

RADIONUCLIDE CYSTOGRAM - NON-TX PTS  
UPDATED: APRIL 2010

CPT CODE: 78740

**Indications:** This examination is most commonly performed for patients with suspected reflux of urine from the bladder into the ureters. The sensitivity of this examination and the identification of ureteral reflux is equal to the radiographic equivalent with far less (about one-one hundredth) of the radiation burden of the radiologic evaluation.

**Patient Prep:** Catheterization is necessary. IP's can be catheterized on the ward. OP's can self-catheterize if they routinely do so. OP pediatric patients should be catheterized by a parent or nurse (contact Peds Specialty Clinic) who accompanies the patient.

**Scheduling:** Allow 60-90 minutes.

**Radiopharmaceutical & Dose:** 2 doses, each 1.0 mCi  $\pm$  20% (0.8-1.2) mCi Tc-99m-DTPA (or other Tc-99m agent if DTPA not available). Tc<sup>99m</sup> may be used only if a Tc-99m agent is not made. Dose will be adjusted for patient weight per NMIS or weight table.

Have Buretrol set up ready with 500 ml bag of saline running. Fill Buretrol with 150 ml saline.

**Imaging Device:** GE camera with LEHRPH collimator.

**Imaging Procedure:** PREDEFINED STUDY: Cystogram

1. Lay the patient supine with detector head below the table. Ensure that the bladder and both kidneys are in the FOV. Acquire a series of dynamic images for up to 60 min.
2. Begin running saline (warmed to room temp.) into the urinary bladder. Inject dose directly into the first port of the IV line as soon as saline is running properly. Start acquisition.
3. Watch computers or p-scope for reflux. Record volume instilled when reflux is first seen and time.
4. When the urinary bladder is filled (volume in bladder should be greater than 200 ml) or when patient complains of discomfort or the need to void, proceed as below.
5. At maximum filling, clamp the catheter and ask the patient to attempt to void for 2 min (frames). Watch for reflux. Then unclamp catheter and ask patient to void "around and through" the catheter while recording images. Expect possible leakage about the catheter.
6. Measure the volume of urine voided. Calculate the Residual Volume and Reflux Bladder Volume according to the worksheet (Worksheet: Radionuclide Cystogram).
7. If no reflux is seen, repeat second DYN acquisition.

**Acquisition Protocol:**

Set up two studies.

DYN filling and emptying 1

128 x 128; 60 sec frames, 60 frames

Static: Ant 128 x 128 Post 128 x 128

120 sec 120 sec

DYN filling and emptying 2

128 x 128; 60 sec frames, 60 frames

Post-emptying Static: Ant 128 x 128 Post 128 x 128

120 sec 130 sec

**Display:**

Since there is no set endpoint to the test, the display format should be as follows.

NOTE: On all patients, note time and volume when reflux occurs as well as total volume instilled.

Also measures the volume of urine voided and calculate residual volume and reflux bladder volume according to worksheet.

Display each DYN at 1 min/frame.

NOTE: You need to lower the upper window in order to identify a reflux or leak.

**PACS:**

Send all dynamic images and save sets to PACS.

**Interpretation:**

The study is very sensitive for detecting reflux with low radiation dose. The repeat test is required for maximum sensitivity. Any reflux is abnormal.

**Comments:**

A Nuclear Medicine staff or resident physician should be consulted to determine if additional views are indicated.

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RADIONUCLIDE CYSTOGRAM WORKSHEET  
UPDATED: APRIL 2010

CPT CODE: N/A

PATIENT NAME: \_\_\_\_\_  
 PATIENT NUMBER: \_\_\_\_\_  
 DATE OF STUDY: \_\_\_\_\_  
 RADIOPHARMACEUTICAL: \_\_\_\_\_  
 DOSE: \_\_\_\_\_

Right Reflux at	_____	cc saline instilled
Left Reflux at	_____	cc saline instilled
Total	_____	cc saline instilled
Urinary Bladder:	_____	counts pre-void
	_____	counts post-void
Voided Volume of Urine:	_____	ml

$$\text{Residual Volume} = \frac{(\text{voided volume}) \times (\text{counts post-void})}{(\text{counts pre-void}) - (\text{counts post-void})}$$

$$\text{Residual Volume} = \frac{(\quad) \times (\quad)}{(\quad) - (\quad)} = \underline{\hspace{2cm}}$$

$$\text{Residual Volume} = \underline{\hspace{2cm}}$$

**REFLUX BLADDER VOLUME:**

$$\text{Total Bladder Volume} = \text{voided volume} + \text{residual volume}$$

$$\text{Total Bladder Volume} = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\text{Initial Volume} = \text{Total Bladder Volume} - \text{Total Volume Instilled}$$

$$\text{Initial Volume} = \underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\text{Reflux Volume} = \text{Initial Volume} + \text{Volume Instilled to Initiate Reflux}$$

$$\text{Reflux Volume} = \text{R } \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\text{L } \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

TECHNOLOGIST: \_\_\_\_\_