

# NUCLEAR MEDICINE PROTOCOLS



## Gastric Emptying Study

<b>Indications</b>	<ul style="list-style-type: none"><li>• Determination of delayed gastric emptying with quantification of gastric emptying rate.</li><li>• Evaluation of mechanical obstruction</li><li>• Evaluation of anatomic obstruction (pyloric, post-surgical, or post radiotherapy)</li><li>• Evaluation of altered function (gastroparesis (diabetic or idiopathic), scleroderma, amyloidosis, anorexia nervosa)</li><li>• Evaluation of suspected tumors or surgery</li><li>• Evaluation of nausea and vomiting, and early suspected satiety</li><li>• Evaluation of weight loss</li><li>• Evaluation of gastric therapy (Reglan)</li></ul>
<b>Exam Time</b>	1 <sup>1</sup> / <sub>2</sub> to 2 hours
<b>Administration to Imaging Time</b>	Immediately
<b>Patient Preparation</b>	NPO for 8 hours. Diabetics need to be instructed to bring insulin with them. The dose of insulin is to be adjusted when the meal is given.
<b>Patient Positioning</b>	Sitting between images, supine for imaging
<b>Radiopharmaceutical and Dose</b>	<b>Solid Phase:</b> <sup>99m</sup> Tc SC ( Sulfur Colloid) <b>Dose Range:</b> 1-2 mCi in cooked eggs or oatmeal <b>Liquid Phase:</b> <sup>111</sup> In-DTPA (diethylene triamine pentaacetic acid) or <sup>99m</sup> Tc-DTPA in 300 ml water orange juice, or milk.
<b>Method of Administration:</b>	Oral.
<b>Conflicting exams and medications:</b>	The Meal should be optimally be ingested within 10 minutes <ul style="list-style-type: none"><li>• Drugs affecting gastric mobility. Delayed gastric emptying is caused by aluminum hydroxide, narcotics, and propantheline. Gastric emptying enhanced by Reglan.</li><li>• Premenopausal women should be studied on days 1-10 of their menstrual cycle to avoid effects of hormonal variation on gastrointestinal motility.</li></ul>
<b>Imaging Device</b>	Low energy for <sup>99m</sup> Tc; medium energy for <sup>111</sup> In
<b>Acquisition Protocol</b>	<b>Dynamic: 60 sec/image for 60 minutes to 90 minutes</b> <b>Views: Anterior or left anterior oblique and posterior sequentially for geometric mean method</b> <b>Solid Study:</b> <ul style="list-style-type: none"><li>• Prepare 1 egg and mix in tracer</li><li>• Stir and scramble or prepare oatmeal and add tracer</li><li>• Administer to patient with 30 -120ml water. Encourage patient to eat quickly.</li></ul>

## Gastric Emptying Study

- Supine position. Acquisition should be started as quickly as possible after ingestion of food
- Position camera anterior or LAO
- Instruct patient to hold still
- Obtain dynamic images for 60 minutes  
(**SNM and SGRA recommend 4 hours**)
- Supine is good for checking of reflux

### Comments

- Normally for eggs or oatmeal half of the activity leaves the stomach in 60-120 minutes. For liquids only, the half-emptying time is normally less than 20 minutes.
- Computer acquisition is essential. Half time for emptying is done by drawing a region of interest around the stomach and determination of the time it takes to reach half the peak counts or a least squares fit method to derive a half emptying time to reach 50% of the peak counts.