UNM HOSPITALS

Gastric Emptying – Standard Meal or Ensure/Boost Plus

Special Instructions	**See below for patient preparation. The ordering physician should determine what medications are to be continued or discontinued prior to the study.** **To be performed at UNMH and SRMC.**

Radiopharmaceutical: Tc-99m sulfur colloid in standardized meal (255 kcal):

- 4 oz (120g) liquid egg whites (Eggbeaters)
- 2 slices white bread
- 30 g strawberry jam
- 4 oz (120g) water

- Preferably, this should be in sandwich form (spread jam on bread, put the cooked scrambled eggs inside) to facilitate estimation of the percent of the meal consumed. Tc99m sulfur colloid must be cooked in the egg to ensure binding to proteins.
- If the patient is unable to consume solids, consult with the radiologist about mixing the Tc-99m sulfur colloid into one can of Ensure Plus or Boost Plus instead of the standardized meal.

Dose (Adult/Pediatric): Refer to Nuclear Medicine Dose Chart

Route of Administration: Oral

Patient Preparation: Please ensure the following:

- NPO for at least 6 hours (NPO after midnight for morning studies).
- Advise patients not to smoke on the morning of the study.
- If the patient takes insulin or oral diabetes medications, have them bring them with them to the study.

Equipment Setup: Collimator: High resolution

Computer set up (E-CAM/SPECT-CT/Evo/Symbia E):

Gastric Retention workflow:

- 128 x 128 matrix
- Zoom 1.0 (greater for small children)
- Static anterior/posterior images, 1 min/image
- Imaging time points: Immediate, 30, 60, 120, 180, and 240 minutes

Patient Positioning: Standing (preferred) or seated. Supine only if the patient cannot sit or stand.

Camera position:

- Anterior/Posterior, center over the abdomen (include stomach and all bowel)

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Procedure:

Have the patient fill out the patient questionnaire.

For patients **less** than 18 years old:

- Ask the patient/caregiver if the patient is diabetic.
- If the patient is **not diabetic**, the blood sugar does not need to be measured; write '**nondiabetic**' in the blank for blood sugar measurement on the questionnaire and technologist comments in Radnet. (Questionnaire to be scanned into PACS)
- Before the patient starts eating, the blood glucose must be measured and documented. If the glucose level is over **275 mg/dl**, check with the radiologist to see if the patient needs to be rescheduled.

For patients **older** than 18 years:

- Before the patient starts eating, the blood glucose must be measured and documented on the questionnaire and technologist comments in Radnet. (Questionnaire to be scanned into PACS.) If the glucose level is over **275 mg/dl**, check with the radiologist to see if the patient needs to be rescheduled.
- If the patient normally takes **oral diabetes medications** with breakfast, they may take these medications with the meal. If they normally take **insulin** with breakfast, they may take ½ of their usual dose (due to the small size of the meal). Consult with the attending radiologist if questions.

- Make the standardized meal as a sandwich (spread jelly on each piece of toast, put eggs between the slices of bread, and have the patient eat it like a sandwich). This will facilitate estimations of the percent of the meal consumed.
- Encourage the patient to eat all of the meal as quickly as possible (preferably less than 10 minutes if the patient is able to do so without becoming ill). Record the percent of the meal consumed and the amount of time taken to eat the meal.
- Acquire one-minute anterior/posterior static images of the abdomen at each time point above.
- Between images, the patient may wait in the waiting area and may walk to the bathroom as needed. Emphasize the importance of returning on time for images. Encourage hospitalized patients to sit up as much as possible.

Processing:

- Merge Static images under GE Static Merge.
- Select concatenated file.
- Open Gastric Retention Static processing workflow.
- Open ROI processing.
- Ensure that decay correction is ON, background is ON, and geometric mean is ON.

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- On the immediate image, draw the region around ALL activity (stomach plus bowel and esophagus if need). Only include the visible activity, not the entire field of view.
- On 30, 60, 120, 180, and 240 minute images, draw the region around the stomach only.
- If in doubt about regions, check with the radiologist.
- Calculate percent remaining in the stomach at each time point using the counts at each time point (Y-values on graph) divided by the immediate counts.
- Label each time point on the graph with the corresponding percentages (immediate = 100%)
- Make sure Y axis is set at 0 before performing the calculations on the graph

Note: if the stomach appears to be nearly empty at an earlier time point than 4 hours, have the patient wait while calculating the emptying percentages thus far. If the percent remaining is less than 10%, show the data to the radiologist; if approved by the radiologist, the study can be ended early without obtaining the remaining time point.

Items Required For Complete Study:

- Raw data of static anterior/posterior emptying images
- Savescreens:
  - Raw Data
  - Gastric emptying results page(s) with graph and emptying percentage
  - Results page with anterior and posterior images, ROI, as well as graph with emptying percentage.
- Paperwork with patient questionnaire, percent of meal consumed/amount of time, and percent retention calculations
- Transfer of all digital images to PACS
- Complete the examination in RIS