Radiopharmaceutical: IN-^{111}
Dose: 500 uCi
T1/2: 2.8 days (67.2 hours)
Energy: 173 keV and 245 keV
CPT: 78805 (limited area); 78806 (whole body); 78807 (SPECT)

Indications:

Approved indications include, but are not limited to:

1. To detect site(s) of inflammation as a cause of abdominal pain.
2. To localize site(s) of infection in patients with granulocytosis and/or positive blood cultures.
3. To detect and determine the extent of inflammatory or ischemic bowel disease. 111In-leukocytes are preferred for quantitative assessment.
4. To detect and follow up musculoskeletal infection, such as septic arthritis and osteomyelitis.

Patient Preparation:

- The patient should be made aware that there will be three appointments on the first day of this test, and one appointment on the second day.

Equipment:

1. Philips Skylight (MEGP collimator)
2. Philips Forte (MEGP collimator)
3. Philips Vertex Plus (LEUHR collimator)

Procedure:

1. Place a 20 guage (no smaller than a 22 guage) intravenous catheter in the patient's arm..
2. Draw 60 mL of patient's whole blood using the heparin (1000 units) provided by the radiopharmacy (Jubilant) as an anticoagulant. Be sure to gently draw blood as to not damage blood cells.
3. Fill out the appropriate paperwork and labels included in the kit provided by Jubilant. Be sure to include name and date of birth as a means of identification.
4. Place a label with patient's name and DOB on the syringe and place syringe in plastic bag. Place syringe in box with opening facing upward.
5. Place armband provided in kit on patient.
6. Explain that the process of tagging the leukocytes can take 3 to 5 hours, and give patient a time to return for re-injection.
7. Call the pharmacy to have them pick up the case.
8. When the tagged cells and the patient return, place another 20-gauge (no smaller than a 22 guage) intravenous catheter in the patient's arm.
9. Be sure to check all patient identifiers on the blood and the patient's wristband, as well as asking the patient, prior to reinjecting tagged leukocytes.
10. Inject the patient with tagged cells.
11. **If Irritable Bowel Disease is the indication, perform a 10 cm/min wholebody scan at 30 min post reinjection.**
12. At **4 hours** post injection, obtain appropriate images:
    A. For FUO or abdominal pain (liver lesion, etc.), obtain a wholebody scan at 6 to 7 cm/min, followed by static images (600 sec) of area of interest.
    B. For osteomyelitis, or other musculoskeletal infection, obtain static images (600 sec) of area of interest.
13. At **20 hours** post injection, repeat appropriate images:

A. For FUO or abdominal pain (liver lesion, etc.), obtain a wholebody scan at 5 to 6 cm/min, followed by static images (600 to 900 sec) of area of interest.
B. For osteomyelitis, or other musculoskeletal infection, obtain static images (600 to 900 sec) of area of interest.

14. For certain indications, SPECT may be performed at **20 hours** post reinjection.

Acquisition Parameters:

Wholebody:

- Matrix: High-Res.
- Zoom: 1.00 x (Full-Field)
- Scan Speed: 6 to 7 cm/min for 4 hour; 5 to 6 cm/min for 20 hour
- Position: Supine
- Orientation: Feet First
- Display Mode: Variable
- Body Contour: Learn Mode

Statics:

- Matrix: 256 x 256
- Zoom: 1.00 x (Full-Field)
- Total Time: 600 sec for 4 hour images; 600 to 900 sec for 20 hour images.
- Position: Supine
- Orientation: Feet First

SPECT:

- Matrix size: 128 x 128
- Zoom: 1.00 x (Full Field)
- Number of angles: 128
- Time per angle: 30 seconds
- SPECT mode: Step
- Orbit type: Non-circular
- Rotation direction: Counter-clockwise

Processing:

Wholebody:

1. Left click on 2 VIEW/4 VIEW WHOLEBODY DISPLAY from top menu in Pegasys.
2. Select in the following order: POSTERIOR 4 HOUR, ANTERIOR 4 HOUR, POSTERIOR 20 HOUR, and ANTERIOR 20 HOUR and click PROCEED.
3. Pan images so that top of patients skull is level across top of image.
4. Change color to GREY. Increase brightness as necessary.
5. Left click on pencil tool and select correct annotation defaults.
6. Left click on camera icon to snapshot the image.

Statics:

1. Left click on ALL IMAGE DISPLAY from top menu in Pegasys.
2. Select images to display and PROCEED,
3. Increase brightness as necessary for interpretation.
4. Left click on pencil tool for annotation defaults. Choose proper labeling, ensuring proper image orientation.
5. Left click on camera icon to snapshot the image.

SPECT

1. Left click on AUTOSPECT from top menu in Pegasys.
2. Select PROJECTION and PROCEED.

3. At top of screen, left click on OPEN. From listed defaults, choose BONE SPECT (12 iterations, Cutoff of 0.5, and Order of 5.0).
4. Perform motion correction as necessary.
5. Set yellow lines to outer limits of scan field and left click on RECONSTRUCT at top left of screen.
6. After reconstruction is complete, left click on REORIENT.
7. Adjust images, if needed.
8. Left click on SAVE at top right of screen.
9. Left click on QUIT.
10. Left click on MCD & MCD/AC PHYSICIANS REVIEW button on top menu in Pegasys.
11. Choose the TRANSVERSE images and PROCEED.
12. Left click on 3D.
13. Left click on VOLUME.
14. In transverse view, middle click at center of patient and extend green line beyond body habitus.
15. At right of screen, change DEPTH to 128 and VIEWS to 32.
16. Left click on CREATE. This will take a minute or so, then left click on SAVE, and PROCEED.
17. Left click on CANCEL, CANCEL, and QUIT.
1. 18. Reverse the AXIAL and SAGITTAL images. To do this, left click on PAGE 2 at top right of menu at top of screen on Pegasys. Left click on SPECT FRAME REVERSE. Select TRANSVERSE images, this will automatically proceed and then reverse the frames. When the images reappear, left click on EXIT, and then SAVE SELECTED AND PROCEED. Do the same for the SAGITTAL images.
18. Display a composite of all scan planes. Left click on REFRAME from top menu on Pegasys.
19. Select TRANSVERSE-R images and PROCEED.
20. Right click on SELECTION MENU and then right click on 3 Right click on SELECTION MENU again, then right click on 3 STANDARD.
21. Left click on the 24 VIEW image display. Ensure that anatomy of interest is completely included in display range.
22. Increase brightness as necessary for interpretation.
23. Left click on the pencil tool, and then choose the proper annotation defaults. Ensure that the proper patient orientation is noted on the images.
24. Left click on the camera icon and snapshot.
25. Repeat steps 20 to 25 for CORONAL and SAGITTAL-R planes.
26. DICOM all saved images, as well as raw projection data (for SPECT), and send to PACS.