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F-18 FDG Tumor Imaging - Siemens

Pre-Procedure Instructions:

1. Patient called 1-2 business days prior to their appointment and reminded of the prep, given directions and an opportunity to ask questions regarding the procedure.
2. Determine if the patient is diabetic and if so, what their diabetic regimen is. Make sure patient understands blood glucose has to be under 200 mg/dl for the scan.
3. Patient is instructed to take daily medications as ordered by the physician with exception of diabetic medication.
4. NPO at least 4-6 hours prior to F-18 FDG injection – patient is encouraged to have water the day of the scan.
5. Obtain patients current medical/surgical history, height, weight, allergies, and current medications.
6. Determine in patients of childbearing age, (age 60 and younger), chance of pregnancy or breastfeeding.

Radiopharmaceutical: F-18 FDG (must be ordered by technologist the day prior to test)

Dose Range: 6-15 mCi, **Prescribed dose of 10 mCi F-18 FDG, If patient weighs > 250 order 12mCi**

Procedure:

1. Patient is interviewed, assessed for correct indication for the test ordered, pre-procedure teaching is completed and the information documented on the assessment form.
2. The patient reads and signs the F-18 FDG Informed Consent form.
3. IV access is obtained by using an IV catheter and normal saline for flush.
4. A blood sugar is obtained via glucometer. Confirm a fasting BGL of <200 mg/dl.
5. If BGL is >200 mg/dl notify radiologist prior to injection.
6. Inject the prescribed dose of FDG using all radiation safety guidelines. Remove IV once injection is completed.
7. The patient is instructed to rest quietly for an approximate 60-minute uptake.
8. Immediately prior to the scan the patient is asked to void and weight is obtained via scale in scan room.
9. The patient is positioned by the technologist on the scanning table. The technologist selects the correct protocol indicated by the diagnosis.
10. Upon completion of the PET scan, the patient is assisted off the table and instructed to resume all normal activities. Patient is instructed to increase fluids (unless on fluid restriction) and void to decrease radiation exposure to bladder wall.

* If the patient has limited mobility or any illness/disease that would warrant any change in protocol this information is brought to the attention of the technologist or physician so variations to the protocol can be adapted.

Approximate times required to complete a Skull-Mid-Thigh/Whole Body Scan:

- | | |
|-----------------------|---------------|
| 1. Prep-time | 15 minutes |
| 2. 18-FDG uptake time | 60 minutes |
| 3. Scanning time | 20-30 minutes |

Patient Preparations:

Patient is to be NPO for at least 4-6 hours prior to appointment (except water). Patient must be well hydrated by drinking water the night before and at least 32oz 2 hours prior to their scan appointment. Patient should avoid strenuous activity for at least 24 hours prior to scan. Patient should remove any interfering objects in the field of view included but not limited to bra, jewelry, belt buckle, etc. Diabetic patients must receive special instructions based on their medications. Refer to diabetic instructions sheet.

Procedure:

After reviewing patient history form, answering patient questions and obtaining informed consent, the patient's finger can be lanced and a baseline glucose sample is taken. The sample may also be taken directly from the IV prior to saline flush. The sample is analyzed using a glucometer in accordance with CORP#: POC-002 and the results documented on the patient's history sheet. If the results are <200 mg/dl proceed, if >200mg/dl call the radiologist prior to injection of FDG. If a critical value is obtained follow the Point of Care Policy and Procedure referenced earlier. Document on the history sheet if the radiologist wants to proceed with the scan also document any further orders given. If the test is cancelled per radiologist the ordering physician must be notified to assist with glucose control and/or rescheduling. IV access is obtained and the dose is injected. The IV is flushed with 20 mL of saline to assure that the entire prescribed dose is delivered. The patient rests quietly in the uptake room for approximately 60 minutes while the radiotracer is absorbed. Immediately prior to the scan, the patient is taken to the restroom to void. Next, the patient is taken into the scan room, a weight obtained and positioned for the scan. Scan protocol is chosen by technologist based on region of interest and body mass index. Raw data is acquired and used for post processing. All images are sent to the MIM Workstations (East, North and Server) and PACS for access by radiologist and to archive. The most previous PET/CT scans should also be sent to the MIM Workstations.

Scanning Length Variations:

78814	Limited scanning area; usually for radiation oncology patients, preformed with their therapy holding devices for more precise localization of the tumor
78815	Below orbits through pelvis to mid-thigh
78816	Top of Skull through the toes (melanoma, myeloma, Merkel cell)

Camera: Siemens Biograph mCT Flow-40 slice

Scan Parameters:Skull Base to Mid-Thigh Scan

Patient is placed in position on scan table to enter head first. Scan through the mid-thigh area. Arms up if possible unless patient can't or Head/Neck scan.

Whole body

Whole body patients are completed in one scan for most patients; two parts if taller than 6'5". If patient can fit in one scan patient is supine/feet first/arms in an X on top of abdomen and laying on the black extension board.

For patients that need two parts...first the patients will be scanned supine, top of head through mid-thigh, with the arms down. After this scan is complete the patient will change positions on the scanner. They will then be scanned from the bottom of the feet through the end point of prior scan, allow for overlap.

Head/Neck Scan

Patient is placed in supine position on scan table to enter head first. Patient's arms are down to their side as close as possible. Start scan at top of sinuses through mid-thigh.

Adjust scan range 1 to go from top of sinuses through carina. Scan time for range 1 is 0.5 and the rest of body based off of body habitus/weight. PET Head/Neck Zooms (recon 3 and 4) will process automatically. Recon the CT Zoom to match the PET Head/Neck Zoom end location.

** Process with a large FOV using the Attenuation CT WB image if any part of the patient's body is out of FOV. Delete the red circle around image prior to processing and sending.

Scan Protocol Parameters

PET/CT

AP Scout CT 120 KV(140 kV if arms are down) & 20 mA

CT Scan

Recon 1: 780 DFOV
Recon 2: 500 DFOV
120 kV Care Dose 4D set to Semi (140 kV if arms are down)
90 Quality Ref mAs (body) (on large patients >250 lbs 100 Ref mAs)
Dose saving optimized for Liver (7)
4 mm slices, 3 mm Increment
Pitch 0.8
Scan Detector Size: 16 x 1.2
Kernel: B30f Medium Smooth (use IMAR with metal implants)
Window: Abdomen (Head/Neck Zoom: Mediastinum)

PET Scan

Radiopharmaceutical, Dose, and Injection time entered
Minutes per range determined by the patient's weight
Recon Method: Iterative + TOF
Iterations 2, Subsets 21
Image Size: 200 (Matrix)
Zoom: 1.00
Filter: Gaussian
FWHM: 4 mm
Scatter Correction: Relative
See comments on recon tab for entering Dose and Initials

PET Zoom

Recon Method: Iterative + TOF

Iterations 2, Subsets 21
Image Size: 400 (Matrix)
Zoom: 2.00
Filter: Gaussian
FWHM: 3mm
Scatter Correction: Relative

Scan Range Time:

Scan range times are determined by the patient's weight:

250-300	0.7
200-250	0.8
150-200	0.9
100-150	1.0
<100	1.1
Head/Neck	0.5
Legs	2.1

F-18 Fluciclovine (Axumin) – Skull to Mid-Thigh - Siemens

Pre-Procedure Instructions:

7. Patient called 1-2 business days prior to their appointment and reminded of the prep, given directions and an opportunity to ask questions regarding the procedure.
8. Patient must be NPO (nothing to eat and/or drink) 4 hours prior to exam.
9. Patient is allowed to intake only enough water to take meds.
10. Patient is asked to void prior to leaving for appt. or prior to checking in for appt. Preferably 30-60 minutes before scan starts.
11. Obtain patients current medical/surgical, height, weight, allergies, and current medications.
12. Patient is instructed to take daily medications as ordered by physician with water only.

Radiopharmaceutical: F-18 Fluciclovine (Axumin) *must be ordered by technologist prior to test

Dose Range: 8-12 mCi F-18 Fluciclovine (Axumin), **Prescribed Dose of 10 mCi Fluciclovine (Axumin)**

Procedure:

11. Patient is interviewed, assessed for correct indication for the test ordered, pre-procedure teaching is completed and the information documented on the assessment form.
12. The patient reads and signs the F-18 Fluciclovine (Axumin) Informed Consent form.
13. Position Patient on scan table.
14. IV access is obtained by using an IV catheter and normal saline for flush.
15. Inject the prescribed dose of F-18 Fluciclovine (Axumin) using all radiation safety guidelines.
16. The patient is instructed to raise arms above head, if patient cannot do arms over head then change IV cap and place arms down to sides.
17. The technologist selects the correct protocol indicated by the physician order.
18. CT acquisition begins 1:30 post injection.
19. PET acquisition begins 4 +/- 1 minute post injection.
20. Remove IV once acquisition is completed.
21. Upon completion of the PET scan, the patient is assisted off the table and instructed to resume all normal activities. Patient is instructed to force fluids (unless on fluid restriction) and void to decrease radiation exposure to bladder wall.

Comments: If the patient has limited mobility or any illness/disease that would warrant any change in protocol this information is brought to the attention of the technologist or physician so variations to the protocol can be adopted.

Approximate times required to complete a F-18 Fluciclovine (Axumin) Scan:

- | | |
|----------------------------|---------------|
| 1. Prep-time | 15 minutes |
| 2. F-18 Axumin uptake time | 4 minutes |
| 3. Scanning time | 20-30 minutes |

Patient Preparation:

Patient is advised to avoid strenuous activity for 24 hours prior to exam. Patient should be NPO 4 hours prior to the exam (they can take enough water to take their pills prior to exam if needed) Patient should remove any interfering objects in the field of view included but not limited to bra, jewelry, etc.

Procedure:

After reviewing patient history form, answering patient questions and obtaining informed consent, patient is positioned on scan table, IV access is obtained and the dose is injected. The IV is flushed with 20 mL of saline to assure that the entire prescribed dose is delivered. The patient is instructed to bring arms above head post injection. CT acquisition begins 1:30 minutes post injection. PET acquisition begins 4 +/- 1 minutes post injection. The scan direction should be from mid-thigh scanning to base of skull. Raw data is acquired and used for post processing. All images are sent MIM Workstations (East, North, Server) as well as to PACS for access by radiologist and to archive.

Scanning Length:

78815	Mid-thigh to base of skull
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Camera: Siemens Biograph mCT Flow- 40 slice

Scan Parameters:

PET/CT mid-thigh to skull base

AP Scout CT 120 KV (140 kV if arms are down) and 20 mA

CT Scan

Recon 1: 780 DFOV
 Recon 2: 500 DFOV
 120 kV Care Dose 4D set to Semi (140 kV if arms are down)
 90 Quality Ref mAs (body)
 Dose saving optimized for Liver (7)
 4 mm slices, 3 mm Increment
 Pitch 0.8
 Scan Detector Size: 16 x 1.2
 Kernel: B30f Medium Smooth (use IMAR with metal implants)
 Window: Abdomen

PET Scan

Radiopharmaceutical, Dose, and Injection time entered
 Minutes per range determined by the patient's weight
 Recon Method: Iterative + TOF
 Iterations 2, Subsets 21
 Image Size: 200 (Matrix)
 Zoom: 1.00

Filter: Gaussian

FWHM: 4 mm

Scatter Correction: Relative

See comments on recon tab for entering Dose and Initials

Scan Range Time: Scan range 0.4 over pelvis rest of scan TBD by weight

Scan range times are determined by the patient's weight.

Scan Range Time:

Scan range times are determined by the patient's weight:

250-300	0.7
200-250	0.8
150-200	0.9
100-150	1.0
<100	1.1

Ga-68 Dotatate (NETSPOT) Neuroendocrine Tumor (NET) – Skull to Mid-Thigh - Siemens

Pre-Procedure Instructions:

13. Patient called 1-2 business days prior to their appointment and reminded of the prep, given directions and an opportunity to ask questions regarding the procedure.
14. Patient is allowed to intake water only and should be well hydrated prior to their PET/CT.
15. Patient should be NPO for 2 hours prior to appt.
16. Obtain patients current medical/surgical, height, weight, allergies, and current medications.
17. Patient is instructed to take daily medications as ordered by physician with water only.
18. If patient is receiving Somatostatin Analog Injections they must be scheduled at the end of the cycle of that drug. Example: Short acting 24 hours after injection. Long acting 4 to 6 wks after the injection depending on which one.

Radiopharmaceutical: Ga-68 Dotatate NETSPOT *must be ordered by technologist prior to test

Dose Range: 0.054 mCi/kg ordered, Prescribed Dose max of 5.4 mCi Ga-68 Dotatate NETSPOT
*** order 5.4 mCi for every patient***

Procedure:

22. Patient is interviewed, assessed for correct indication for the test ordered, pre-procedure teaching is completed and the information documented on the assessment form.
23. The patient reads and signs the Ga-68 NETSPOT Informed Consent form.
24. IV access is obtained by using an IV catheter and normal saline for flush.
25. Inject the prescribed dose of Ga-68 NETSPOT using all radiation safety guidelines. Remove IV once injection is completed.
26. The patient is instructed to rest quietly for an approximate 40-90 (60 min) minute uptake.
27. Immediately prior to the scan the patient is asked to void and weight is obtained via scale in scan room.
28. Immediately prior to the scan the patient is asked to void and weight is obtained via scale in scan room.
29. The patient is positioned by the technologist on the scanning table. The technologist selects the correct protocol indicated by the physician order.
30. Upon completion of the PET scan, the patient is assisted off the table and instructed to resume all normal activities. Patient is instructed to force fluids (unless on fluid restriction) and void to decrease radiation exposure to bladder wall.

Comments: If the patient has limited mobility or any illness/disease that would warrant any change in protocol this information is brought to the attention of the technologist or physician so variations to the protocol can be adopted.

Approximate times required to complete Ga-68 NETSPOT Scan:

- | | |
|------------------------------|---------------|
| 4. Prep-time | 15 minutes |
| 5. Ga-68 NETSPOT uptake time | 40-90 minutes |
| 6. Scanning time | 35 minutes |

Patient Preparation:

Patient must be well hydrated by drinking water the night before the test and at least 32 ounces 1 hour prior to their scan appointment. Patient should be NPO for 2 hours prior to appt. Patient should remove any interfering objects in the field of view included but not limited to bra, jewelry, etc.

Procedure:

After reviewing patient history form, answering patient questions and obtaining informed consent, patient is positioned on scan table, IV access is obtained and the dose is injected. The IV is flushed with 10 mL of saline to assure that the entire prescribed dose is delivered. The patient rests quietly in the uptake room for approximately 45-60 minutes while the radiotracer is absorbed. Immediately prior to the scan, the patient is taken to the restroom to void. Next, the patient is taken into the scan room, a weight obtained and positioned for the scan. The scan direction should be from the pelvis to head arms down. The pelvis/groin position should be imaged soon after patient empties his/her bladder. Scan protocol is chosen by technologist based on region of interest and body mass index. Raw data is acquired and used for post processing. All images are sent to PACS for access by radiologist and to archive.

Scanning Length:

78815	Mid-thigh to base of skull
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Camera: Siemens Biograph mCT Flow, 40 slice

Scan Parameters:

PET/CT mid-thigh to skull base

AP Scout CT 120 kV (140 kV if arms are down)

CT Scan

Recon 1: 780 DFOV
 Recon 2: 500 DFOV
 120 kV Care Dose 4D set to Semi (140 kV if arms down)
 90 Quality Ref mAs (on Whole Body use 130 Ref mAs)
 (Choose Large protocol for patients over 250)
 Dose saving optimized for Liver (7)
 4 mm slices, 3 mm Increment, Pitch 0.8
 Scan Detector Size: 16 x 1.2
 Kernel: B30f Medium Smooth (use IMAR with metal implants)
 Window: Abdomen

PET Scan

Radiopharmaceutical, Dose, and Injection time entered
Minutes per range determined by the patient's weight
Recon Method: Iterative + TOF
Iterations 2, Subsets 21
Image Size: 200 (Matrix)
Zoom: 1.00
Filter: Gaussian
FWHM: 4 mm
Scatter Correction: Relative
See comments on recon tab for entering Dose and Initials

Scan Range Times: Scan by weight (if there is time scan at a longer range ex: 0.8 to 0.7-.1 to add one to two minutes more than what they would be for an FDG scan)

Scan Range Time:

Scan range time Examples with the minute or so added:

200-300	0.5 (start at 45 minutes)
150-200	0.6
<100-150	0.7

Radium 223 Dichloride Xofigo Therapy - Siemens

Radiopharmaceutical:

- Radium 223 Dichloride
- Physical half-life 11.4 days
- Multiple Energies
 - 95.3% emitted as alpha rays
 - 3.6% emitted as beta rays
 - 1.1% emitted as gamma rays
- Mimics calcium

Dose:

- 50 kBq per kg and specific for each patient
- Each patient will receive full dose
- Dose Calibrator Setting is 268
- Regimen will be 6 doses given at 4 week intervals via IV
- Do not add saline to increase volume
- Written directive is signed prior to administration

Method of Administration:

- IV

Indications:

- Treatment of bone metastasis in prostate cancer patients
- At least two known bone metastasis to start treatment
- Targets new bone growth around metastasis

Contraindications:

- Suppressed Bone Marrow

Precautions:

- Appropriate shielding and ALARA techniques for handling pure alpha/beta/gamma emitters should be used.
- Syringe shield should be used and gloves

Patient Preparation/Education:

- Contact Xofigo access services at 1-855-696-3446 at least 3 business days prior to each administration and provide them with the patient's weight in kg.
***After the first dose is administered, they will call 8 days prior to the next treatment to confirm shipping and will still need weight in kg.*
- Prior to first treatment:
 - a. Absolute Neutrophil Count (ANC) should be greater than or equal to $1.5 \times 10^9/L$
 - b. Platelet Count should be greater than or equal to $100 \times 10^9/L$
 - c. Hemoglobin should be greater than or equal to 10 g/dL
- Prior to subsequent administrations:
 - a. Absolute Neutrophil Count (ANC) should be greater than or equal to $1.0 \times 10^9/L$
 - b. Platelet Count should be greater than or equal to $50 \times 10^9/L$
- Discontinue Ra-223 Dichloride if hematologic do not recover within 6-8 weeks following the last treatment following supportive care
- Patients may eat and take prescribed medications as needed prior to the procedure
- Hospitalization is not required
- Review information from the written patient information guidelines that summarize the following (*The NRC does not require written Instructions but it is up to the institution to do so*):
 - Increased hydration and frequent urination (1 week)
 - Avoid transfer of bodily fluids (1 week)
 - Wash hands thoroughly after using the bathroom (1 week)
 - Clean up spilled urine and dispose of blood contaminated materials (1 Week)
 - Use a condom for sexual relations (1 week)

Equipment:

- None; No Imaging Required

Procedure:

- On administration day, patient will check-in to Radiation Oncology and meet with nursing staff. Nursing staff will screen patient for any hematologic issues, obtain weight and bring patient to designated injection room.
- Correctly identify outpatients for the scheduled examination and verify chart orders.
- Have patient sign consent and make sure the written directive is signed.
- Establish IV and flush a minimum of 20ml of 0.9% Sodium Chloride prior to injection

- Authorized user to inject Xofigo via established IV over a 1 minute period.
- Flush with minimum of 20ml of 0.9% Sodium Chloride before removing IV
- The patient should also be instructed to drink plenty of fluids for at least 24 hours after the exam.
- Give Xofigo post injection instructions to patient and answer all questions.
- Nursing staff will take patient to Radiation Oncology for post injection consult.

Miscellaneous Comments:

- All doses will be uCi amounts
- Excretion is primarily through the feces
 - 60% of the activity is taken up by the bones by 4 hours
 - Approximately 75% is excreted from the body within 1 week
- Excretion is primarily through the feces, less than 5% is through the urine
- Ra-223 Dichloride can be placed in decay and the final decay product is non-radioactive Pb-207
 - May take as long as 8 months to decay in storage
- Volume to Inject (ml) = $\frac{\text{body weight (kg)} \times 50 \text{ (kBq/kg body weight)}}{\text{Decay Factor} \times 1000 \text{ kBq/ml}}$
- Estimated dose to family/caregivers is <100 mRem (1mSv) to family and caregivers
 - Person would have to be standing 3 feet away from the patient without moving for 119 days to even receive 100 mRem
- Instructions to the patient include:
 - Clean up spilled urine and dispose of any body fluid –contaminated material to prevent its being handled
 - Wash hands thoroughly after using toilet
 - Use a condom 1 week after injection
- Biggest side effects are diarrhea and bone pain

Processing:

- Scan paperwork and written directive into PACS
- No written/dictated report is necessary due to this being handled by Radiation Oncology and not a Radiologist

GE Discovery 610 PET/CT Protocol Parameters

*All CT Scans are set to auto mA and utilize the GE Smart Scan dose reduction

PET CT EYES to THIGH (<200 lbs)

Scout mA: 10 kV: 120
CT Scan mA: 15-180 kV: 140
Noise: 28.50

PET CT EYES to THIGH LARGE (>200 lbs)

Scout mA: 10 kV: 120
CT Scan mA: 15-300 kV: 140
Noise: 25

PET CT EYES to THIGH HEAD/NECK

Scout mA: 10 kV: 120
CT Scan mA: 50-300 kV: 140
Noise: 25

PET CT BRAIN FDG

Scout mA: 10 kV: 120
CT Scan mA: 10-100 kV: 140
Noise: 25

PET CT WHOLEBODY (15 PET beds)

Scout mA: 10 kV: 120
CT Scan mA: 15-300 kV: 140
Noise: 25

PET CT LEGS

Scout mA: 10 kV: 120
CT Scan mA: 15-180 kV: 140
Noise: 28.50

PET 3D: Standard dose of 10 mCi with 3 minute acquisition/PET bed

F-18 FDG Tumor Imaging (GE)

Pre-Procedure Instructions:

19. Patient called 1-2 business days prior to their appointment and reminded of the prep, given directions and an opportunity to ask questions regarding the procedure.
20. Determine if the patient is diabetic and if so, what their diabetic regimen is. Make sure patient understands blood glucose has to be under 200 mg/dl for the scan.
21. Patient is instructed to take daily medications as ordered by the physician with exception of diabetic medication.
22. NPO at least 6 hours prior to F-18 FDG injection – patient is encouraged to have water the day of the scan.
23. Obtain patients current medical/surgical history, height, weight, allergies, and current medications.
24. Determine in patients of childbearing age, (age 60 and younger), chance of pregnancy or breastfeeding.

Radiopharmaceutical: F-18 FDG (must be ordered by technologist the day prior to test)

Dose Range: 6-15 mCi, **Prescribed dose of 10 mCi F-18 FDG, If patient weighs > 300 order 12mCi**

Procedure:

31. Patient is interviewed, assessed for correct indication for the test ordered, pre-procedure teaching is completed and the information documented on the assessment form.
32. The patient reads and signs the F-18 FDG Informed Consent form.
33. IV access is obtained by using an IV catheter and normal saline for flush.
34. A blood sugar is obtained via glucometer. Confirm a fasting BGL of <200 mg/dl.
35. If BGL is >200 mg/dl notify radiologist prior to injection.
36. Inject the prescribed dose of FDG using all radiation safety guidelines. Remove IV once injection is completed.
37. The patient is instructed to rest quietly for an approximate 45-60 minute uptake.
38. Immediately prior to the scan the patient is asked to void and weight is obtained via scale in scan room.
39. The patient is positioned by the technologist on the scanning table. The technologist selects the correct protocol indicated by the physician order.
40. Upon completion of the PET scan, the patient is assisted off the table and instructed to resume all normal activities. Patient is instructed to force fluids (unless on fluid restriction) and void to decrease radiation exposure to bladder wall.

* If the patient has limited mobility or any illness/disease that would warrant any change in protocol this information is brought to the attention of the technologist or physician so variations to the protocol can be adapted.

Approximate times required to complete a Whole Body Scan:

- | | |
|-----------------------|---------------|
| 4. Prep-time | 15 minutes |
| 5. 18-FDG uptake time | 45-60 minutes |
| 6. Scanning time | 25-45 minutes |

Patient Preparations:

Patient is to be NPO for at least 6 hours prior to appointment (except water). Patient must be well hydrated by drinking water the night before and at least 32oz 2 hours prior to their scan appointment. Patient should avoid strenuous activity for at least 24 hours prior to scan. Patient should remove any interfering objects in the field of view included but not limited to bra, jewelry, etc. Diabetic patients must receive special instructions based on their medications. Refer to diabetic instructions sheet.

Procedure:

After reviewing patient history form, answering patient questions and obtaining informed consent, the patient's finger is lanced and a baseline glucose sample is taken. The sample may also be taken directly from the IV prior to saline flush. The sample is analyzed using a glucometer in accordance with CORP#: POC-002 and the results documented on the patient's history sheet. If the results are <200 mg/dl proceed, if >200mg/dl call the radiologist prior to injection of FDG. If a critical value is obtained follow the Point of Care Policy and Procedure referenced earlier. Document on the history sheet if the radiologist wants to proceed with the scan also document any further orders given. If the test is cancelled per radiologist the ordering physician must be notified to assist with glucose control and/or rescheduling. IV access is obtained and the dose is injected. The IV is flushed with 20-30 mL of saline to assure that the entire prescribed dose is delivered. The patient rests quietly in the uptake room for approximately 45-60 minutes while the radiotracer is absorbed. Immediately prior to the scan, the patient is taken to the restroom to void. Next, the patient is taken into the scan room, a weight obtained and positioned for the scan. The scan direction should be from the pelvis to head. The pelvis/groin position should be imaged soon after patient empties his/her bladder. Scan protocol is chosen by technologist based on region of interest and body mass index. Raw data is acquired and used for post processing. All images are sent to PACS for access by radiologist and to archive.

Scanning Length Variations:

78814	Limited scanning area; usually for radiation oncology patients, preformed with their therapy holding devices for more precise localization of the tumor
78815	Below orbits through pelvis to mid-thigh
78816	Top of Skull through the toes (melanoma, myeloma, Merkel cell)

Camera: GE Discovery 610 *16 Slice CT

Scan Parameters:Skull Base to Mid-Thigh Scan

Patient is placed in supine position on scan table to enter head first. Patient's arms are raised above their head for indications other than head and neck cancer diagnosis. If unable to raise their arms they may be left down at the patient's side utilizing a strap. This should be avoided if possible as it causes loss of data in the lateral projections.

Whole Body Scan (Head to toe)

Whole body patients are completed in two parts. First, patients will be scanned supine, head through mid-thigh, with the arms down. After this scan is complete the patient will change positions on the scanner. They will then be scanned from the bottom of the feet through the end point of prior scan, allow for overlap. Some patients will be able to be scanned completely in the first scan (for patients under 5'10").

Scan Protocol Parameters**PET/CT**

AP Scout CT
CT Scan

70 DFOV
140 kV Auto mA Smart mA
3.75 mm slices, Pitch 0.938:1, Speed 18.75
Recon Type Q.AC, Wide View
Recon Option Full, 400/40, SS30
Matrix 512
Recon2 Recon type Stnd, Wide View, Matrix 512, Recon Option Full 400/40 SS30

PET Scan

Radiopharmaceutical, Dose, and Injection time entered
Minutes per bed determined by the patients BMI/ Protocol selection
Recon Type VPHD, Recon Option MAC,
Matrix 192
Recon2 Recon type VPHD, 6.4mm, 32/2; Recon Option NAC

Scan Bed Minutes:

Scan bed minutes are determined by the patients BMI, which is calculated by: $(\text{Pt. Weight}/(\text{Pt. Height} \times \text{Pt. Height})) \times 703$

If BMI = 25-29 – 2.5 minute/bed

30-34 – 3 minute/bed

35-39 – 3.5 minute/bed

>40 – 4 minute/bed

F-18 Fluciclovine (Axumin) Skull to Mid-Thigh Imaging - GE

Pre-Procedure Instructions:

25. Patient called 1-2 business days prior to their appointment and reminded of the prep, given directions and an opportunity to ask questions regarding the procedure.
26. Patient must be NPO 4 hours prior to exam.
27. Patient is allowed to intake water only and should be well hydrated prior to their PET/CT.
28. Obtain patients current medical/surgical, height, weight, allergies, and current medications.
29. Patient is instructed to take daily medications as ordered by physician with water only.

Radiopharmaceutical: F-18 Fluciclovine (Axumin) *must be ordered by technologist prior to test

Dose Range: 6-10 mCi F-18 Fluciclovine (Axumin), **Prescribed Dose of 8mCi Fluciclovine (Axumin)**

Procedure:

41. Patient is interviewed, assessed for correct indication for the test ordered, pre-procedure teaching is completed and the information documented on the assessment form.
42. The patient reads and signs the F-18 Fluciclovine (Axumin) Informed Consent form.
43. Patient is asked to empty bladder.
44. Patient is positioned on scan table.
45. IV access is obtained by using an IV catheter and normal saline for flush.
46. Inject the prescribed dose of F-18 Fluciclovine (Axumin) using all radiation safety guidelines. Remove IV once injection is completed.
47. The patient is instructed to raise arms above head 1 minute post injection.
48. The technologist selects the correct protocol indicated by the physician order.
49. CT acquisition begins 1:30 post injection.
50. PET acquisition begins 4 +/- 1 minute post injection.
51. Upon completion of the PET scan, the patient is assisted off the table and instructed to resume all normal activities. Patient is instructed to force fluids (unless on fluid restriction) and void to decrease radiation exposure to bladder wall.

Comments: If the patient has limited mobility or any illness/disease that would warrant any change in protocol this information is brought to the attention of the technologist or physician so variations to the protocol can be adopted.

Approximate times required to complete a F-18 Fluciclovine (Axumin) Scan:

- | | |
|----------------------------|---------------|
| 7. Prep-time | 15 minutes |
| 8. F-18 Axumin uptake time | 4 minutes |
| 9. Scanning time | 20-30 minutes |

Patient Preparation:

Patient must be well hydrated by drinking water the night before the test and at least 32 ounces 1 hour prior to their scan appointment. Patient should remove any interfering objects in the field of view included but not limited to bra, jewelry, etc.

Procedure:

After reviewing patient history form, answering patient questions and obtaining informed consent, patient is positioned on scan table, IV access is obtained and the dose is injected. The IV is flushed with 10 mL of saline to assure that the entire prescribed dose is delivered. The patient is instructed to bring arms above head 1 minute post injection. CT acquisition begins 1:30 minutes post injection. PET acquisition begins 4 +/- 1 minutes post injection. The scan direction should be from mid-thigh scanning to base of skull. Raw data is acquired and used for post processing. All images are sent to PACS for access by radiologist and to archive.

Scanning Length:

78815	Mid-thigh to base of skull
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Camera: GE Discovery 610 *16 Slice CT

Scan Parameters:

PET/CT mid-thigh to skull base

AP Scout CT
CT Scan

70 DFOV
140Kv
3.75 mm slices, Pitch 0.938:1, Speed 18.75
Recon Type Q.AC, Wide View
Recon Option Full, 400/40, SS30
Matrix 512
Recon2 Recon type Std, Wide View, Matrix 512, Recon Option Full 400/40 SS30

PET Scan

Radiopharmaceutical, Dose, and Injection time entered
Minutes per bed determined by the patients BMI/ Protocol selection
Recon Type VPHD, Recon Option MAC,
Matrix 192
Recon2 Recon type VPHD, 6.4mm, 32/2; Recon Option NAC

Scan Bed Minutes: Scan 5mins/bed over pelvis rest of scan TBD by BMI

Scan bed minutes are determined by the patients BMI, which is calculated by: $(\text{Pt. Weight}/(\text{Pt. Height} \times \text{Pt. Height})) \times 703$

If BMI = 25-34.9—3 min/beds Torso and 1.5 min/bed legs

>35 - 4 min/bed Torso and 1.5 min/bed legs

Ga-68 Dotatate (NETSPOT) Neuroendocrine Tumor (NET) – Skull to Mid-Thigh

Pre-Procedure Instructions:

30. Patient called 1-2 business days prior to their appointment and reminded of the prep, given directions and an opportunity to ask questions regarding the procedure.
31. Patient must be NPO 2 hours prior to exam.
32. Patient is allowed to intake water only and should be well hydrated prior to their PET/CT.
33. Obtain patients current medical/surgical, height, weight, allergies, and current medications.
34. Patient is instructed to take daily medications as ordered by physician with water only.
35. Verify if patient is taking a somatostatin analog drug. If yes: Long-Acting must be scheduled at end of cycle (usually 3-4 weeks post injection) if short-acting schedule 24 hours post last injection.

Radiopharmaceutical: Ga-68 dotatate NETSPOT *must be ordered by technologist prior to test

Dose Range: 0.054 mCi/kg ordered, **Prescribed Dose max of 5.4 mCi Ga-68 dotatate NETSPOT**

Procedure:

52. Patient is interviewed, assessed for correct indication for the test ordered, pre-procedure teaching is completed and the information documented on the assessment form.
53. The patient reads and signs the Ga-68 NETSPOT Informed Consent form.
54. IV access is obtained by using an IV catheter and normal saline for flush.
55. Inject the prescribed dose of Ga-68 NETSPOT using all radiation safety guidelines. Remove IV once injection is completed.
56. The patient is instructed to rest quietly for an approximate 40-60 minute uptake.
57. Immediately prior to the scan the patient is asked to void and weight is obtained via scale in scan room.
58. Immediately prior to the scan the patient is asked to void and weight is obtained via scale in scan room.
59. The patient is positioned by the technologist on the scanning table. The technologist selects the correct protocol indicated by the physician order.
60. Upon completion of the PET scan, the patient is assisted off the table and instructed to resume all normal activities. Patient is instructed to force fluids (unless on fluid restriction) and void to decrease radiation exposure to bladder wall.

Comments: If the patient has limited mobility or any illness/disease that would warrant any change in protocol this information is brought to the attention of the technologist or physician so variations to the protocol can be adopted.

Approximate times required to complete Ga-68 NETSPOT Scan:

- | | |
|-------------------------------|---------------|
| 10. Prep-time | 15 minutes |
| 11. Ga-68 NETSPOT uptake time | 40-60 minutes |
| 12. Scanning time | 20-30 minutes |

Patient Preparation:

Patient must be well hydrated by drinking water the night before the test and at least 32 ounces 1 hour prior to their scan appointment. Patient should remove any interfering objects in the field of view included but not limited to bra, jewelry, etc.

Procedure:

After reviewing patient history form, answering patient questions and obtaining informed consent, patient is positioned on scan table, IV access is obtained and the dose is injected. The IV is flushed with 10 mL of saline to assure that the entire prescribed dose is delivered. The patient rests quietly in the uptake room for approximately 45-60 minutes while the radiotracer is absorbed. Immediately prior to the scan, the patient is taken to the restroom to void. Next, the patient is taken into the scan room, a weight obtained and positioned for the scan. The scan direction should be from the pelvis to head.

The pelvis/groin position should be imaged soon after patient empties his/her bladder. Scan protocol is chosen by technologist based on region of interest and body mass index. Raw data is acquired and used for post processing. All images are sent to PACS for access by radiologist and to archive.

Scanning Length:

78815	Mid-thigh to base of skull
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Camera: GE Discovery 610 *16 Slice CT

Scan Parameters:

PET/CT mid-thigh to skull base

AP Scout CT

CT Scan

70 DFOV

140Kv

3.75 mm slices, Pitch 0.938:1, Speed 18.75

Recon Type Q.AC, Wide View

Recon Option Full, 400/40, SS30

Matrix 512

Recon2 Recon type Std, Wide View, Matrix 512, Recon Option Full 400/40 SS30

PET Scan

Radiopharmaceutical, Dose, and Injection time entered

Minutes per bed determined by the patients BMI/ Protocol selection

Recon Type VPHD, Recon Option MAC,

Matrix 192

Recon2 Recon type VPHD, 6.4mm, 32/2; Recon Option NAC

Scan Bed Minutes: Scan 5mins/bed over pelvis rest of scan TBD by BMI

Scan bed minutes are determined by the patients BMI, which is calculated by: $(\text{Pt. Weight}/(\text{Pt. Height} \times \text{Pt. Height})) \times 703$

If BMI = 25-34.9—4 min/beds Torso and 1.5 min/bed legs

>35 - 5 min/bed Torso and 1.5 min/bed legs

F-18 FDG Neurology – Mobile PET

Indication:	Dementia differentiation, pre-surgical evaluation of seizures, or tumor localization (oncology). Pregnancy is a relative contraindication.
Patient Prep:	4 – 6 hours fast. Hydration encouraged with plain, unflavored water. Avoid caffeine and alcohol.
Pre-Injection:	30 minutes in comfortable, quiet, dimly-lit room with minimal interaction and stimulus. Start IV 10 minutes prior to FDG. Blood glucose level will be tested prior to administration of FDG. Recommended range is 40 – 200 mg/dl. <i>Please complete attached glucose/critical value form.</i>
Dose:	5 – 12 mCi IV bolus (Pediatric 0.143 mCi/Kg)
Acquisition:	30 – 45 minute uptake target for dementia/seizures. 55 – 75 minute uptake target for brain tumors (oncology protocol). Static images of the brain (one bed position). 10 – 20 mins (variable per manufacturer's recommendations).
Positioning:	Comfortably supine, centered in field of view, arms down, avoiding extreme neck positions. Head secured to avoid movement.
Precautions:	Medications altering cerebral metabolism include: sedatives, amphetamines, narcotics, anti-psychotics, corticosteroids. <i>Discontinue breastfeeding for 24 hours after.</i>
Technical:	Specific imaging and reconstruction parameters are manufacturer dependent and available upon request.
References:	<i>Society of Nuclear Medicine Procedure Guidelines. Refer to guidelines for dosimetry tables.</i>

F-18 FDG Oncology – Mobile PET

- Indications:** Including but not limited to: Differentiation of benign and malignant tumors, staging known malignancies, detecting tumor recurrence, monitoring the effect of therapy, and guiding treatment planning.
- Patient Prep:** 4 – 6 hours fast with the exception of plain, unflavored water.
Dietary guidelines, hydration, and activity restriction encouraged.
Medications to be taken as prescribed.
Patient encouraged to dress in warm clothing.
- See attached patient preparation instructions for further detail.*
- Pre-Injection:** Blood glucose level will be tested prior to administration of FDG.
Recommended range is 40 – 200 mg/dl.
- Please complete attached glucose/critical value form.*
- Dose:** 10 – 20 mCi IV bolus, administered in contralateral side.
(*For pediatric patients, use the formula: 0.143 mCi/Kg*)
- Extravasation or any other complication with injection site will be noted on the PET/CT patient screening form (*attached*).
- Camera specifications and patient body habitus will be taken into consideration, when applicable.
- Acquisition:** 55 – 75 minute uptake time (60 minute target).
- Uptake in temperate, quiet, and comfortable environment encouraged. Warm blankets provided when necessary. Talking is discouraged.
- Patient instructed to void immediately prior to imaging. Imaging to begin at pelvis when possible.
- Imaging from skull base to mid-thigh, whole body, or inclusion of the brain/skull dependent on indication/diagnosis and ordering physician requests (see table below).
- Topogram and low dose, non-contrast CT for attenuation correction and localization performed prior to PET acquisition.
If oral contrast is requested, provide details in additional directives.
- Positioning:** Comfortably supine, centered in field of view. Immobilization devices may be used as needed to prevent motion (head holders, arm/leg/feet straps, etc.)

Scanning Parameters	Diagnosis
Skull base through mid-thigh (arms up)	Lung nodules and esophageal, stomach, liver, pancreas, breast, lung, mesothelioma, lymphoma, leukemia, colorectal, bladder, gynecologic, prostate, kidney, testicular cancers, etc.
Vertex through mid-thigh (arms down)	Head and neck primary cancers (Including Thyroid, Oral, Pharyngeal, Laryngeal, etc.)
Whole Body (arms down)	Melanoma, Multiple Myeloma, Sarcomas of the extremities, etc.
Brain	Brain tumor (see neurology protocol).

Precautions: Female patients will be asked if they are pregnant or breastfeeding prior to administration of radiopharmaceutical.

If patient is pregnant or potentially pregnant, radiologist must be notified and informed consent obtained (see attachment).

Post exam instructions (*attached*) given to each patient which recommends the discontinuation of breastfeeding for 24 hours.

Technical: Specific imaging and reconstruction parameters are manufacturer dependent and available upon request.