| 10:00 pm   | Child drinks 8 oz of water with the number of Dulcolax tablets shown below. Tablets must be swallowed whole. They must not be chewed or crushed. Tablets must not be taken within one hour of antacids or milk.  
3 years or under  none  
4 thru 9 years  1 tablet if it can be swallowed whole  
7 thru 13 years  2 tablets |
| 12:00 am   | Wake child to drink 8 oz of water if possible  
NOTE: If physician has request an exam of the child’s urinary tract (an IVP) in addition to the barium enema, the 7:00 am procedure shown below should not be carried out until after the IVP has been completed. |
| 7:00 am    | If only the barium enema is scheduled, have child drink 12 oz of water if possible.  
Administer Dulcolax rectal suppository according to age.  
1 thru 9 years  ½ suppository cut in half lengthwise  
9 to 13 years of age  1 whole suppository  
Reassure the child and try to get him/her to retain the suppository for at least 15 minutes. |
Upper Gastro-Intestinal (GI)/Esophagram/Small Bowel Series [under 2 years]
The patient should be fasting 4 hours prior to the exam
Nothing to eat or drink the morning of the examination
The exam is usually scheduled at 8:00am unless otherwise requested

Upper Gastro-Intestinal (GI)/Esophagram/Small Bowel Series [over 2 years]
The patient should have nothing to eat or drink after the evening meal the day prior to the exam.
Nothing to eat or drink the morning of the examination
Special Procedure Imaging Exam Preps

**Arthrogram, any joint**  
No prep required

**Hysterosalpingogram**  
No prep required

**Myelogram**  
Nothing to eat after midnight

**Venogram**  
BUN and creatinine lab results required for patients over 55 years of age.
Preventative Imaging

Cardiac Scoring

- Find out now if you are at risk for a heart disease tomorrow
  - 1 in 4 Americans has some form of heart disease
  - 85% of heart disease can be halted or prevented if the condition is diagnosed early

- There is a new way to help you avoid a heart attack
  - Calcium Scoring is an exam that detects the amount of plaque, if any, in the coronary arteries
  - The exam typically lasts less than 15 minutes, is done with a CT scanner and is completely painless and noninvasive

Heart disease is primarily caused by the build-up of plaque (atherosclerosis) in the arteries of the heart. The narrowing of vessels containing plaque constricts blood flow and oxygen. It is also possible for pieces of plaque to break off causing further artery blockage.

Cardiac Scoring can detect early warning signs of heart disease, allowing you the opportunity to make life style changes before serious heart damage occurs. A certified radiologist, using advanced computer technology designed for this procedure, will calculate your cardiac score and provide an evaluation within 48 hours. Knowing your score will help both you and your physician plan any necessary treatment.

Risk Factors for Heart Disease:
- Over 35 years of age
- Family history of heart disease
- Current or previous smoker
- High blood pressure
- High stress level
- Sedentary lifestyle
- Diabetic

The exam is not usually covered by insurance but is worth the investment in your health. If you have questions call 964-3358.
Cardiology – Ankle-Brachial Indices (ABI)

This is a pain free noninvasive test that uses blood pressure cuffs and a doppler ultrasound. The test screens for lower extremity vascular disease, a measure of plaque buildup in the legs and feet. Lower extremity vascular disease symptoms include cramping or pain when walking, discoloration of feet or ulcerations. Additionally, people who have plaque buildup in their legs and feet have a higher risk for infection, heart attacks or strokes.

Facts you may not realize:

- Heart disease and stroke, the principal components of cardiovascular disease, are consequently the first and third leading causes of death in the United States – accounting for more than 40% of all deaths.

- Nationwide, thirteen percent of people screened have signs of vascular disease. Most are unaware they are having a problem.

- On in four people die as a result of having their first heart attack. More individuals die of heart disease than all forms of cancer combined.

- Approximately 950,000 Americans die of cardiovascular disease each year, equating to one every 33 seconds.

- Although heart disease and stroke are often thought to affect primarily men and seniors, it is also a major contributor to death in women and people in the prime of their lives.

Appointments for ABI screenings are available:

- Tuesdays 8:00 am – 11:30 pm
- Wednesdays 8:00 am – 3:00 pm
Bone Densitometry - DEXA

Osteoporosis is often called a “silent disease” because there are no early warning signs of bones becoming weak. Frequently a fracture, from even minimal trauma, is the first sign of thinning bones. Between the ages of 25 and 35, bone mass usually peaks, but after the age of 35, women can lose bone, this loss accelerates after menopause.

Risk factors that cause the amount of bone mineral to decrease in your body include:

- Aging
- Low calcium intake
- People who are very thin
- Poor eating habits
- Postmenopausal women
- Smoking
- Some bowel diseases may hinder absorption of vitamin D
- Use of alcohol
- Use of steroids (prednisone)

Approximately eight million women in the United States suffer from osteoporosis, a systemic skeletal disease in which the density and quality of bone are reduced. To detect osteoporosis accurately, doctors use an enhanced form of x-ray technology called dual-energy x-ray absorptiometry (DXA or DEXA). DEXA bone densitometry is today’s established standard for measuring bone mineral density (BMD). Bone densitometry is a non-invasive, accurate, inexpensive way of detecting osteoporosis. Measurement of the lower spine and hips are most often done. The exam takes 15 – 30 minutes and does not require undressing. The DEXA tests can also assess your risk for developing fractures.

Bone desitometry:

- Can be beneficial for any age or gender
- Provides early detection other tests miss
- Can measure multiple sites of the body to determine the most appropriate treatments
- Can estimate fracture risk
- Is easily administered with a low radiation dose that is roughly equivalent to a cross-country airline flight.

It is possible however to reverse bone loss and make bones stronger. A baseline densitometry at 40 is a positive step in preventative action. If your bone density is found to be low, you and your physician can work together on a treatment plan to help prevent fractures before they occur.
Body Composition Analysis

A non-invasive measurement of:
•   Skeletal bone mineral content
•   Lean muscle mass
•   Percentage of body fat

Why should I have a body composition analysis test?
Percentage of body fat is an excellent measure of overall fitness and health. Body Composition Analysis can determine a baseline measure of body fat and lean muscle mass. It is also a good way to measure improvement as you progress toward your health and fitness goals.

How is the test performed?
This simple ten-minute procedure is performed in the Radiology department utilizing a special x-ray machine called a DEXA scanner. The patient is required to lie still on the x-ray table for approximately five minutes while the scanner moves over the body starting at the top of the head and ending at the toes. This scan produces an x-ray of the entire body. A computer analyzes this image and results are determined.

How much does this test cost?
The cost for the procedure is $30.00. Because insurance does not cover the cost of this test, Pioneer Valley Hospital will collect the fee prior to the exam. We accept cash payment and most major credit cards.

Do I need a doctor’s order for this test?
A doctor’s order is not required for this test. If you would like to schedule an appointment for this test please call Pioneer Valley Hospital Imaging Department at 964-3888.