

**GASTROINTESTINAL BLEED STUDY  
(Tc-99m-Red Blood Cells)**

**RESPONSIBLE DIVISION:** Division of Nuclear Medicine, Department of Radiology, UT Southwestern Med Center

**Date Last Reviewed: 01/2019**

**POLICY BASIS FOR PROCEDURE**

- To establish a protocol for gastrointestinal bleed examination

**DESCRIPTION OF STANDARD PROCEDURE**

**SCOPE**

- All Nuclear Medicine Technologists and Physicians must adhere to these guidelines

**PROCEDURE**

**Indications:**

- Localization of gastrointestinal bleeding sites
- Localization of non-gastrointestinal bleeding sites

**Examination Time:**

- Variable, depends on whether and when the site of bleeding is identified.
- The study may be terminated as soon as the bleeding site is identified.
- Imaging can be performed for up to 24 hours with a single injection of radiopharmaceutical.

**Patient Preparation**

- None

**Equipment & Energy Windows:**

- Gamma camera: Large field of view.
- Collimator: Low energy, high resolution, parallel hole.
- Energy window: 20% window centered at 140 keV.

**Radiopharmaceutical, Dose, & Technique of Administration:**

- Radiopharmaceutical: Tc-99m radio-labeled red blood cells.
- Red blood cell labeling method with Ultratag. Careful attention must be given to follow Ultratag instructions for radiolabelling as inadequate radiolabeling will alter the tagging process and result in suboptimal imaging.

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## UT Southwestern Department of Radiology

- Dose: 30 mCi (925 MBq) Tc99m Pertechnetate.
- Technique of administration: Standard intravenous injection.

### Patient Position & Imaging Field:

- Patient position: Supine.
- Imaging field: Usually abdomen and pelvis; may exclude uppermost abdomen.  
(Occasionally position over a different part of the body depending on suspected site of bleeding.)

### Acquisition Protocol (1-2):

- Matrix size: 128 x 128
- Start the acquisition just before or simultaneously with injection of the radiopharmaceutical.
- Flow - 2 sec/frame for 60 frames  
Dynamic - 60 sec/frame for 90 frames.  
Static - Lateral of pelvis  
Static – Anterior of Thyroid  
Static – Oblique images of the pelvis unless the patient's condition is not feasible for additional imaging.  
Dynamic - Additional imaging for 30 minutes may be obtained if bleeding is not visualized.
- Imaging may cease if bleeding is visualized before the end of the 90 minute dynamic imaging.  
Physician approval must be obtained for confirmation and ensure no additional views are needed. Imaging will continue until the patient is ready to be transported back to their room.
- Imaging may be resumed without an additional radiopharmaceutical injection for up to 24 hours.

### Principle Radiation Emission Data – Tc-99m

- Physical half-life = 6.01 hours.

Radiation	Mean % per disintegration	Mean energy (keV)
Gamma-2	89.07	140.5

**Dosimetry - Tc-99m-Labeled Red Blood Cells**

Organ	rads/25 mCi	mGy/925 MBq
Heart	2.0	20.0
Liver	1.8	18.0
Spleen	1.5	15.0
Lungs	1.4	14.0
Kidneys	1.4	14.0
Blood	1.4	14.0
Red marrow	0.8	8.0
Whole body	0.4	4.0

Effective Dose	rems/25 mCi	mSv/925 MBq
Whole Body	0.648	6.48

**REFERENCES:**

1. Dam, HQ, Brandon DC. Grantham, VV, et al. The SNMMI Procedure Standard/EANM Practice Guideline for Gastrointestinal Bleeding Scintigraphy 2.0 J Nucl Med Technol. 2014; 42:308-3017.
2. ACR Practice Parameter for the performance of gastrointestinal scintigraphy, Revised 2015.

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